

APPENDIX E

WDFW Priority Species and Preferred Habitats that Occur in Chelan County and the Alpine Lakes Area

Table 6
WDFW Priority Species and Preferred Habitats that Occur in Chelan County and the Alpine Lakes Area

Common Name (Scientific Name)	State Status ¹	Priority Area ¹	PHS Habitat Description ²	Chelan County ¹	Alpine Lakes Area ³
Birds					
American white pelican (<i>Pelecanus erthrhynchos</i>)	Endangered	Breeding areas, regular concentrations	Rivers, lakes, reservoirs, estuaries, bays, and open marshes, sometimes inshore marine habitats.	X	
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Sensitive	Breeding areas, communal roosts, regular concentrations	Roost, nest habitat and forage areas near lakes, reservoirs, rivers, and uneven-aged coniferous forest stands with readily available food source (fish and carrion).	X	
Black-backed woodpecker (<i>Picoides arcticus</i>)	Candidate	Breeding areas, regular occurrences	Associated with boreal and montane coniferous forests, especially in areas with standing dead trees such as burns, bogs, and windfalls.	X	
Black-crowned night-heron (<i>Nycticorax nycticorax</i>)	Priority	Breeding areas	Marshes, swamps, wooded streams, mangroves, shores of lakes, ponds, lagoons; salt water, brackish, and freshwater situations.	X	
Burrowing owl (<i>Athene cunicularia</i>)	Candidate	Breeding areas, foraging areas, regular concentrations	Open grasslands, especially prairie, plains, and savanna, sometimes other open areas such as vacant lots near human habitation or airports. Spends much time on the ground or on low perches such as fence posts or dirt mounds.	X	
Cavity-nesting ducks: wood duck (<i>Aix sponsa</i>), Barrow's goldeneye (<i>Bucephala islandica</i>), common goldeneye (<i>Bucephala clangula</i>), bufflehead (<i>Bucephala albeola</i>), hooded merganser (<i>Lophodytes cucullatus</i>)	Priority	Breeding areas	Nest primarily in late successional forests and riparian areas adjacent to low gradient rivers, sloughs, lakes, and beaver ponds. Nest almost exclusively in tree cavities, which offer protection from weather and predators. Snags and cavity trees near shallow wetlands are ideal for brood.	X	
Common loon (<i>Gavia immer</i>)	Sensitive	Breeding sites, migratory stopovers, regular concentrations	Breeding habitat includes usually clear lakes containing both shallow and deep water areas. Nest sites are found on small islands, quiet backwaters, mainland shores, marshy portions of lakes. In winter and during migration, use inland lakes and rivers and marine and estuarine coastal waters.	X	
Dusky grouse (<i>Dendragapus obscurus</i>)	Priority	Breedings areas, regular concentrations	Coniferous forest, especially fir, mostly in open situations with a mixture of deciduous trees and shrubs	X	
Eastern Washington breeding concentrations of: Phalaropes (<i>Scolopacidae</i>), stilts (<i>Recurvirostridae</i>), avocets (<i>Recurvirostridae</i>)	Priority	Breeding areas	None provided.	X	
Eastern Washington nonbreeding concentrations of: grebes (<i>Podicipedidae</i>), cormorants (<i>Phalacrocoracidae</i>)	Priority	Breeding areas	None provided.	X	
Flammulated owl (<i>Otus flammeolus</i>)	Candidate	Breeding sites, regular concentrations	Montane forest, usually open conifer forests containing pine, with some brush or saplings (typical of the physiognomy of pre-European settlement ponderosa pine forests).	X	
Golden eagle (<i>Aquila chrysaetos</i>)	Candidate	Breeding areas, foraging areas	Open, arid plateaus deeply cut by streams and canyons, western shrub-steppe and grassland communities and transition zones between shrub, grassland, and forested habitat. Sometimes found in mature and old-growth forests near the edges of clearcuts in western Washington. Nests generally are located on cliffs and are occasionally located in trees.	X	X
Great blue heron (<i>Ardea herodias</i>)	Priority	Breeding areas	Nesting habitat typically consists of mature forest. Breeding herons feed in wetland complexes, large rivers and creeks, and small lakes. Fall/Winter often prey on small mammals in fallow, freshly plowed, or mowed fields and in grasslands habitats.	X	
Harlequin duck (<i>Histrionicus histrionicus</i>)	Priority	Breeding areas, regular concentrations in salt water	Require fast-flowing water with loafing sites nearby. Streams usually have substrate that ranges from cobble to boulder, with adjacent vegetated banks. They have been found more often at distances >50 meter (164 feet) from roads or trails, and in stream reaches with mature and old-growth forest cover. Stream alterations that would cause greater surface runoff, changing water levels, or lower macroinvertebrate levels should be avoided.	X	

Table 6
WDFW Priority Species and Preferred Habitats that Occur in Chelan County and the Alpine Lakes Area

Common Name (Scientific Name)	State Status ¹	Priority Area ¹	PHS Habitat Description ²	Chelan County ¹	Alpine Lakes Area ³
Lewis' woodpecker (<i>Melanerpes lewis</i>)	Candidate	Breeding areas, regular occurrences	Open forest and woodland, often logged or burned, including oak, coniferous forest (primarily ponderosa pine, riparian woodland and orchards, less commonly in pinyon-juniper.	X	
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Candidate	Regular concentrations, regular occurrences in breeding areas	Open country with scattered trees and shrubs, savanna, and, occasionally, open woodland; often perches on poles, wires, or fenceposts.	X	
Mountain quail (<i>Oreortyx pictus</i>)	Priority	Any occurrence	Mixed evergreen-deciduous forests, regenerating clearcuts, forest and meadow edges, chaparral slopes, shrub-steppe, and mixed forest/shrub areas. Seek brush, hardwood, and conifer communities for nesting, brooding in cool, moist bottoms of draws and canyons.	X	
Northern goshawk (<i>Accipiter gentilis</i>)	Candidate	Breeding areas. Including alternate nest sites, post-fledging foraging areas	All forested regions with >50% closed canopy with multiple layers.	X	
Prairie falcon (<i>Falco mexicanus</i>)	Priority	Breeding areas	Primarily open situations, especially in mountainous areas, steppe, plains, or prairies.	X	
Peregrine falcon (<i>Falco peregrinus</i>)	Sensitive	Breeding areas, regular occurrences	Nest on cliffs, typically 45 meters (150 feet) or more in height. Nest on off-shore islands and ledges on vegetated slopes. Wetlands, especially intertidal mudflats, estuaries, and coastal marshes, are key feeding areas in winter; maintain large trees and snags in these areas.	X	
Pileated woodpecker (<i>Dryocopus pileatus</i>)	Candidate	Breeding areas	Old-Growth and Mature Forest	X	
Sage sparrow (<i>Amphispiza belli</i>)	Priority	Breedings areas, regular occurrences in suitable habitat during breeding season	Found from sea level to alpine; strongly associated with sagebrush for breeding.	X	
Sage thrasher (<i>Oreoscoptes montanus</i>)	Candidate	Breedings areas, regular occurrences in suitable habitat during breeding season	Sagebrush plains, primarily in arid or semi-arid situations, rarely around towns.	X	
Sooty grouse (<i>Dendragapus fuliginosus</i>)	Priority	Breedings areas, regular concentrations	During breeding season, can be found in forested habitats from sea level to thousands of feet in elevation. Lowland forest in the preferred habitat for this species. In winter, found almost entirely in coniferous forests.	X	
Vaux’s swift (<i>Chaetura vauxi</i>)	Candidate	Breeding areas, communal roosts	Strongly associated with old-growth and mature forests. They require hollow chambers in large snags or live trees with broken tops for nesting and night roosting.	X	
Waterfowl concentrations (<i>Anatidae</i> , excluding Canada geese in urban areas)	Priority	Significant breeding areas, regular concentrations in winter	None provided.	X	
Western grebe (<i>Aechmophorus occidentalis</i>)	Candidate	Breeding areas, regular concentrations, migratory stopovers, regular occurrences in winter	Marshes, lakes, and bays; in migration and winter also sheltered seacoasts or rivers. Nests anchored to living vegetation on large inland bodies of water very close to deep water to allow bird to swim submerged.	X	
White-headed woodpecker (<i>Picoides albolarvatus</i>)	Candidate	Breeding sites, regular occurrences	Montane coniferous forest, primarily pine and fir.	X	
Terrestrial Mammals					
Bighorn sheep (<i>Ovis canadensis</i>)	Priority	Breeding areas, regular concentrations	Occur in mesic to xeric, alpine to desert grasslands or shrub-steppe in mountains, foothills, or river canyons.	X	
Black-tailed jackrabbit (<i>Lepus californicus</i>)	Candidate	Regular concentrations	Inhabits open plains, fields, and deserts; open country with scattered thickets or patches of shrubs.	X	
Cascade red fox (<i>Vulpes vulpes cascadenis</i>)	Candidate	Any occurrence	None provided.	X	

Table 6
WDFW Priority Species and Preferred Habitats that Occur in Chelan County and the Alpine Lakes Area

Common Name (Scientific Name)	State Status ¹	Priority Area ¹	PHS Habitat Description ²	Chelan County ¹	Alpine Lakes Area ³
Elk (<i>Cervus elaphus</i>)	Priority	Calving areas, migration corridors, regular concentrations in winter and in foraging areas along coastal waters	Forested areas in winter; summer can be moderate-sized patches of forage openings and cover areas.	X	
Fisher (<i>Martes pennanti</i>)	Endangered	Any occurrence	Mature, uneven stands of coniferous and mixed coniferous/deciduous with extensive continuous canopy where 50% to 90% of overstory is evergreen that is optimal winter habitat.	X	
Marten (<i>Martes americana</i>)	Priority	Regular occurrence	Mixed age forests of a variety of species composition.	X	X
Mountain goat (<i>Oreamnos americanus</i>)	Priority	Breeding areas, regular concentrations	Alpine and subalpine habitat; steep grassy talus slopes, grassy ledges of cliffs, or alpine meadows, usually at timberline or above. May seek shelter and food in stands of spruce or hemlock in winter.	X	
Northwest white-tailed deer (<i>Odocoileus virginianus ochrorus</i>)	Priority	Regular concentrations in winter, migration corridors	Occupy many types of habitats in mountains and lowlands, including various forests and woodlands, forest edges, shrublands, grasslands with shrubs, and residential areas.	X	
Preble's shrew (<i>Sorex preblei</i>)	Candidate	Any occurrence	Habitats include arid and semiarid shrub-grass associations and openings in montane coniferous forests dominated by sagebrush.	X	
Rocky mountain mule deer (<i>Odocoileus hemionus hemionus</i>)	Priority	Breeding areas, migration corridors, regular concentrations in winter	Occupy many types of habitats in mountains and lowlands, including various forests and woodlands, forest edges, shrublands, grasslands with shrubs, and residential areas.	X	
Western gray squirrel (<i>Sciurus griseus</i>)	Threatened	Any occurrence	Pine and oak typical. Transitional, conifer-dominated areas that merge with open patches of oak and other deciduous trees. Mature and large seeded mast-producing trees provide abundant food and sites for nest construction.	X	
White-tailed jackrabbit (<i>Lepus townsendii</i>)	Candidate	Regular concentrations	Open grasslands and sagebrush plains. At higher elevations found in open areas adjacent to pine forests and in alpine tundra.	X	
Amphibians					
Columbia spotted frog (<i>Rana luteiventris</i>)	Candidate	Any occurrence	Highly aquatic; rarely found far from permanent quiet water; usually occurs at the grassy/sedgy margins of streams, lakes, ponds, springs, and marshes. May disperse into forest, grassland, and brushland during wet weather, and may traverse uplands to reach wintering sites.	X	
Western toad (<i>Anaxyrus boreas</i>)	Candidate	Any occurrence	Occur in a wide variety of habitats ranging from desert springs to mountain wetlands, and various upland habitats around ponds, lakes, reservoirs, and slow-moving rivers and streams. For shelter, they dig burrows in loose soil or seclude themselves under logs or rocks. Egg laying sites include shallow areas of ponds, lakes, or reservoirs, or pools of slow-moving streams.	X	
Reptiles					
Sagebrush lizard (<i>Sceloporus graciosus</i>)	Candidate	Any occurrence	Sagebrush and other types of shrublands, also pinyon-juniper woodland and openly wooded areas of ponderosa pine or Douglas-fir; occupied areas have open ground and some low bushes	X	
Sharptail snake (<i>Contia tenuis</i>)	Candidate	Any occurrence	Moist situations in pastures, meadows, oak woodlands, broken chaparral, and the edges of coniferous or hardwood forests.	X	
Bivalves					
California floater (<i>Anodonta californiensis</i>)	Candidate	Any occurrence	Freshwater	X	

Table 6
WDFW Priority Species and Preferred Habitats that Occur in Chelan County and the Alpine Lakes Area

Common Name (Scientific Name)	State Status ¹	Priority Area ¹	PHS Habitat Description ²	Chelan County ¹	Alpine Lakes Area ³
Bats					
Roosting concentrations of: Big-brown bat (<i>Eptesicus fuscus</i>), Myotis bats (<i>Myotis</i> spp.), Pallid bat (<i>Antrozous pallidus</i>)	Priority	Regular concentrations in naturally occurring breeding areas and other communal roosts	None provided.	X	
Townsend’s big-eared bat (<i>Corynorhinus townsendii</i>)	Candidate	Any occurrence	This species uses caves, mines, hollow trees, and built structures for roosting. Westside lowland conifer-hardwood forest, ponderosa pine forest and woodlands, mixed highland conifer forest, eastside mixed conifer forest, shrub-steppe, and both eastside and westside riparian wetlands.	X	

Notes:

1. Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.

2. NatureServe: An Online Encyclopedia of Life. Available from: <http://explorer.natureserve.org/servlet/NatureServe?init=Species>. Accessed on: October 20, 2016.

3. Washington Department of Fish and Wildlife, 2016. WDFW PHS online. Cited: July 7, 2016. Available from: <http://wdfw.wa.gov/mapping/phs/>.

PHS: Priority Habitats and Species

WDFW: Washington Department of Fish and Wildlife

APPENDIX F

Easement Agreements and Deeds

DIRECTORS
LYMAN B. BARDIN
RONALD K. PFLUGRATH
KENT A. CHRISTENSEN

Icicle Irrig. Exchange
M. PROE, CASHBURN, SECRETARY, MANAGER
JANET ROGERS, DEPUTY SECRETARY

ICICLE IRRIGATION DISTRICT

CHELAN COUNTY
308 SOUTH DIVISION STREET — 509/782-2561
CASHMERE, WASHINGTON 98815

January 29, 1987

Wenatchee National Forest
Donald H. Smith, Forest Supervisor
Post Office 811
Wenatchee, Washington 98801

SUP	DEP
AD	LMP
AS	ELM
BUD	LDS
FISC	LMM
I&E	FIRE
IP	REC
PER	ARCH
DR	RAWWS
EC	TBR
RDS	FSL

RE: Decision Notice of Categorical Exclusion Leavenworth Ranger District
Wenatchee National Forest Enchantment Core Management
Wenatchee World, Friday, January 16, 1987

Dear Mr. Smith:

This letter is being written to inform you that the Icicle Irrigation District and the Peshastin Irrigation District have entered into a land exchange agreement with the Forest Service, Department of Agriculture relative to Colchuck Lake, Eight Mile Lake and Klonaqua Lake and the Snow Lakes Trailhead. Within this agreement, the Forest Service acknowledges that there is reserved to the Districts a nonexclusive, perpetual easement across, through, along and upon the property for the purpose of maintenance, repair, operation, modification, upgrading and replacement of all facilities presently located in and upon the property, together with a nonexclusive right of ingress to and egress from all such facilities for all such purposes.

The Districts may exercise the rights hereunder by any means reasonable for the purposes described, including but not limited to the use of motorized transportation and equipment. These rights include the right to regulate water level to all facilities located upon the property. In performing maintenance, repair operation, modification, upgrading and replacement of facilities located in or upon the property, the District will not without the prior written consent of the Forest Service, which consent shall not be unreasonably be withheld, materially increase the size or scope of the facilities.

The easements reserved by the District and granted by the United States of America, Forest Service, herein shall be perpetual unless the Districts, their assigns or heirs, abandon such facilities for a period of five successive years. The United States of America, Forest Service, acknowledges that the interests in real property, improvements to real property and water rights are used by the Districts on an "as-needed" basis to supplement the water supply of the Districts. No abandonment shall be deemed to take place unless the Districts have ceased to use the interest in real property, the water rights and the improvements to real property on an "as-needed" basis, for five successive years.

The United States shall charge no fee for the exercise of the rights reserved or granted hereunder, nor shall it require any further permission for the Districts to exercise the rights granted or reserved herein.

DIST. RESPONDED

PAGE TWO - Required mandatory permits and limit number issued - Enchantment Core Management.

Because the Districts reserve the aforementioned rights, it is this writer's hopes that mandatory permits with a limited number issued and the fee charge on reservation permits will not pertain to the Icicle or Peshastin Irrigation Districts. During the period after May 1 of each year and running through November 31 of each year, the Districts need to make random inspections of the facilities for the purpose of water regulation, water storage and facility maintenance. Some of these trips are on the spur of the moment due to numerous circumstances and the thought of having to obtain a mandatory permit or not being able to enter the area at all on a particular day, would pose a hardship on the Districts' overall function of delivering irrigation water in an efficient manner. It is the desire of the Districts that some acknowledgement of exemption from the practice of mandatory permits on a first-come, first-serve basis and the fee charge on reservation permits, be made by the United States Forest Service for the Districts.

The Districts would appreciate a response to the above concerns at your earliest convenience.

Sincerely,

ICICLE IRRIGATION DISTRICT
PESHASTIN IRRIGATION DISTRICT

Monroe Mashburn Secretary/Manager
Monroe Mashburn, Secretary/Manager

C.C. Leavenworth Ranger Station
Attention: Steve Morton
600 Sherbourne
Leavenworth, Washington 98826

MM/jr

RIGHTS PREVIOUSLY CONVEYED OR PERMITTED BY THE UNITED STATES

1. Existing Contracts/Agreements/Memorandums of Understanding - NONE
2. Existing public roads - NONE.
3. Special Use Permits -
 - a. SU Permit dated 3/21/32 for a right of way for a power transmission line granted to Puget Sound Power and Light Company (now Chelan County P.U.D.), over and across the SW1/4SW1/4 sec. 15, T.24N., R.18E., W.M.
 - b. SU Permit dated 6/30/23 for a right of way for an irrigation canal, flume and tunnel granted to Icicle Irrigation District over and across the E1/2SE1/4 sec. 28, and lots 2 to 4 inclusive, sec. 26, T. 24 N., R. 17 E., W.M.
 - c. SU Permit dated 9/14/12 for a right of way for a water pipeline granted to the City of Leavenworth over and across the SE1/4 sec. 28, T. 24 N., R. 17 E., W.M.
4. Grazing Permits - NONE.
5. Mining Claims - NONE.
6. Oil & Gas Leases - NONE.
7. Cost-Share Agreement Areas - NONE.
8. Power Site Classification Withdrawal - #224 dated 5/13/29 - (Affects lots 3 & 4, sec. 26, and SE1/4 sec. 28, T. 24 N., R. 17 E., W.M.) Will be revoked before documents are conveyed to Icicle Irrigation District.
9. Other Outstanding Rights:
 - a. Certificate of Water Rights in Icicle Creek and Snow Creek, a tributary to Icicle Creek, for 83.33 second feet issued to Icicle Irrigation District on 9/18/34, and recorded in Volume F, Page 2 of Water Right Certificates at Olympia, Washington. Intakes are located in SW1/4SW1/4 sec. 27 and NE1/4SE1/4 sec. 28, T. 24 N., R. 17 E., W.M.
 - b. The interests, rights and privileges of both the United States of America and Joseph L. Hughes and the Pacific National Bank of Seattle, as set forth in that certain easement dated 10/17/67 and recorded in Volume 602, Page 451, Chelan County, Washington.

Certified &
Prepared By: 15/ Dorylee M. Engle
Dorylee M. Engle, Land Law Examiner
Title Examiner for the Washington Forests

Date 6/27/89

Icicle Irrigation District Land Exchange
Wenatchee #139 - OR 44205(W)

Wenatchee National Forest - Chelan County, Washington

T. 23 N., R. 19 E., W.M.
sec. 7, NE1/4SE1/4.

40.00 acres

WEEKS LAW STATUS - Acquired through donation from Chelan County #146, under the Clarke-McNary Act of June 7, 1924. Received Title Approval from the Office of General Counsel on 9/27/39. Surface rights use and management in U.S.A. Will be conveyed to Icicle Irrigation District by USDA Exchange Deed.

T. 24 N., R. 17 E., W.M.
sec. 26, lots 2 to 4 inclusive;
sec. 28, SE1/4.

125.25 acres
160.00 acres

RESERVED PUBLIC DOMAIN STATUS - Became NF System Lands by Proclamation dated 3/2/1907. Determination of surface rights under Serial No. OR 04264 on 5/7/1962 - use and management in U.S.A. Will be conveyed to Icicle Irrigation District by Patent.

Power Site Classification #224 - lots 3 & 4, sec. 26, and SE1/4 sec. 28.

T. 24 N., R. 18 E., W.M.

*changed
ind. sent
District
11/28/89*
sec. 15, W1/2^{Wdme}SE1/2SW1/4SW1/4, SE1/4SW1/4SW1/4SW1/4,
and S1/2SE1/4SW1/4SW1/4. 17.50 acres

RESERVED PUBLIC DOMAIN STATUS - Acquired through land exchange from Peshastin Lumber & Box Company under General Exchange Act of 3/20/1922; Serial No. 018679, received Final Title Approval on 5/17/1941. Surface rights use and management in U.S.A. Will be conveyed to Icicle Irrigation District by Patent.

SUBJECT TO:

1. Easement for transmission and power lines to Puget Sound Power & Light Company dated 8/20/1930.
2. Rights of way of the Icicle Irrigation District for irrigation canals.

sec. 34, W1/2SE1/4.

80.00 acres

WEEKS LAW STATUS - Acquired through donation from Chelan County #D58, under the Clarke-McNary Act of June 7, 1924. Received Title Approval from the Office of General Counsel on 9/27/34. Surface rights use and management in U.S.A. Will be conveyed to Icicle Irrigation District by USDA Exchange Deed.

TERRENCE M. MCCAULEY
LAW OFFICES
100 NORTH DIVISION STREET
POST OFFICE BOX 836
CASHMERE, WASHINGTON 98815

AREA CODE 509
782-1023

December 6, 1989

Ms. Dorylee M. Engle
Land Law Examiner
United States Department of Agriculture
Forest Service
1022 First Avenue
Seattle, WA 98104-1008

Dear Dorylee:

Re: Forest Service - Icicle Land Exchange

I will be unable to review the land exchange files and proceed for two weeks because of a Supreme Court brief which I am obligated to write and file in the very near future. I do enclose for you a revised easement termination agreement adding a signature line for the third director, Mr. Ralph Kimmerly.

To save time, you could have this original agreement signed by Mr. Jackson on behalf of the Department of Agriculture and you could return the signed original to me. I could then obtain the signatures of the directors and take care of recording that agreement at the appropriate time.

Please call if you have any questions.

Very truly yours,



Terrence M. McCauley

TMM:ljt
Enclosure
cc: Mr. Monroe Mashburn
icla9

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

EASEMENT TERMINATION AGREEMENT

This agreement, made and entered into on the date last shown below, by and between the ICICLE IRRIGATION DISTRICT, a municipal corporation organized under the laws of the State of Washington, hereinafter referred to as "DISTRICT", and the UNITED STATES OF AMERICA acting by and through the U. S. Department of Agriculture, hereinafter referred to as "UNITED STATES",

WITNESSETH:

WHEREAS, DISTRICT and UNITED STATES have executed a certain land exchange agreement dated April 1, 1986 which is incorporated herein by this reference (hereinafter referred to as "Agreement" and,

WHEREAS, DISTRICT pursuant to the Agreement as conveyed by warranty deed certain real property in Chelan County, Washington to the UNITED STATES in which deed DISTRICT reserved certain easements and,

WHEREAS, DISTRICT and the UNITED STATES desire to set forth the terms and conditions on the basis of which the reserved easements shall terminate, now therefore,

In consideration of the agreement between DISTRICT and UNITED STATES and in consideration of the land exchange pursuant thereto and for valuable consideration, DISTRICT and the UNITED STATES agree as follows:

The easements reserved by DISTRICT in that certain warranty deed in which the DISTRICT conveyed certain real property in Chelan County, Washington to the UNITED STATES pursuant to the agreement shall be perpetual unless the DISTRICT, its successors and assigns, abandons DISTRICT facilities. NO ABANDONMENT for purposes of this agreement shall be deemed to have taken place unless the DISTRICT has ceased to use the interests in real property and easements, the water rights and the improvements to real property on an "as - needed" basis for five (5) consecutive years. In the event of such

Easement termination agreement -1-
icju2 - 12/6/89

TERRENCE M. MCCAULEY
LAW OFFICES
100 NORTH DIVISION STREET
POST OFFICE BOX 836
DASHMERE, WASHINGTON 98815
509/782-1023

COPY

1 abandonment for five (5) consecutive years, the easements
2 shall terminate.

3 Dated this _____ day of _____, 1989.

4
5 ICICLE IRRIGATION DISTRICT

6 By:

7 _____
8 LYMAN B. BARDIN - Director

9 _____
10 KENT CHRISTENSEN - Director

11 _____
12 RALPH F. KIMMERLY

13 Attest:

14 _____
15 MONROE MASHBURN - Secretary/Manager

16 THE UNITED STATES OF AMERICA

17 By: _____
18 Carlin B. Jackson
19 Director of Lands,
20 Pacific Northwest Region Forest Service
21 U.S. Department of Agriculture

22
23
24
25 Easement termination agreement -2-
 icju2 - 12/6/89

TERRENCE M. MCCAULEY
LAW OFFICES
100 NORTH DIVISION STREET
POST OFFICE BOX 836
CASHMERE, WASHINGTON 98815
509/782-1023

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

State of Washington)
) ss.
County of Chelan)

I certify that I know or have satisfactory evidence that
LYMAN B. BARDIN, KENT CHRISTENSEN, RALPH F. KIMMERLY and MONROE
MASHBURN are the persons who appeared before me, and said persons
acknowledged that they signed this instrument, on oath stated that
they were authorized to execute the instrument and acknowledged it
as the Directors and Secretary/Manager respectively of ICICLE
IRRIGATION DISTRICT to be the free and voluntary act of such party
for the uses and purposes mentioned in the instrument.

Dated this _____ day of _____, 1989.

NOTARY PUBLIC for the State of Washington
My Appointment Expires _____

State of Washington)
) ss.
County of _____)

I certify that I know or have satisfactory evidence that
CARLIN B. JACKSON is the person who appeared before me, and said
person acknowledged that he signed this instrument, on oath stated
that he was authorized to execute the instrument and acknowledged
it as the Director of Lands, Pacific Northwest Region Forest
Service, U.S. Department of Agriculture, to be the free and
voluntary act of such party for the uses and purposes mentioned in
the instrument.

Dated this _____ day of _____, 1989.

NOTARY PUBLIC for the State of Washington
My Appointment Expires _____

FEE 8.00
FILED FOR RECORD
PIONEER TITLE COMPANY
'90 MAY 22 AM 10 51
BOOK 929 PAGE 496-97
KENNETH C. HOUSSEN
CHELAN COUNTY AUDITOR
WENATCHEE, WASH.

OR 44205(W)
Wenatchee #139

EXCHANGE DEED

9005220023

THIS DEED, made this 27th day of December, 1989, between the UNITED STATES OF AMERICA, Grantor, acting herein by and through the Forest Service, United States Department of Agriculture, and ICICLE IRRIGATION DISTRICT, a municipal corporation organized and existing under the laws of the State of Washington and fully authorized to do business in the State of Washington, Grantee.

WITNESSETH: That the Grantor, hereunto authorized by the Weeks Law Act approved March 1, 1911, (16 U.S.C. 516), the provisions of which have been complied with, for, and in consideration of the conveyance to it by the Grantee of lands in the County of Chelan, State of Washington, as stated in the deed to the United States, the receipt of which is hereby acknowledged, does hereby remise, release, quitclaim and convey unto the Grantee all its rights, title, and interest in and to the real property situated in the County of Chelan, State of Washington, described as follows:

T. 23 N., R. 19 E., W.M.
sec. 7, NE1/4SE1/4.

T. 24 N., R. 18 E., W.M.
sec. 34, W1/2SE1/4.

Containing 120 acres, more or less.

TO HAVE AND TO HOLD the above-described real property unto Icicle Irrigation District and its successors and assigns forever, together with all hereditaments and appurtenances thereunto belonging.

IN WITNESS WHEREOF, the Grantor, by its duly authorized representative, has executed this deed pursuant to the delegation of authority promulgated in Title 7 CFR 2.60 and 49 FR 34283, August 29, 1984, on the day and year first above written.

UNITED STATES OF AMERICA

REAL ESTATE EXCISE TAX
EXEMPT

Chelan County Treasurer
Robert H. May

By SE
Deputy

By Carlin B. Jackson
CARLIN B. JACKSON
Director of Lands
Pacific Northwest Region
Forest Service
U.S. Department of Agriculture

Certified correct as to consideration, description and conditions.
5/7/90
D. S. O. O. O.
Forester

OR 44205(W)

ACKNOWLEDGMENT

State of OREGON }
County of MULTNOMAH } ss.

On this 27th day of December, 1989, before me a Notary Public within and for said State, personally appeared CARLIN B. JACKSON, Director of Lands, Pacific Northwest Region, Forest Service, Department of Agriculture, and the same person who executed the within and foregoing instrument, who, being by me duly sworn according to law, did say that said instrument was signed in behalf of the United States of America by its authority duly given and by him delivered as and for its act and deed. And he did further acknowledge that he executed said instrument as the free act and deed of the United States of America, for the purposes and consideration herein mentioned and set forth, and I do hereby so certify.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year above written.



Theresa A. Bower
Notary Public for the State of Oregon
Residing at Portland, Oregon
My Commission expires 8/3/91

The United States of America

To all to whom these presents shall come, Greeting:

OR 44205(W)

WHEREAS,

ICICLE IRRIGATION DISTRICT

being the owner of certain tracts of land situated within the limits of to the Wenatchee National Forest, Washington, has under provisions of the General Exchange Act of March 20, 1922, as amended (16 U.S.C. 485, 486); Alpine Lakes Area Management Act of July 12, 1976, (16 U.S.C. 1132); Federal Land Policy and Management Act of October 21, 1976, as amended (43 U.S.C. 1715, 1716, 1717); and the Weeks Law Act of March 1, 1911, as amended (16 U.S.C. 516), reconveyed and relinquished the said tracts to the United States of America and has, under provisions of the said Acts, selected in lieu thereof the following tracts of land:

Willamette Meridian, Chelan County, Washington

T. 24 N., R. 17 E.,
sec. 26, lots 2, 3 and 4 inclusive;
sec. 28, SE1/4.

The area described contains 285.25 acres according to the official plats of the survey of the said land, on file in the Bureau of Land Management;

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES OF AMERICA unto ICICLE IRRIGATION DISTRICT, the lands above described, together with all minerals; TO HAVE AND TO HOLD the said lands with all the rights, privileges, immunities, and appurtenances, of whatsoever nature thereunto belonging, unto the said ICICLE IRRIGATION DISTRICT, its successors and assigns, forever;

EXCEPTING AND RESERVING TO THE UNITED STATES from the lands so granted:

1. A right-of-way thereon for ditches or canals constructed by the authority of the United States (Act of August 30, 1890, 43 U.S.C. 945).
2. A right-of-way for all right, title and interest in the existing Icicle Creek Road No. 2451 over and across the E1/2SE1/4 of sec. 28, T. 24 N., R. 17 E., the easement being 80 feet in width, lying 40 feet on each side of the centerline. The centerline of the existing road is more particularly described as follows:

Patent Number **46-90-0006**

BOOK 929 PAGE 493

FEE
FILED FOR RECORD
90 MAY 22 AM 10
PIONEER TITLE COMPANY
90 MAY 22 AM 10 50
BOOK 929 PAGE 493
KENNETH C. HOUSSEN
CHelan COUNTY AUDITOR
WENATCHEE, WASH.

9005220027

OR 44205(W)

Beginning at a point on the east line of said sec. 28, from which point the southeast section corner bears south, 2,020 feet more or less; thence in a southwesterly direction to a point on the west line of the E1/2SE1/4 of said sec. 28, from which point the southeast section corner bears N. 46° W., 1,848 feet more or less.

IT IS AGREED that Icicle Irrigation District and assigns shall have the right to use the road for all proper and lawful purposes as provided for in 36 CFR 212.8(c) subject to compliance with traffic control regulations as provided in 36 CFR 212.7(a)(1) and (2). The exercise of the rights herein granted shall be subordinate to any easement on said road subsequently granted by the United States to a public road agency for operation as a public highway.

Provided, that if at any time the Regional Forester determines that the road or any segment thereof, is no longer needed, the easement traversed thereby shall terminate. In the event of such determination, the Regional Forester shall furnish to Icicle Irrigation District, its successors or assigns, a statement in recordable form evidencing termination.

3. The interests, rights and privileges of both the United States and Joseph L. Hughes and the Pacific National Bank of Seattle as set forth in that certain easement for Icicle Creek Road No. 2451, dated October 17, 1967, and recorded as Auditor's File No. 688811 in Volume 602, Page 451, Chelan County, Washington, records, which interests, rights and privileges together with the right to construct, reconstruct, and maintain the road over and across NW1/4SE1/4 and SW1/4SE1/4 sec. 28, T. 24 N., R. 17 E., W.M., are herein reserved, except the United States does not reserve in this patent, the title to any timber within the road easement, but only the right to cut and deck for use of the landowner such timber as may be necessary to accommodate the construction and maintenance of the road on the reserved right-of-way. This reservation is made subject to the following terms, provisions, and conditions:

Joseph L. Hughes and The Pacific National Bank of Seattle and its assigns shall have the right to use for all useful purposes the road described above, subject to traffic control regulations as provided in 36 CFR 212.7(a) (1) and (2) and the bearing of road maintenance costs proportionate to use as provided in 36 CFR 212.7(d).

Patent Number **46-90-0006**

BOOK 929 PAGE 494

Form 1860-10
(April 1988)

OR 44205(W)

Provided, that if at any time the Regional Forester determines that the road or any segment thereof, is no longer needed, the easement traversed thereby shall terminate. In the event of such determination, the Regional Forester shall furnish to Icicle Irrigation District, its successors or assigns, a statement in recordable form evidencing termination.

SUBJECT TO a Certificate of Water Rights in Icicle Creek and Snow Creek, a tributary to Icicle Creek, for 83.33 second feet issued to Icicle Irrigation District on September 18, 1934, and recorded in Volume F, page 2 of Water Right Certificates at Olympia, Washington. (Also affects intakes located in the NE1/4SE1/4, sec. 28, T. 24 N., R. 17 E., W.M.)



[SEAL]

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in Portland, Oregon
the Twentyseventh day of April
in the year of our Lord one thousand nine hundred and
Ninety and of the Independence of the
United States the two hundred and fourteenth

By Robert E. Mallick
Chief, Branch of Lands and
Minerals Operations

Patent Number **46-90-0006**

BOOK 929 PAGE 495

FEE 9.00
FILED FOR RECORD
PIONEER TITLE COMPANY
'90 MAY 9 AM 10 21
BOOK 928 PAGE 612-14
KENNETH C. HOUSLEY
1 CHELAN COUNTY AUDITOR EASEMENT TERMINATION AGREEMENT
2 WENATCHEE, WASH.

3 This agreement, made and entered into on the date last shown
4 below, by and between the ICICLE IRRIGATION DISTRICT, a municipal
5 corporation organized under the laws of the State of Washington,
6 hereinafter referred to as "DISTRICT", and the UNITED STATES OF
7 AMERICA acting by and through the U. S. Department of Agriculture,
8 hereinafter referred to as "UNITED STATES",

9 WITNESSETH:

10 WHEREAS, DISTRICT and UNITED STATES have executed a certain
11 land exchange agreement dated April 1, 1986 which is incorporated
12 herein by this reference (hereinafter referred to as "Agreement"
13 and,

14 WHEREAS, DISTRICT pursuant to the Agreement as conveyed by
15 warranty deed certain real property in Chelan County, Washington
16 to the UNITED STATES in which deed DISTRICT reserved certain
17 easements and,

18 WHEREAS, DISTRICT and the UNITED STATES desire to set forth
19 the terms and conditions on the basis of which the reserved
20 easements shall terminate, now therefore,

21 In consideration of the agreement between DISTRICT and UNITED
22 STATES and in consideration of the land exchange pursuant thereto
23 and for valuable consideration, DISTRICT and the UNITED STATES
24 agree as follows:

25 The easements reserved by DISTRICT in that certain warranty
deed in which the DISTRICT conveyed certain real property in
Chelan County, Washington to the UNITED STATES pursuant to
the agreement shall be perpetual unless the DISTRICT, its
successors and assigns, abandons DISTRICT facilities. NO
ABANDONMENT for purposes of this agreement shall be deemed to
have taken place unless the DISTRICT has ceased to use the
interests in real property and easements, the water rights
and the improvements to real property on an "as - needed"
basis for five (5) consecutive years. In the event of such

BOOK 928 PAGE 612

Easement termination agreement -1-
icju2 - 12/6/89

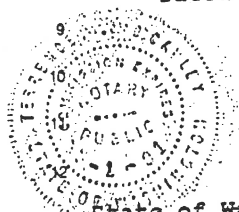
TERRENCE M. MCCAULEY
LAW OFFICES
100 NORTH DIVISION STREET
POST OFFICE BOX 836
CASHMERE, WASHINGTON 98815
509-782-1023

9005090031

1
2 State of Washington)
3 County of Chelan) ss.

4 I certify that I know or have satisfactory evidence that
5 LYMAN B. BARDIN, KENT CHRISTENSEN, RALPH F. KIMMERLY and MONROE
6 MASHBURN are the persons who appeared before me, and said persons
7 acknowledged that they signed this instrument, on oath stated that
8 they were authorized to execute the instrument and acknowledged it
9 as the Directors and Secretary/Manager respectively of ICICLE
10 IRRIGATION DISTRICT to be the free and voluntary act of such party
11 for the uses and purposes mentioned in the instrument.

12 Dated this 3d day of April, 1989.



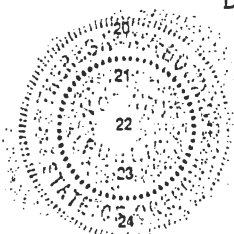
13 Terrence M. McCauley
14 NOTARY PUBLIC for the State of Washington

15 My Appointment Expires Nov 1, 1991

16 Coregonal
17 State of Washington)
18 County of Multnomah) ss.

19 I certify that I know or have satisfactory evidence that
20 CARLIN B. JACKSON is the person who appeared before me, and said
21 person acknowledged that he signed this instrument, on oath stated
22 that he was authorized to execute the instrument and acknowledged
23 it as the Director of Lands, Pacific Northwest Region Forest
24 Service, U.S. Department of Agriculture, to be the free and
25 voluntary act of such party for the uses and purposes mentioned in
the instrument.

26 Dated this 27th day of December, 1989.



27 Therera A. Bowar
28 NOTARY PUBLIC for the State of Washington

29 My Appointment Expires 8/3/91

30 Easement termination agreement -3-
icju2 - 12/6/89

BOOK 928 PAGE 614

TERRENCE M. MCCAULEY
LAW OFFICES
100 NORTH DIVISION STREET
POST OFFICE BOX 836
CASHMERE, WASHINGTON 98815
509 782 1023

1 abandonment for five (5) consecutive years, the easements
2 shall terminate.

3 Dated this 30 day of April, 1989.

4 ICICLE IRRIGATION DISTRICT

5 By:

6 Lyman B. Bardin
7 LYMAN B. BARDIN - Director

8 Kent Christensen
9 KENT CHRISTENSEN - Director

10 Ralph F. Kimmerly
11 RALPH F. KIMMERLY - Director

12 Attest:

13 Monroe Mashburn
14 MONROE MASHBURN - Secretary/Manager

15 THE UNITED STATES OF AMERICA

16 By: Carlin B. Jackson
17 Carlin B. Jackson
18 Director of Lands,
19 Pacific Northwest Region Forest Service
20 U.S. Department of Agriculture

21
22
23
24 BOOK 928 PAGE 613

25 Easement termination agreement -2-
icju2 - 12/6/89

TERRENCE M. MCCAULEY
LAW OFFICES
100 NORTH DIVISION STREET
POST OFFICE BOX 836
CASHMERE, WASHINGTON 98815
509-782-1023

Form 1980-9
(November 1984)

The United States of America

To all to whom these presents shall come, Greeting:

OR 44205(W)

WHEREAS,

ICICLE IRRIGATION DISTRICT

being the owner of certain tracts of land situated within the limits of to the Wenatchee National Forest, Washington, has under provisions of the General Exchange Act of March 20, 1922, as amended (16 U.S.C. 485, 486); Alpine Lakes Area Management Act of July 12, 1976, (16 U.S.C. 1132); Federal Land Policy and Management Act of October 21, 1976, as amended (43 U.S.C. 1715, 1716, 1717); and the Weeks Law Act of March 1, 1911, as amended (16 U.S.C. 516), reconveyed and relinquished the said tracts to the United States of America and has, under provisions of the said Acts, selected in lieu thereof the following tracts of land:

Willamette Meridian, Chelan County, Washington

T. 24 N., R. 17 E.,
sec. 26, lots 2, 3 and 4 inclusive;
sec. 28, SE1/4.

The area described contains 285.25 acres according to the official plats of the survey of the said land, on file in the Bureau of Land Management;

NOW KNOW YE, that there is, therefore, granted by the UNITED STATES OF AMERICA unto ICICLE IRRIGATION DISTRICT, the lands above described, together with all minerals; TO HAVE AND TO HOLD the said lands with all the rights, privileges, immunities, and appurtenances, of whatsoever nature thereunto belonging, unto the said ICICLE IRRIGATION DISTRICT, its successors and assigns, forever;

EXCEPTING AND RESERVING TO THE UNITED STATES from the lands so granted:

1. A right-of-way thereon for ditches or canals constructed by the authority of the United States (Act of August 30, 1890, 43 U.S.C. 945).
2. A right-of-way for all right, title and interest in the existing Icicle Creek Road No. 2451 over and across the E1/2SE1/4 of sec. 28, T. 24 N., R. 17 E., the easement being 80 feet in width, lying 40 feet on each side of the centerline. The centerline of the existing road is more particularly described as follows:

Patent Number 46-90-0006

BOOK 529 PAGE 493

FEE
FILED FOR RECORD
FEE 9.00
FILED FOR RECORD
PIONEER TITLE COMPANY
*90 MAY 22 AM 10:50
BOOK 529 PAGE 493
KENNETH C. HOUSSEN
CHelan COUNTY AUDITOR
Wenatchee, WASH.

9005220027

OR 44205(W)

Beginning at a point on the east line of said sec. 28, from which point the southeast section corner bears south, 2,020 feet more or less; thence in a southwesterly direction to a point on the west line of the E1/2SE1/4 of said sec. 28, from which point the southeast section corner bears N. 46° W., 1,848 feet more or less.

IT IS AGREED that Icicle Irrigation District and assigns shall have the right to use the road for all proper and lawful purposes as provided for in 36 CFR 212.8(c) subject to compliance with traffic control regulations as provided in 36 CFR 212.7(a)(1) and (2). The exercise of the rights herein granted shall be subordinate to any easement on said road subsequently granted by the United States to a public road agency for operation as a public highway.

Provided, that if at any time the Regional Forester determines that the road or any segment thereof, is no longer needed, the easement traversed thereby shall terminate. In the event of such determination, the Regional Forester shall furnish to Icicle Irrigation District, its successors or assigns, a statement in recordable form evidencing termination.

3. The interests, rights and privileges of both the United States and Joseph L. Hughes and the Pacific National Bank of Seattle as set forth in that certain easement for Icicle Creek Road No. 2451, dated October 17, 1967, and recorded as Auditor's File No. 688811 in Volume 602, Page 451, Chelan County, Washington, records, which interests, rights and privileges together with the right to construct, reconstruct, and maintain the road over and across NW1/4SE1/4 and SW1/4SE1/4 sec. 28, T. 24 N., R. 17 E., W.M., are herein reserved, except the United States does not reserve in this patent, the title to any timber within the road easement, but only the right to cut and deck for use of the landowner such timber as may be necessary to accommodate the construction and maintenance of the road on the reserved right-of-way. This reservation is made subject to the following terms, provisions, and conditions:

Joseph L. Hughes and The Pacific National Bank of Seattle and its assigns shall have the right to use for all useful purposes the road described above, subject to traffic control regulations as provided in 36 CFR 212.7(a) (1) and (2) and the bearing of road maintenance costs proportionate to use as provided in 36 CFR 212.7(d).

Patent Number 46-90-0006

BOOK 929 PAGE 494

Form 1860-10
(April 1988)

OR 44205(W)

Provided, that if at any time the Regional Forester determines that the road or any segment thereof, is no longer needed, the easement traversed thereby shall terminate. In the event of such determination, the Regional Forester shall furnish to Icicle Irrigation District, its successors or assigns, a statement in recordable form evidencing termination.

SUBJECT TO a Certificate of Water Rights in Icicle Creek and Snow Creek, a tributary to Icicle Creek, for 83.33 second feet issued to Icicle Irrigation District on September 18, 1934, and recorded in Volume F, page 2 of Water Right Certificates at Olympia, Washington. (Also affects intakes located in the NE1/4SE1/4, sec. 28, T. 24 N., R. 17 E., W.M.)



[SEAL]

IN TESTIMONY WHEREOF, the undersigned authorized officer of the Bureau of Land Management, in accordance with the provisions of the Act of June 17, 1948 (62 Stat. 476), has, in the name of the United States, caused these letters to be made Patent, and the Seal of the Bureau to be hereunto affixed.

GIVEN under my hand, in Portland, Oregon
the Twentyseventh day of April
in the year of our Lord one thousand nine hundred and
Ninety and of the Independence of the
United States the two hundred and fourteenth

By Robert C. Malloha
Chief, Branch of Lands and
Minerals Operations

Patent Number 46-90-0006

BOOK 929 PAGE 495

EXCHANGE DEED

9005220028

Carried correct as to consideration, descriptions
and conditions. D. W. 00.00
5/17/90 D. W. Forester

WITNESSETH: That the Grantor, hereunto authorized by the Weeks Law Act approved March 1, 1911, (16 U.S.C. 516), the provisions of which have been complied with, for, and in consideration of the conveyance to it by the Grantee of lands in the County of Chelan, State of Washington, as stated in the deed to the United States, the receipt of which is hereby acknowledged, does hereby remise, release, quitclaim and convey unto the Grantee all its rights, title, and interest in and to the real property situated in the County of Chelan, State of Washington, described as follows:

T. 24 N., R. 18 E., W.M.
sec. 34, W1/2SE1/4.

TO HAVE AND TO HOLD the above-described real property unto Icicle Irrigation District and its successors and assigns forever, together with all hereditaments and appurtenances thereunto belonging.

UNITED STATES OF AMERICA

By SE Deputy

Page 1 of 2

BOOK 929 PAGE 496

OR 44205(W)

ACKNOWLEDGMENT

State of OREGON)
) ss.
County of MULTNOMAH)

On this 27th day of December, 19 89, before me a Notary Public within and for said State, personally appeared CARLIN B. JACKSON, Director of Lands, Pacific Northwest Region, Forest Service, Department of Agriculture, and the same person who executed the within and foregoing instrument, who, being by me duly sworn according to law, did say that said instrument was signed in behalf of the United States of America by its authority duly given and by him delivered as and for its act and deed. And he did further acknowledge that he executed said instrument as the free act and deed of the United States of America, for the purposes and consideration herein mentioned and set forth, and I do hereby so certify.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year above written.



Sharon A. Bower
Notary Public for the State of Oregon
Residing at Portland, Oregon
My Commission expires 8/3/91

OR 44205 (W)
Wenatchee #139

6-1267
REAL ESTATE EXCISE TAX
EXEMPT

SPECIAL WARRANTY DEED

Chelan County Treasurer
Robert H. May

By S. J. L. Deputy

ICICLE IRRIGATION DISTRICT, a municipal corporation organized and existing under the laws of the State of Washington and fully authorized to do business in the State of Washington, hereinafter called Grantor, for and in consideration of National Forest System land under the provisions of the General Exchange Act of March 20, 1922 (42 Stat. 465, as amended; 16 U.S.C. 485, 486); the Alpine Lakes Area Management Act of July 12, 1976 (90 Stat. 906; 16 U.S.C. 1132), the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2755; 43 U.S.C. 1715, 1716, 1717); and the Weeks Law Act of March 1, 1911 (36 Stat., 961, as amended; 16 U.S.C. 516), which is of equal value to the land herein conveyed, the receipt of which is hereby acknowledged, hereby grants, bargains, sells, conveys and confirms to the UNITED STATES OF AMERICA, Grantee, and its assigns, all interest in the following described real property, including minerals, in the County of Chelan, State of Washington, except for those encumbrances specifically set forth:

Willamette Meridian, Chelan County, Washington

T. 23 N., R. 16 E.,
sec. 5, lots 1 and 2;
sec. 15, lots 1 and 2.

T. 24 N., R. 14 E.,
sec. 3, lots 17 thru 25, inclusive.

T. 24 N., R. 16 E.,
sec. 33, lot 1.

T. 24 N., R. 17 E.,

sec. 27, Part of the NW1/4SW1/4 described as follows:
BEGINNING at an aluminum monument, set on the southerly edge of the Icicle River Road right-of-way as recorded under Auditor's No. 692951 and 617768, and common with point "A" as described in the City of Leavenworth deed, recorded under Auditor's No. 698355, from said POINT OF BEGINNING the west 1/4 corner of said section 27 bears N. 37° 18' 55" W., 718.59 feet;
THENCE S. 54° 01' 45" E., 292.95 feet along line A-E of said City of Leavenworth property to a rebar with aluminum cap;
THENCE S. 29° 00' 59" E., 108.50 feet to an "X" on a boulder 2 feet x 4 feet x 3 feet lying on the north bank of the Icicle River;
THENCE S. 16° 26' 32" W., 40.00 feet to the center of the Icicle River;
THENCE N. 73° 33' 28" W., 400.00 feet along the north bank of the Icicle River;

FEE 1300
FILED FOR RECORD
PIONEER TITLE COMPANY
SU MAY 17 PM 2 55
BOOK 329 PAGE 085-71
KENNETH C. HOUSSEN
CHELAN COUNTY AUDITOR
WENATCHEE, WASH.

9005170061

OR 44205(W)

THENCE N. 16° 26' 32" E., 40.00 feet to a rebar with aluminum cap located on the north bank of said Icicle River;
THENCE N. 28° 07' 10" W., 199.96 feet to a rebar with aluminum cap located on the southerly edge of said Icicle River Road right-of-way;
THENCE S. 82° 28' 37" E., 137.81 feet along the southerly edge of said right-of-way;
THENCE along the southerly edge of said right-of-way following a curve to the left having a radius length of 613.00 feet along an arc length of 51.77 feet to the POINT OF BEGINNING, as shown in that certain record of survey recorded on January 11, 1983, as Auditor's File No. 8301120006 in Book 14 of Surveys, at Page 80.

Containing 362.83 acres, more or less.

EXCEPTING AND RESERVING to the Grantor, its successors and assigns, a nonexclusive, perpetual easement across, through, along and upon the property described herein for the purposes of maintenance, repair, operation, modification, upgrading and replacement of all facilities presently located in or upon the property described herein, together with a nonexclusive right of ingress to and egress from all such facilities for all such purposes, in accordance with the Rules and Regulations of the Secretary of Agriculture, 36 CFR 251.17 and 251.18, attached hereto and made a part hereof, in such manner as not unreasonably to interfere with its use by the United States, its authorized users or assigns, or cause substantial injury thereto.

The Grantor may exercise the rights hereunder by any means reasonable for the purposes described, including but not limited to the use of motorized transportation and equipment, or aircraft. These rights include the right to regulate water level of all facilities located upon the property described herein. In performing maintenance, repair, operation, modification, upgrading and replacement of facilities located in or upon the property described herein, the Grantor will not without the prior written consent of the Forest Service, which consent shall not unreasonably be withheld, materially increase the size or scope of the facilities.

The United States of America shall charge no fee for the exercise of the rights reserved or granted hereunder, nor shall it require any further permission for the Grantor to exercise the rights granted or reserved herein.

Said easements shall be perpetual unless the Grantor, its successors and assigns, abandons such facilities. The United States of America acknowledges that the interests in real property, improvements to real property and water rights referred to in this Warranty Deed are used by the Grantor on an "as-needed" basis to supplement the water supply of the Grantor.

Termination of this easement will be according to terms and conditions set out in the "Easement Termination Agreement" dated December 27, 1989 and recorded on May 9, 1990, as Auditor's File No. 9005090031 in records of Chelan County, Washington. (Affects all parcels.)

OR 44205(W)

FURTHER EXCEPTING AND RESERVING to the Grantor, its successors and assigns, the right to overflow and inundate the bed and shore of Colchuck, Eight Mile and Klonauqua Lakes and further excepting and reserving to the Grantor all other water rights in favor of the Icicle Irrigation District, in accordance with the Rules and Regulations of the Secretary of Agriculture, 36 CFR 251.19, attached hereto and made a part hereof, including, but not limited to, the following:

1. Rights granted by Commissioners of Public Lands, under that certain Application No. 12855 dated October 26, 1927, and recorded April 14, 1928, in volume 172 of Deeds, page 131 in the records of Chelan County, Washington, as Auditor's File No. 165072. (Affects secs. 5 and 15, T.23 N., R.16 E.; sec. 3, T.24 N., R.14 E., and sec. 33, T.24 N., R.16 E., W.M.).
2. Water rights granted under Certificate of Water Right to use the waters of Klonauqua Lake for the purposes of irrigation under Appropriation Permit No. 827, entered of record in Volume 3, at Page 1227, on August 21, 1939.
3. Water rights granted under Certificate of Water Right to use the waters of Eight Mile Lake for the purposes of irrigation under Appropriation Permit No. 828, entered of record in Volume 3, at Page 1228, on August 21, 1939.
4. Water rights granted under Certificate of Water Right to use the waters of Colchuck Lake for the purposes of irrigation under Appropriation Permit No. 829, entered of record in Volume 3, at Page 1229, on August 21, 1939.
5. Water rights granted in Icicle Creek and Snow Creek, a tributary of Icicle Creek, as noted in that certain Certificate of Water Rights for 83.33 second feet issued to Icicle Irrigation District on September 18, 1934, and recorded in Volume F, Page 2 of Water Right Certificates at Olympia, Washington. (Also affects intakes located in the SW1/4SW1/4 sec. 27, T. 24 N., R. 17 E., W.M.)

SUBJECT TO:

1. Easements for water pipeline and use incidental thereto over and across the eastern portion of NW1/4SW1/4 sec. 27, T. 24 N., R. 17 E., W.M., granted to the City of Leavenworth, a municipal corporation. Recorded February 25, 1964, under Auditor's No. 617729 in volume 657, page 54, and March 19, 1970, under Auditor's No. 698355 in volume 697, page 603, Chelan County.
2. Shifting or change in the course of the ICICLE RIVER and rights of the State of Washington in and to that portion of said premises, if any, lying in the bed or former bed of the Icicle River, if it is navigable. Affects NW1/4SW1/4 sec. 27, T. 24 N., R. 17 E., W.M.

OR 44205(W)

The acquiring agency is the Forest Service, U.S. Department of Agriculture.

The Grantor for itself and for its successors in interest does by these presents expressly limit the covenants of the deed to those herein expressed, and excludes all covenants arising or to arise by statutory or other implication, and does hereby covenant that against all persons whomsoever lawfully claiming or to claim by, through or under said Grantor and not otherwise, Grantor will forever warrant and defend the said described real estate.

Dated this 17th day of May, 1990.

ICICLE IRRIGATION DISTRICT

By Lyman B. Bardin
Lyman B. Bardin
President, Board of Directors

ATTEST:

By Monroe Mashburn
Monroe Mashburn
Title Secretary/Manager

By Kent A. Christensen
Kent A. Christensen, Director
By Ralph F. Kimmerly
Ralph F. Kimmerly, Director

ACKNOWLEDGMENT

STATE OF Washington }
County of } ss

On this 17th day of May, 1990, before me the undersigned, a Notary Public in and for said State, personally appeared Lyman B. Bardin, Kent Christensen, Ralph F. Kimmerly, and Monroe Mashburn, known to me to be the Directors and Secretary/Manager, respectively, of the ICICLE IRRIGATION DISTRICT, the municipal corporation that executed the within and foregoing instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.



Terence M. McGee
Notary Public for the State of Washington
Residing at Leavenworth
My Commission Expires May 1, 1991

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

RULES AND REGULATIONS OF THE SECRETARY OF AGRICULTURE
GOVERNING THE GRANTOR'S RIGHT TO OCCUPY AND USE
LANDS CONVEYED TO THE UNITED STATES

Code of Federal Regulations - Title 36 - Chapter II - Section 251.17

Except as otherwise provided in paragraph (h) of this section, in conveyances of lands to the United States under authorized programs of the Forest Service, where owners reserve the right to occupy and use the land for the purposes of residence, agriculture, industry, or commerce, said reservations shall be subject to the following conditions, rules and regulations which shall be expressed in and made a part of the deed of conveyance to the United States and such reservations shall be exercised thereunder and in observance thereof:

(a) Except when provided otherwise by statute, the reservation so created shall not be assigned, used, or occupied by anyone other than the grantor without the consent of the United States.

(b) All reasonable precautions shall be taken by the grantor and all persons acting for or claiming under him to prevent and suppress forest fires upon or threatening the premises or other adjacent lands of the United States, and any persons failing to comply with this requirement shall be responsible for any damages sustained by the United States by reason thereof.

(c) The premises shall not be used or permitted to be used without the written consent of the United States, for any purpose or purposes other than those specified in the instrument creating the reservation.

(d) The grantor and all persons acting for or claiming under him shall maintain the premises and all buildings and structures thereon in proper repair and sanitation and shall comply with the National Forest laws and regulations and the laws and lawful orders of the State in which the premises are located.

(e) Except when provided otherwise by statute, the reservation shall terminate (1) upon the expiration of the period named in the deed; (2) upon failure for a period of more than one calendar year to use and occupy the premises for the purposes named in the deed; (3) by use and occupancy for unlawful purposes or for purposes other than those specified in the deed; and (4) by voluntary written relinquishment by the owner.

(f) Upon the termination of the reservation the owners of personal property remaining on the premises shall remove same within a period of three months, and all such property not so removed shall become the property of the United States except that when such removal is prevented by conditions beyond the control of the owners the period shall be extended in writing

by the Forest Service to allow a reasonable time for said removal, but in no event longer than one year.

(g) The said reservation shall be subject to right-of-way for the use of the United States or its permittees, upon, across, or through the said land, as may hereafter be required for the erection, construction, maintenance, and operation of public utility systems over all or parts thereof, or for the construction and maintenance of any improvements necessary for the good administration and protection of the National Forests, and shall be subject to the right of officials or employees of the Forest Service to inspect the premises, or any part thereof, at all reasonable times and as often as deemed necessary in the performance of official duties in respect to the premises.

(h) The conditions, rules and regulations set forth in paragraphs (a) through (g) of this section shall not apply to reservations contained in conveyances of lands to the United States under the act of March 3, 1893, as amended (63 Stat. 1185, 84 Stat. 82; 16 U.S.C. 845).

All regulations heretofore issued by the Secretary of Agriculture to govern the exercise of occupancy and use rights reserved in conveyances of lands to the United States under authorized programs of the Forest Service shall continue to be effective in the cases to which they are applicable, but are hereby superseded as to occupancy and use rights hereafter reserved in conveyances under such programs.

(36 Stat. 961, as amended, 16 U.S.C. 513-516, 42 Stat. 465, as amended, 16 U.S.C. 485, 486, and 50 Stat. 525, as amended, 7 U.S.C. 1011, and 70 Stat. 1034, 7 U.S.C. 426a, 78 Stat. 890, 16 U.S.C. 1131-1136; 79 Stat. 843, 16 U.S.C. 460p-460p-5; 79 Stat. 1295, 16 U.S.C. 460-460-9; 80 Stat. 190, 16 U.S.C. 460-460-3; 82 Stat. 804, 16 U.S.C. 460-460-8; 82 Stat. 319, 16 U.S.C. 1241-1249 and 82 Stat. 906, 16 U.S.C. 1371-1387)

Done at Washington, D.C., this 30th day of December 1970.

T. K. COWDEN,
Assistant Secretary of Agriculture.

(F.R. Doc. 71-132; Filed, Jan. 5, 1971;
8:49 a.m.)

5400-38 (7/64)

EXHIBIT 10J-1

BOOK 929 PAGE 089

United States Department of Agriculture
Forest Service

CONDITIONS, RULES AND REGULATIONS OF THE SECRETARY OF AGRICULTURE
GOVERNING EXERCISE OF RIGHTS-OF-WAY RESERVED
IN CONVEYANCES TO THE UNITED STATES OF AMERICA

Code of Federal Regulations - Title 36 - Chapter II - Section 251.18

This section governs the use, occupancy & operation of rights-of-way reserved by a grantor of lands to the U.S.

(a) Brush and refuse resulting from the exercise of the right-of-way reservation shall be disposed of to the satisfaction of the Forest Officer in charge.

(b) Timber cut and destroyed in the exercise of the right-of-way reservation shall be paid for at the rates to be prescribed by the Forest Officer in charge, which rates shall be the usual stumpage prices charged in the locality in sales of National Forest timber of the same kind or species; for injury to timber, second growth, and reproduction, the amount of actual damage shall be ascertained by the Forest Supervisor according to the rules applicable in such cases.

(c) All improvements built or maintained upon the right-of-way shall be kept in an orderly, safe and sanitary condition. Failure to maintain such conditions shall be cause for the termination of the reservation after 30 days' notice in writing to the occupant or user that unsatisfactory conditions exist and that the Department intends to terminate all rights under the reservation unless such conditions are forthwith corrected to the satisfaction of the Regional Forester.

(d) Upon the abandonment of a reserved right-of-way, either by formal release, by termination, or by non-use for a period of 1 calendar year, all improvements thereon not the property of the United States shall be removed therefrom within 3 months from the date of the abandonment; otherwise, such improvements shall vest in and become the property of the United States.

(e) All reasonable precautions to prevent and suppress forest fires shall be taken by the grantor and all persons acting for or claiming under him; suitable crossings shall be constructed by grantor and/or said persons where the reserved right-of-way intersects existing roads and trails; borrow pits shall not be opened outside of the immediate graded section except under a special-use permit from the Forest Supervisor.

(f) Officers of the Forest Service shall have free ingress and egress on and over the reserved rights-of-way for all purposes necessary and incidental to the protection and administration of the National Forest.

(36 Stat. 962, as amended; 16 U.S.C. 518)

United States Department of Agriculture
Forest Service

CONDITIONS, RULES AND REGULATIONS OF THE SECRETARY OF AGRICULTURE
GOVERNING EXERCISE OF WATER RIGHTS RESERVED BY THE GRANTOR
OF LANDS CONVEYED TO THE UNITED STATES

Code of Federal Regulations - Title 36 - Chapter II - Section 251.19

This section governs the exercise of water and related rights reserved by the grantor of land conveyed to the United States under the provisions of the act of March 1, 1911 (36 Stat. 961).

(a) All reasonable precautions shall be taken by the grantor and all persons acting for or claiming under him to prevent and suppress forest fires upon or threatening the premises or other adjacent lands of the United States, and any person failing to comply with this requirement shall be responsible for any damages sustained by the United States by reason thereof.

(b) All slash and debris resulting from the cutting and removal of timber shall be disposed of as directed by the Forest Officer in charge.

(c) Flowage and reservoir areas shall be cleared of timber and debris, in a manner satisfactory to the Forest Supervisor, or in accordance with a special agreement approved by him. Timber cut and destroyed in the exercise of the reserved rights shall be paid for at rates to be prescribed by the Forest Officer in charge, which rate shall be the usual stumpage price charged in the locality.

(d) The water surface created shall be open to the Forest Service and its permittees when such use does not interfere with the original purpose of the development.

(e) The water surface shall be open to fishing by the public in accordance with State laws when such use does not interfere with the original purpose of the development.

(f) Plans for dams and supplemental structures, impounding or controlling more than 10 acre-feet of water or with a head in excess of 6 feet, shall be approved by the Regional Engineer of the Forest Service before construction shall begin.

(36 Stat. 962, as amended, 16 U.S.C. 518)

EXHIBIT 10J-5 (Rev. 7/26/88)

BOOK 929 PAGE 091

OR 44205 (W)
Wenatchee #139

64267
REAL ESTATE EXCISE TAX
EXEMPT

SPECIAL WARRANTY DEED

Chelan County Treasurer
Robert H. May

By Sullivan Deputy

ICICLE IRRIGATION DISTRICT, a municipal corporation organized and existing under the laws of the State of Washington and fully authorized to do business in the State of Washington, hereinafter called Grantor, for and in consideration of National Forest System land under the provisions of the General Exchange Act of March 20, 1922 (42 Stat. 465, as amended; 16 U.S.C. 485, 486); the Alpine Lakes Area Management Act of July 12, 1976 (90 Stat. 906; 16 U.S.C. 1132), the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2755; 43 U.S.C. 1715, 1716, 1717); and the Weeks Law Act of March 1, 1911 (36 Stat., 961, as amended; 16 U.S.C. 516), which is of equal value to the land herein conveyed, the receipt of which is hereby acknowledged, hereby grants, bargains, sells, conveys and confirms to the UNITED STATES OF AMERICA, Grantee, and its assigns, all interest in the following described real property, including minerals, in the County of Chelan, State of Washington, except for those encumbrances specifically set forth:

Willamette Meridian, Chelan County, Washington

T. 23 N., R. 16 E.,
sec. 5, lots 1 and 2;
sec. 15, lots 1 and 2.

T. 24 N., R. 14 E.,
sec. 3, lots 17 thru 25, inclusive.

T. 24 N., R. 16 E.,
sec. 33, lot 1.

T. 24 N., R. 17 E.,
sec. 27, Part of the NW1/4SW1/4 described as follows:
BEGINNING at an aluminum monument, set on the southerly edge of the Icicle River Road right-of-way as recorded under Auditor's No. 692951 and 617768, and common with point "A" as described in the City of Leavenworth deed, recorded under Auditor's No. 698355, from said POINT OF BEGINNING the west 1/4 corner of said section 27 bears N. 37° 18' 55" W., 718.59 feet.
THENCE S. 54° 01' 45" E., 292.95 feet along line A-E of said City of Leavenworth property to a rebar with aluminum cap;
THENCE S. 29° 00' 59" E., 108.50 feet to an "X" on a boulder 2 feet x 4 feet x 3 feet lying on the north bank of the Icicle River;
THENCE S. 16° 26' 32" W., 40.00 feet to the center of the Icicle River;
THENCE N. 73° 33' 28" W., 400.00 feet along the north bank of the Icicle River;

FEE 13.00
FILED FOR RECORD
PIONEER TITLE COMPANY
MAY 17 PM 2 55
Deed
BOOK 929 PAGE 085-91
KENNETH C. HOUSSEN
CHELAN COUNTY AUDITOR
WENATCHEE, WASH.

9005170061

OR 44205(W)

THENCE N. 16° 26' 32" E., 40.00 feet to a rebar with aluminum cap located on the north bank of said Icicle River;
THENCE N. 28° 07' 10" W., 199.96 feet to a rebar with aluminum cap located on the southerly edge of said Icicle River Road right-of-way;
THENCE S. 82° 28' 37" E., 137.81 feet along the southerly edge of said right-of-way;
THENCE along the southerly edge of said right-of-way following a curve to the left having a radius length of 613.00 feet along an arc length of 51.77 feet to the POINT OF BEGINNING, as shown in that certain record of survey recorded on January 11, 1983, as Auditor's File No. 8301120006 in Book 14 of Surveys, at Page 80.

Containing 362.83 acres, more or less.

EXCEPTING AND RESERVING to the Grantor, its successors and assigns, a nonexclusive, perpetual easement across, through, along and upon the property described herein for the purposes of maintenance, repair, operation, modification, upgrading and replacement of all facilities presently located in or upon the property described herein, together with a nonexclusive right of ingress to and egress from all such facilities for all such purposes, in accordance with the Rules and Regulations of the Secretary of Agriculture, 36 CFR 251.17 and 251.18, attached hereto and made a part hereof, in such manner as not unreasonably to interfere with its use by the United States, its authorized users or assigns, or cause substantial injury thereto.

The Grantor may exercise the rights hereunder by any means reasonable for the purposes described, including but not limited to the use of motorized transportation and equipment, or aircraft. These rights include the right to regulate water level of all facilities located upon the property described herein. In performing maintenance, repair, operation, modification, upgrading and replacement of facilities located in or upon the property described herein, the Grantor will not without the prior written consent of the Forest Service, which consent shall not unreasonably be withheld, materially increase the size or scope of the facilities.

The United States of America shall charge no fee for the exercise of the rights reserved or granted hereunder, nor shall it require any further permission for the Grantor to exercise the rights granted or reserved herein.

Said easements shall be perpetual unless the Grantor, its successors and assigns, abandons such facilities. The United States of America acknowledges that the interests in real property, improvements to real property and water rights referred to in this Warranty Deed are used by the Grantor on an "as-needed" basis to supplement the water supply of the Grantor.

Termination of this easement will be according to terms and conditions set out in the "Easement Termination Agreement" dated December 27, 1989 and recorded on May 9, 1990, as Auditor's File No. 9005090031 in records of Chelan County, Washington. (Affects all parcels.)

OR 44205(W)

FURTHER EXCEPTING AND RESERVING to the Grantor, its successors and assigns, the right to overflow and inundate the bed and shore of Colchuck, Eight Mile and Klonauqua Lakes and further excepting and reserving to the Grantor all other water rights in favor of the Icicle Irrigation District, in accordance with the Rules and Regulations of the Secretary of Agriculture, 36 CFR 251.19, attached hereto and made a part hereof, including, but not limited to, the following:

1. Rights granted by Commissioners of Public Lands, under that certain Application No. 12855 dated October 26, 1927, and recorded April 14, 1928, in volume 172 of Deeds, page 131 in the records of Chelan County, Washington, as Auditor's File No. 165072. (Affects secs. 5 and 15, T.23 N., R.16 E.; sec. 3, T.24 N., R.14 E., and sec. 33, T.24 N., R.16 E., W.M.).
2. Water rights granted under Certificate of Water Right to use the waters of Klonauqua Lake for the purposes of irrigation under Appropriation Permit No. 827, entered of record in Volume 3, at Page 1227, on August 21, 1939.
3. Water rights granted under Certificate of Water Right to use the waters of Eight Mile Lake for the purposes of irrigation under Appropriation Permit No. 828, entered of record in Volume 3, at Page 1228, on August 21, 1939.
4. Water rights granted under Certificate of Water Right to use the waters of Colchuck Lake for the purposes of irrigation under Appropriation Permit No. 829, entered of record in Volume 3, at Page 1229, on August 21, 1939.
5. Water rights granted in Icicle Creek and Snow Creek, a tributary of Icicle Creek, as noted in that certain Certificate of Water Rights for 83.33 second feet issued to Icicle Irrigation District on September 18, 1934, and recorded in Volume F, Page 2 of Water Right Certificates at Olympia, Washington. (Also affects intakes located in the SW1/4SW1/4 sec. 27, T. 24 N., R. 17 E., W.M.)

SUBJECT TO:

1. Easements for water pipeline and use incidental thereto over and across the eastern portion of NW1/4SW1/4 sec. 27, T. 24 N., R. 17 E., W.M., granted to the City of Leavenworth, a municipal corporation. Recorded February 25, 1964, under Auditor's No. 617729 in volume 657, page 54, and March 19, 1970, under Auditor's No. 698355 in volume 697, page 603, Chelan County.
2. Shifting or change in the course of the ICICLE RIVER and rights of the State of Washington in and to that portion of said premises, if any, lying in the bed or former bed of the Icicle River, if it is navigable. Affects NW1/4SW1/4 sec. 27, T. 24 N., R. 17 E., W.M.

OR 44205(W)

The acquiring agency is the Forest Service, U.S. Department of Agriculture.

The Grantor for itself and for its successors in interest does by these presents expressly limit the covenants of the deed to those herein expressed, and excludes all covenants arising or to arise by statutory or other implication, and does hereby covenant that against all persons whomsoever lawfully claiming or to claim by, through or under said Grantor and not otherwise, Grantor will forever warrant and defend the said described real estate.

Dated this 17th day of May, 1970.

ICICLE IRRIGATION DISTRICT

By Lyman B. Bardin
Lyman B. Bardin
President, Board of Directors

By Kent A. Christensen
Kent A. Christensen, Director

By Ralph F. Kimmerly
Ralph F. Kimmerly, Director

ATTEST:

By Monroe Mashburn
Monroe Mashburn
Title Secretary/Manager

ACKNOWLEDGMENT

STATE OF Washington)
County of) ss

On this 17th day of May, 1970, before me the undersigned, a Notary Public in and for said State, personally appeared Lyman B. Bardin, Kent Christensen, Ralph F. Kimmerly, and Monroe Mashburn, known to me to be the Directors and Secretary/Manager, respectively, of the ICICLE IRRIGATION DISTRICT, the municipal corporation that executed the within and foregoing instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.



Terence M. McGee
Notary Public for the State of Washington
Residing at Lawrence
My Commission Expires May 1, 1971

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

RULES AND REGULATIONS OF THE SECRETARY OF AGRICULTURE
GOVERNING THE GRANTOR'S RIGHT TO OCCUPY AND USE
LANDS CONVEYED TO THE UNITED STATES

Code of Federal Regulations - Title 36 - Chapter II - Section 251.17

Except as otherwise provided in paragraph (h) of this section, in conveyances of lands to the United States under authorized programs of the Forest Service, where owners reserve the right to occupy and use the land for the purposes of residence, agriculture, industry, or commerce, said reservations shall be subject to the following conditions, rules and regulations which shall be expressed in and made a part of the deed of conveyance to the United States and such reservations shall be exercised thereunder and in obedience thereto:

(a) Except when provided otherwise by statute, the reservation so created shall not be assigned, used, or occupied by anyone other than the grantor without the consent of the United States.

(b) All reasonable precautions shall be taken by the grantor and all persons acting for or claiming under him to prevent and suppress forest fires upon or threatening the premises or other adjacent lands of the United States, and any persons failing to comply with this requirement shall be responsible for any damages sustained by the United States by reason thereof.

(c) The premises shall not be used or permitted to be used without the written consent of the United States, for any purpose or purposes other than those specified in the instrument creating the reservation.

(d) The grantor and all persons acting for or claiming under him shall maintain the premises and all buildings and structures thereon in proper repair and sanitation and shall comply with the National Forest laws and regulations and the laws and lawful orders of the State in which the premises are located.

(e) Except when provided otherwise by statute, the reservation shall terminate (1) upon the expiration of the period named in the deed; (2) upon failure for a period of more than one calendar year to use and occupy the premises for the purposes named in the deed; (3) by use and occupancy for unlawful purposes or for purposes other than those specified in the deed; and (4) by voluntary written relinquishment by the owner.

(f) Upon the termination of the reservation the owners of personal property remaining on the premises shall remove same within a period of three months, and all such property not so removed shall become the property of the United States except that when such removal is prevented by conditions beyond the control of the owners the period shall be extended in writing

by the Forest Service to allow a reasonable time for said removal, but in no event longer than one year.

(g) The said reservation shall be subject to right-of-way for the use of the United States or its permittees, upon, across, or through the said land, as may hereafter be required for the erection, construction, maintenance, and operation of public utility systems over all or parts thereof, or for the construction and maintenance of any improvements necessary for the good administration and protection of the National Forests, and shall be subject to the right of officials or employees of the Forest Service to inspect the premises, or any part thereof, at all reasonable times and as often as deemed necessary in the performance of official duties in respect to the premises.

(h) The conditions, rules and regulations set forth in paragraphs (a) through (g) of this section shall not apply to reservations contained in conveyances of lands to the United States under the act of March 3, 1925, as amended (43 Stat. 1185, 64 Stat. 82; 16 U.S.C. 535).

All regulations heretofore issued by the Secretary of Agriculture to govern the exercise of occupancy and use rights reserved in conveyances of lands to the United States under authorized programs of the Forest Service shall continue to be effective in the cases to which they are applicable, but are hereby superseded as to occupancy and use rights hereafter reserved in conveyances under such programs.

(36 Stat. 961, as amended, 16 U.S.C. 513-518, 42 Stat. 465, as amended, 16 U.S.C. 485, 486, and 50 Stat. 525, as amended, 7 U.S.C. 1011, and 70 Stat. 1034, 7 U.S.C. 426, 78 Stat. 890, 16 U.S.C. 1131-1136; 78 Stat. 843, 16 U.S.C. 460p-460p-5; 79 Stat. 1295, 16 U.S.C. 460q-460q-9; 80 Stat. 190, 16 U.S.C. 460r-460r-5; 82 Stat. 904, 16 U.S.C. 460v-460v-8; 82 Stat. 919, 16 U.S.C. 1241-1249 and 82 Stat. 905, 16 U.S.C. 1271-1287)

Done at Washington, D.C., this 30th day of December 1970.

T. K. COWDEN,
Assistant Secretary of Agriculture.

(F.R. Doc. 71-132; Filed, Jan. 5, 1971;
8:49 a.m.)

SPD 909-221

5409-38 (7-70)

EXHIBIT 10J-1

BOOK 929 PAGE 089

United States Department of Agriculture
Forest Service

CONDITIONS, RULES AND REGULATIONS OF THE SECRETARY OF AGRICULTURE
GOVERNING EXERCISE OF RIGHTS-OF-WAY RESERVED
IN CONVEYANCES TO THE UNITED STATES OF AMERICA

Code of Federal Regulations - Title 36 - Chapter II - Section 251.18

This section governs the use, occupancy & operation of rights-of-way reserved by a grantor of lands to the U.S.

(a) Brush and refuse resulting from the exercise of the right-of-way reservation shall be disposed of to the satisfaction of the Forest Officer in charge.

(b) Timber cut and destroyed in the exercise of the right-of-way reservation shall be paid for at the rates to be prescribed by the Forest Officer in charge, which rates shall be the usual stumpage prices charged in the locality in sales of National Forest timber of the same kind or species; for injury to timber, second growth, and reproduction, the amount of actual damage shall be ascertained by the Forest Supervisor according to the rules applicable in such cases.

(c) All improvements built or maintained upon the right-of-way shall be kept in an orderly, safe and sanitary condition. Failure to maintain such conditions shall be cause for the termination of the reservation after 30 days' notice in writing to the occupant or user that unsatisfactory conditions exist and that the Department intends to terminate all rights under the reservation unless such conditions are forthwith corrected to the satisfaction of the Regional Forester.

(d) Upon the abandonment of a reserved right-of-way, either by formal release, by termination, or by non-use for a period of 1 calendar year, all improvements thereon not the property of the United States shall be removed therefrom within 3 months from the date of the abandonment; otherwise, such improvements shall vest in and become the property of the United States.

(e) All reasonable precautions to prevent and suppress forest fires shall be taken by the grantor and all persons acting for or claiming under him; suitable crossings shall be constructed by grantor and/or said persons where the reserved right-of-way intersects existing roads and trails; borrow pits shall not be opened outside of the immediate graded section except under a special-use permit from the Forest Supervisor.

(f) Officers of the Forest Service shall have free ingress and egress on and over the reserved rights-of-way for all purposes necessary and incidental to the protection and administration of the National Forest.

(36 Stat. 962, as amended; 16 U.S.C. 518)

United States Department of Agriculture
Forest Service

CONDITIONS, RULES AND REGULATIONS OF THE SECRETARY OF AGRICULTURE
GOVERNING EXERCISE OF WATER RIGHTS RESERVED BY THE GRANTOR
OF LANDS CONVEYED TO THE UNITED STATES

Code of Federal Regulations - Title 36 - Chapter II - Section 261.19

This section governs the exercise of water and related rights reserved by the grantor of land conveyed to the United States under the provisions of the act of March 1, 1911 (36 Stat. 961).

(a) All reasonable precautions shall be taken by the grantor and all persons acting for or claiming under him to prevent and suppress forest fires upon or threatening the premises or other adjacent lands of the United States, and any person failing to comply with this requirement shall be responsible for any damages sustained by the United States by reason thereof.

(b) All slash and debris resulting from the cutting and removal of timber shall be disposed of as directed by the Forest Officer in charge.

(c) Flowage and reservoir areas shall be cleared of timber and debris, in a manner satisfactory to the Forest Supervisor, or in accordance with a special agreement approved by him. Timber cut and destroyed in the exercise of the reserved rights shall be paid for at rates to be prescribed by the Forest Officer in charge, which rate shall be the usual stumpage price charged in the locality.

(d) The water surface created shall be open to the Forest Service and its permittees when such use does not interfere with the original purpose of the development.

(e) The water surface shall be open to fishing by the public in accordance with State laws when such use does not interfere with the original purpose of the development.

(f) Plans for dams and supplemental structures, impounding or controlling more than 10 acre-feet of water or with a head in excess of 6 feet, shall be approved by the Regional Engineer of the Forest Service before construction shall begin.

(36 Stat. 962, as amended, 16 U.S.C. 518)

EXHIBIT 10J-5 (Rev. 7/26/88)

BOOK 929 PAGE 091

DECISION MEMO

ISSUANCE OF A CONDITIONAL PERMANENT EASEMENT
FOR THE
ICICLE IRRIGATION DISTRICTUSDA FOREST SERVICE
Region 6
Wenatchee National Forest
Chelan County, Washington

The Forest Service has received an application from Icicle Irrigation District for the issuance of a conditional permanent easement for an agricultural irrigation and/or livestock watering system on National Forest System lands. This system is located within Sections 10 and 15, T. 23 N., R. 16 E., Section 3, T. 24 N., R. 14 E., and Sections 22 and 27, T. 25 N., R. 13 E., and is used to divert, store and transport water for agricultural irrigation and/or livestock watering purposes from National Forest System land, to non Federal land owned by the applicant.

The Act of October 27, 1986 directs the Secretary of Agriculture (through the Forest Service) to issue conditional permanent easements to all who apply for and meet specific qualifying criteria in the Act. The Forest Service has reviewed the application submitted in this particular case, and has found that it meets the criteria identified in the Act. Therefore, pursuant to that Act, the applicant is entitled to the issuance of an easement.

The Forest Service has conducted an environmental analysis of the use and occupancy of National Forest System land included in this application. That analysis included a public notice and comment period, during which the agency disclosed to the public that the standard terms and conditions of the easement itself should be adequate to protect National Forest System lands and resources in a manner consistent with the standards and guidelines in the amended Wenatchee National Forest Land and Resource Management Plan.

It is my decision to respond to this application with the issuance of the Agricultural Irrigation and Livestock Watering System Easement (Form FS-2700-9a). The subject facilities use and occupy 12.30 acres of National Forest System lands, have been in place for more than 25 years, and have an existing water right. Operation and maintenance will be done in accordance with applicable Federal, State, and local laws and no extension or enlargement of the system is allowed.

Therefore, I have determined that, consistent with agency policy at Chapt. 31.2, category 7, of Forest Service Handbook 1909.15, this is an action which has been categorically excluded from documentation in an environmental assessment or environmental impact statement.

This decision is not subject to appeal pursuant to 36 CFR 215.8(a)(4). Implementation will occur upon completion of the easement documentation. For further information about this project, contact Steve Johnson at Wenatchee National Forest, Supervisor's Office, 215 Melody Lane, Wenatchee, WA 98801, (509) 664-2789.



KIMBERLY EVART BOWN

Director of Recreation, Lands, Mineral Resources

1-6-2000

Date

U. S. DEPARTMENT OF AGRICULTURE Forest Service AGRICULTURE IRRIGATION AND LIVESTOCK WATERING SYSTEM EASEMENT Act of October 21, 1976, Act of October 27, 1986 (Pub. L. 99-545), 36 CFR 251, Subpart B	Holder No. 1 2 0 3-0 3	Issue Date 01/04/2000	Expir. Date 0 X/ /
	Type Site 9 1 6	Authority 6 7 6	Auth. Type 1 0
	Region/Forest/District 0 6/ 1 7/ 0 7		State/County 5 3/ 0 0 7
	Cong. Dist. 0 4	Latitude 4 7-3 8-2 6	Longitude 1 2 0-0 7-1 6

THIS EASEMENT, is issued this 6 day of January, ²⁰⁰⁰19, by the UNITED STATES OF AMERICA, acting by and through the Forest Service, Department of Agriculture, hereinafter called Grantor, to **ICICLE IRRIGATION DISTRICT**, of the State of Washington hereinafter called the Holder(s).

WHEREAS, the Holder has applied for an easement under Section 501 of the Federal Land Policy and Management Act of October 21, 1976, as amended by P. L. 99-545 (90 Stat. 2743; 43 U.S.C. 1761), for agricultural irrigation or livestock watering system facilities located on lands owned by the United States on the Wenatchee National Forest, in the County of Chelan, State of Washington.

WITNESSETH

WHEREAS, upon acceptance of this easement the Holder relinquishes all right, title, and interest in and to any easement issued for the same lands by the United States by any previous grant or permit.

NOW THEREFORE, the United States does hereby grant, subject to valid existing rights, an easement for occupancy with water conveyance system facilities of lands shown on the plat contained in Exhibit "A", attached hereto and incorporated herein, as provided by the Holder and hereby accepted by the Authorized Officer.

This easement is issued subject to the following terms, provisions, and conditions applicable to the Holder, its permittees, contractors, assignees, and successors in interest.

1. **AUTHORIZED USE.** This easement authorizes only the right-of-way and water conveyance system facilities as constructed and operated on October 21, 1976, as specified herein.
2. **EXTENSIONS or ENLARGEMENTS.** This easement does not authorize extensions or enlargements of the water conveyance system.
3. **FEES.** This easement is issued free of charge.
4. **TRANSFERABILITY.** This easement is fully transferable provided the water conveyance system facilities are used for agricultural irrigation or livestock watering. Holder shall notify Grantor within sixty (60) days of any address change or change in ownership.
5. **TENURE.** This easement shall continue for as long as the above described lands and water conveyance system facilities are used, operated, and maintained in accordance with the terms and conditions herein described.

6. OPERATION and MAINTENANCE.

- a. Holder agrees to operate and maintain the facilities and use the authorized easement in accordance with applicable Federal, State, and local laws, regulations, and standards.
- b. Holder shall notify, consult with, and obtain concurrence of the Grantor for operation and maintenance of the authorized facilities.
- c. Holder agrees to install and maintain an operable headgate at each diversion structure. Such headgate shall be capable of controlling the amount of water entering the system.
- d. Holder will not use fire or herbicides on the authorized right-of-way except as permitted in writing by the Grantor.

7. EMERGENCY REPAIRS.

- a. Except for emergency repairs required to protect the environment, property of the United States, or public health and safety, the Holder may not use materials on National Forest System lands outside the easement prior to obtaining written authorization and paying for the materials to be used. Holder's use of material within the easement is limited to maintenance of the water conveyance system facility.
- b. If the water conveyance system facilities authorized by this Easement are allowed to deteriorate to the point of threatening persons or property, and the Holder, after notification by the Grantor, refuses to perform the repairs and maintenance required to remove the threat to persons or property, Grantor shall have the right to undertake such repair and maintenance and to assess the Holder for the costs of such repair and maintenance, regardless of whether Grantor had required the Holder to furnish a bond or other security.

8. INDEMNIFICATION. Holder shall indemnify the United States against liability for any and all injury, loss, or damage, including fire suppression costs, that the United States may suffer as a result of claims, demands, losses, or judgments caused by the Holder's use or occupancy under this easement.

9. LIABILITY. Holder is liable for and agrees to repair damage to National Forest System lands caused by Holder's negligence, intentional acts, or of failure to comply with the terms and conditions of this easement or of any law or regulation applicable to the National Forests.

10. SITE RESTORATION. Holder shall, upon termination of this easement, stabilize the site as required by the Grantor. If Holder does not stabilize the site, the Holder agrees to pay the costs of such stabilization if undertaken by the Grantor.

11. SPECIAL PROVISIONS.

The foregoing notwithstanding, this easement is granted subject to the following reservations by Grantor, for itself, its permittees, contractors, and assigns.

A. NONEXCLUSIVE USE. The Grantor reserves the right to use or permit others to use the easement area, provided such use does not unreasonably interfere with the rights and privileges hereby authorized.

B. TERMINATION. This easement may be terminated with consent of Holder, or if Holder fails to exercise the rights and privileges authorized for any continuous period of five (5) years or more. This easement expires according to its terms if Holder uses the water conveyance system for any purpose other than agricultural irrigation or livestock watering. Grantor may take action to terminate this easement under 7 CFR 1.130 - 1.151, for noncompliance with applicable statutes and regulations, or the terms and conditions of this easement.

ACCEPTANCE On this 28th day of September, 1999, I, the undersigned Holder have read, understand, and accept the terms and conditions of this easement.

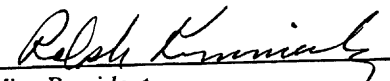


Holder

The following certificate shall be executed by the Vice President of the Corporation:

I, Ralph Kimmerly, certify that I am the Vice President of the Corporation that accepted the above easement; that Joel J. Teeley, who signed said easement on behalf of said Corporation was then Secretary/Manager of said Corporation; that I know his/her signature, and that his/her signature on said easement is genuine; and that said easement was duly signed, sealed, and attested to for and on behalf of said Corporation by authority of its governing body.

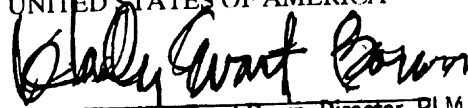
(CORPORATE SEAL)



Vice President

IN WITNESS WHEREOF, the Secretary of Agriculture by the Director of Recreation, Lands, and Mineral Resources, Forest Service, has executed this easement pursuant to delegation of authority specified in 7 CFR 2.60 and 36 CFR 251.52 and the delegation of authority by the Regional Forester published June 23, 1997 (62 F.R. 33826) on the day and year first above written.

UNITED STATES OF AMERICA



Kimberly Ewart Bown, Director, RLM

Recreation, Lands and Mineral Resources
Pacific Northwest Region
USDA Forest Service

ACKNOWLEDGMENT

STATE OF Oregon
County of Multnomah ss.

On this 6th day of January, 192000, before me, the undersigned, a Notary Public in and for said State personally appeared Kimberly Evert Bowan, _____ Director of Recreation, Lands, and Mineral Resources, Pacific Northwest Region, Forest Service, Department of Agriculture, the same person who executed the within and foregoing instrument, who being by me duly sworn according to law, did say that he/she executed said instrument on behalf of the United States of America by its authority duly given and by him/her delivered as and for its act and deed. And he/she did further acknowledge that he/she executed said instrument as the free act and deed of the United States of America, for the purposes and consideration herein mentioned and set forth, and I do hereby so certify.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year first above written.



Louisa Herrera
Name (Printed) Louisa Herrera
Residing at for Hand, OR
My Commission Expires 10/10/2003

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0082.

This information is needed by the Forest Service to evaluate requests to use National Forest System lands and manage those lands to protect natural resources, administer the use, and ensure public health and safety. This information is required to obtain or retain a benefit. The authority for that requirement is provided by the Organic Act of 1897 and the Federal Land Policy and Management Act of 1976, which authorize the Secretary of Agriculture to promulgate rules and regulations for authorizing and managing National Forest System lands. These statutes, along with the Term Permit Act, National Forest Ski Area Permit Act, Granger-Thye Act, Mineral Leasing Act, Alaska Term Permit Act, Act of September 3, 1954, Wilderness Act, National Forest Roads and Trails Act, Act of November 16, 1973, Archeological Resources Protection Act, and Alaska National Interest Lands Conservation Act, authorize the Secretary of Agriculture to issue authorizations for the use and occupancy of National Forest System lands. The Secretary of Agriculture's regulations at 36 CFR Part 251, Subpart B, establish procedures for issuing those authorizations.

The Privacy Act of 1974 (5 U.S.C. 552a) and the Freedom of Information Act (5 U.S.C. 552) govern the confidentiality to be provided for information received by the Forest Service.

Public reporting burden for this collection of information, if requested, is estimated to average 1 hour per response for annual financial information; average 1 hour per response to prepare or update operation and/or maintenance plan; average 1 hour per response for inspection reports; and an average of 1 hour for each request that may include such things as reports, logs, facility and user information, sublease information, and other similar miscellaneous information requests. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Washington D.C. 20250; and to the Office of Management and Budget, Paperwork Reduction Project (OMB #0596-0082), Washington, D.C. 20503.

Certified correct as to consideration, conditions, and descriptions

**EASEMENT SURVEY
ICICLE IRRIGATION**
A PORTION OF GOV. LOTS 6, 7, 8, 9, 10 AND 11,
OF SECTION 10, T.23 N. R.16 E. W.M.
CHELAN COUNTY, WASHINGTON

EXHIBIT "A"

PAGE
1 OF 2

**ACCESS FOR MAINTENANCE
AND REPAIR**

THE SYSTEM IS ACCESSED BY FOREST
ROADS 7600 AND 7601 AND TRAILS
1599 AND 1599A. ALSO BY HELICOPTER
AS DETERMINED BY PREVIOUS
AGREEMENTS AND PERMITS.

EXHIBIT A
2720 SPECIAL USES
USDA - FOREST SERVICE
PACIFIC NORTHWEST REGION
VENATCHEE NATIONAL FOREST

CORNER TIES TO DIVERSION POINT
FROM THE MEANDER CORNER ON THE
WEST SIDE OF COLCHUCK LAKE, THE
DIVERSION POINT (DAM),
BEARS N19°43'E 2920 FT..

A PORTION OF GOV. LOTS 6, 7, 8, 9, 10 AND 11,
OF SECTION 10, T.23 N. R.16 E. W.M.
CHELAN COUNTY, WASHINGTON
AGRICULTURAL EASEMENT - PL 99-545
ICICLE IRRIGATION SYSTEM
COLCHUCK LAKE CONTAINS 3.1 ACRES

*** NOTE ***

BASIS OF MEASUREMENTS, LOCATIONS
AND TIES TO LANDLINE CORNERS IS
GLO SURVEY RECORDS ALONG WITH GIS
AND QUAD MAP DATA.

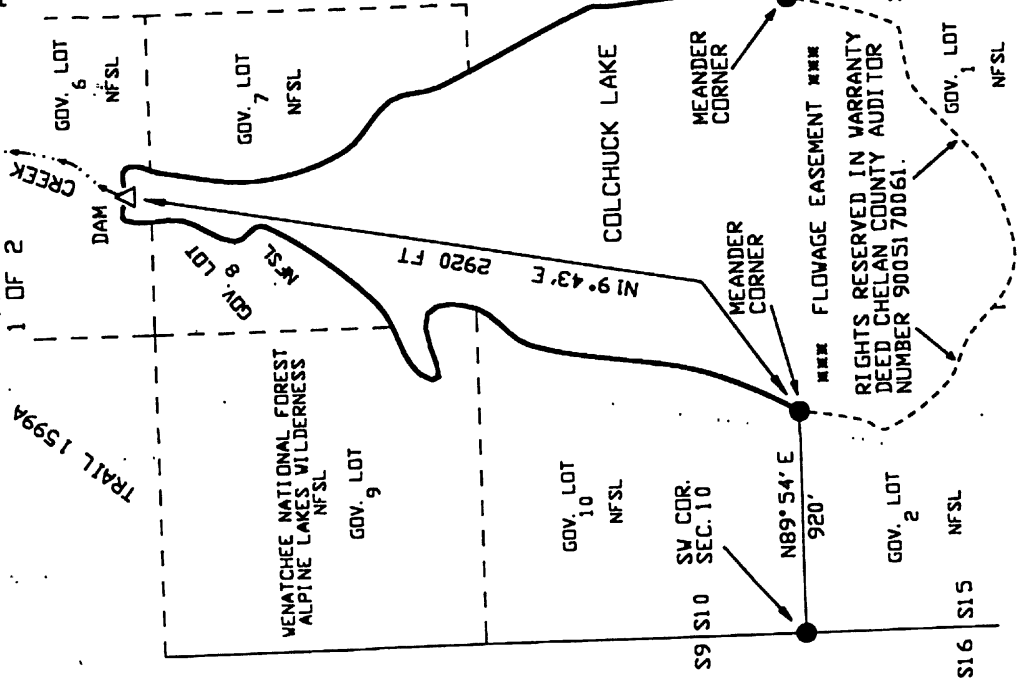
*** NOTE ***

THIS IS A LOCATION MAP OF
COLCHUCK LAKE WHICH FEEDS THE
ICICLE IRRIGATION SYSTEM. THE
INFORMATION SHOWN ON THIS MAP
IS PROVIDED AS LOCATIONAL
INFORMATION AND IS NOT INTENDED
TO BE A SURVEY OF COLCHUCK LAKE.

*** LEGEND ***

- NFSL NATIONAL FOREST
SYSTEM LAND
- △ DAM AND DIVERSION PT
- ORIGINAL GLO STONE MON.
PER RECORD
- CREEK AND NATURAL DRAINAGE
- TRAIL
- - - SECTION SUBD. LINES
- SECTION LINES

SURVEYED BY *Debra L. Linder* 6/9/99
REVIEWED BY *[Signature]* 6/9/99



*** NOTE ***

THIS EASEMENT FOR THE NORTHERN
PORTION OF COLCHUCK LAKE IS
APPROXIMATELY 3.1 ACRES. IT IS
NOT THE INTENTION TO GRANT AN
EASEMENT FOR THE ENTIRE LAKE
SURFACE. THE EASEMENT IS FOR THE
LAKE SHORE AREA FLOODED AS A
RESULT OF THE DAMMING. THE
EASEMENT ALSO COVERS THE AREA
AROUND THE LAKE DAM, SPILLWAYS
AND OVERFLOWS FOR MAINTENANCE AND
OPERATION. THE EASEMENT AREA IS
A STRIP OF LAND ABOVE THE ORIGINAL
LAKE LEVEL THAT IS 20 FT +/- WIDE
CIRCLING THE LAKE IN SECTION 10,
IN SECTION 10, OF 6,650 FT.

EASEMENT SURVEY
 ICICLE IRRIGATION
 A PORTION OF GOV. LOTS 1, 2, 3, 4 AND 5 OF SECTION 22,
 AND A PORTION OF GOV. LOT 1 OF SECTION 27,
 T. 25 N. R. 13 E. W. M.
 CHELAN COUNTY, WASHINGTON

EXHIBIT A
 2720 SPECIAL USES
 USDA - FOREST SERVICE
 PACIFIC NORTHWEST REGION
 WENATCHEE NATIONAL FOREST

EXHIBIT "A"

PAGE
 2 OF 2

A PORTION OF GOV. LOTS 1, 2, 3, 4 AND 5
 OF SECTION 22, AND
 A PORTION OF GOV. LOT 1 OF SECTION 27,
 T. 25 N. R. 13 E. W. M.
 CHELAN COUNTY, WASHINGTON
 AGRICULTURAL EASEMENT - PL 99-545
 ICICLE IRRIGATION SYSTEM
 SQUARE LAKE CONTAINS 4.8 ACRES

*** NOTE ***

THIS EASEMENT FOR SQUARE LAKE
 IS APPROXIMATELY 4.8 ACRES. IT
 IS NOT THE INTENTION TO GRANT
 AN EASEMENT FOR THE ENTIRE LAKE
 SURFACE. THE EASEMENT IS FOR THE
 LAKE SHORE AREA FLOODED AS A
 RESULT OF THE DAMMING. THE
 EASEMENT ALSO COVERS THE AREA
 AROUND THE LAKE, DAM, SPILLWAYS
 AND OVERFLOWS FOR MAINTENANCE AND
 OPERATION. THE EASEMENT AREA IS
 A STRIP OF LAND ABOVE THE ORIGINAL
 LAKE LEVEL THAT IS 20 FT +/- WIDE
 CIRCLING THE LAKE, WITH THE LAKE
 HAVING A PERIMETER OF 10,400 FT.

*** NOTE ***

BASIS OF MEASUREMENTS,
 LOCATIONS AND TIES TO
 LANDLINE CORNERS IS
 GLO SURVEY RECORDS
 ALONG WITH GIS AND
 QUAD MAP DATA.

ACCESS FOR MAINTENANCE
 AND REPAIR

THE SYSTEM IS ACCESSED BY
 FOREST ROAD 7600 AND TRAILS
 1551 AND 1567. ALSO BY
 HELICOPTER AS DETERMINED
 BY PREVIOUS AGREEMENTS AND
 PERMITS.

CORNER TIES TO DIVERSION
 POINT

FROM THE SOUTH 1/4 CORNER
 OF SECTION 22 THE DIVERSION
 POINT (DAM), BEARS N26°54'E
 1800 FT..

*** NOTE ***

THIS IS A LOCATION MAP OF
 SQUARE LAKE WHICH FEEDS THE
 ICICLE IRRIGATION SYSTEM. THE
 INFORMATION SHOWN ON THIS MAP
 IS PROVIDED AS LOCATIONAL
 INFORMATION AND IS NOT INTENDED
 TO BE A SURVEY OF SQUARE LAKE.

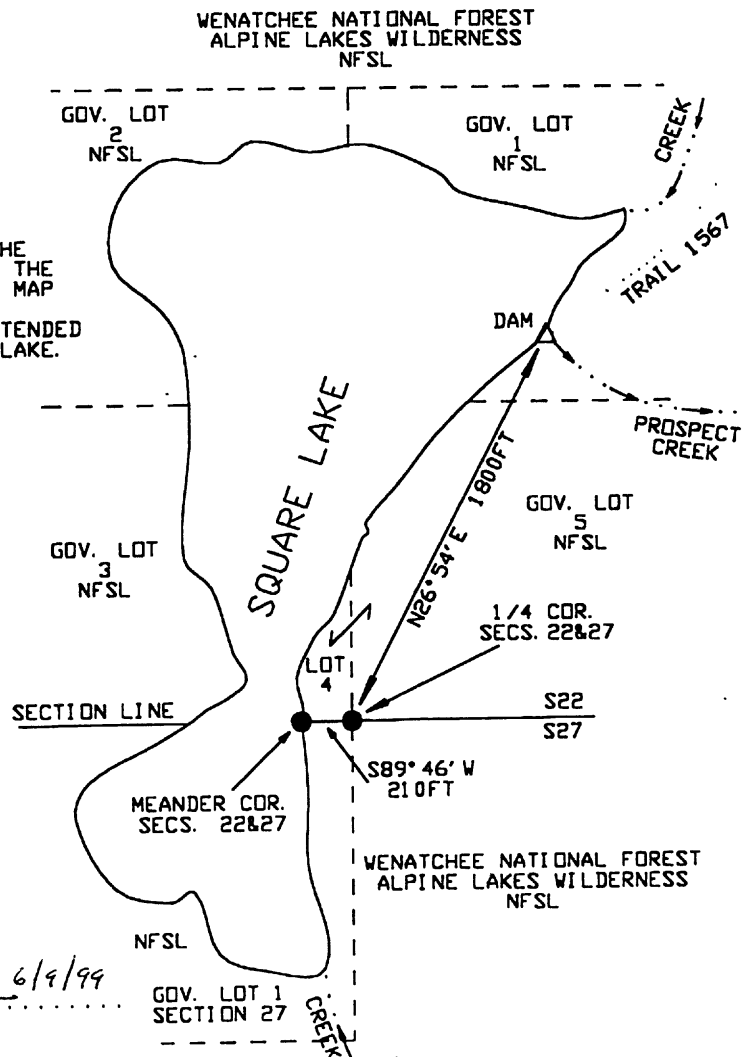


*** SCALE ***
 FEET



*** LEGEND ***

- NFSL NATIONAL FOREST
SYSTEM LAND
- ORIGINAL GLO CORNER
STONE MONUMENT PER RECORD
- △ DAM AND DIVERSION POINT
- TRAIL
- CREEK AND NATURAL DRAINAGE
- SECTION LINE



SURVEYED BY *Leeland L. Luch* 6/9/99
 REVIEWED BY *[Signature]* 6/9/99

Supervisor's Office, Wenatchee

2710

Charles F. Banko, District Ranger

February 26, 1968

Special Uses

Attached is an application from the Icicle Irrigation District for a special use permit at Square Lake.

1. Cabin
2. Small dam and operating valves
3. Diversion tunnel

This is in response to your memo regarding the Regional Attorney's opinion of their existing occupancy under a State of Washington hydrology permit.

Three (3) plats are being sent under separate cover. Please have them printed. Return the originals plus three (3) copies of each.

C.F.B.:Gib

since 1.08 / 1

cont next pg

District Ranger, Leavenworth

A. C. Wright, Forest Supervisor, By

Special-Use Permits (Icicle Irrigation District, Square Lake Dam)

In 1940 the State Public Lands Commissioner granted an easement to the Icicle Irrigation District which supposedly gave permission to construct a dam and overflow Square Lake. This easement was based on the premise that Square Lake was a navigable body of water and hence the shoreland belonged to the State.

In 1965 the Regional Attorney reviewed the case. Due to the size and location of the lake, and the fact that it is frozen over five to eight months of the year, it was his opinion that the lake would not be considered navigable and hence all lands used by the Irrigation District are National Forest owned and controlled.

The structures at Square Lake are in trespass unless covered by a special-use permit.

Please discuss a permit with the Irrigation District and furnish this office with a rough or penciled permit covering all facilities along with as built plans of existing improvements.

Next summer, after the permit is issued, you should schedule an inspection trip to the lake. At this time you could take representatives of the District along with you and work out an agreement for bringing the improvements up to standard.

If the Irrigation District refuses to accept a permit let us know. We will then recommend the navigability of the lake be decided in court.

Attached is a copy of Ed Sage's memorandum covering the facilities from an engineering standpoint. His comment on the cabin is applicable now since it is under special-use. The other items should be kept in mind and resolved when you make the joint visit to Square Lake.

Enclosure

cc: 7500 Square Lakes Dam

FRITZ M. MORRISON

FMorrison:zmc

since 1.08.1

cont next p

7500 Water Storage and Transportation
(2720)

Dam Safety Inspection

Regional Forester, R-6

This is in answer to your letters of August 2, 1978, and January 30, 1980, relative to hazard ratings of permittee-owned dams in Class A and B categories.

We presently have nine dams in the A class, of which six are under the jurisdiction of the Bureau of Reclamation and one (Beehive Reservoir) under Corps of Engineers jurisdiction. The remaining two are presently rated as Moderate Hazard. Enclosed are classification narratives for the latter. Please note that Colchuck Dam is unchanged while Square Lake Dam is recommended for change, from Moderate to Low Hazard. Please let us know if you concur with this change.

We have one dam in the Moderate Hazard Class B category. Enclosed is our classification narrative retaining this structure in the Moderate Hazard class.

ALLEN THOMPSON
Engineering Staff Officer

Enclosures,

CC: Leavenworth R.D. w/enclosure Note: Suggest you place copy of classification write-up in appropriate permittee folder

Black notebook by Sage's desk w/enclosure

2720 Files
Ice/Irrigation District
Colchuck
✓ Square Lake
H&H Reservoir

EASage:b1g

SUPR	DR
DEP	100
P & AO	
AO	
PS	
LPH	
FR	
TA	
PR	
RE	
TE	
TR	
TU	
TV	
W	
X	
Y	
Z	

~~Sudden failure of this 5 foot high, 132 foot long dam would release a~~
surge of water (370 acre feet \pm) into Prospect Creek, a tributary to
Icicle Creek approximately 4.5 miles downstream. The streambed
gradient of Prospect Creek is very steep at first, dropping 790 feet
in the first 0.6 mile but then levels off for the remaining distance
to its confluence with Icicle, dropping another 1,000 feet.

The major storage of this lake (1,850 - 370 = 1,480 acre feet \pm) is
controlled by a 30 inch concrete pipe and gate which exits through a
5 foot by 7 foot tunnel carved through solid rock. Because of this
controlled outlet, large volumes of water are not involved if failure
to the pipe/control gate occurs.

Public hazard is considered minor as the access trail to the lake is
located well above the stream channel except at one bridge crossing.
This crossing is located approximately 2.4 miles downstream from the
lake. The dam itself serves as a bridge for access to a cabin and
control works of the project. It is very unlikely that loss of life
would occur if this dam were to fail. However, some damage to land
and one trail bridge would most likely result. Overall damage should
be considered minor, as project is located in undeveloped, remote area.

I recommend this Class "A" structure be placed in a Low Hazard
Classification.

Signed: EDWARD A. SAGE
Forest Civil Engineer

Date : March 1980

Hazard Rating For Squaw Lake - Wenatchee NF

SUBJECT: Reservoir & Cabin, Icicle Irrigation District, 9/12/68

TO: District Ranger, Leavenworth



REPLY DUE SEPTEMBER 30, 1969

Clause 20 of the above permit states that the permittee shall perform such maintenance on dam as necessary to bring it up to a standard acceptable to the Forest Officer-in-charge. This maintenance shall be completed by September, 1969.

Please advise by the above due date as to the status of the completion of the necessary work.

A. C. WRIGHT
Forest Supervisor

By E. W. GANO

GUpham:zmc

E. W. Gano

since 1.00 / 1

cont next page

Regional Forester

March 24, 1968

A. C. Wright, Forest Supervisor, By

Special-Use Permits (Reservoir - Icicle Irrigation District)

Attached for your review and approval are an original and two copies of a special-use permit for the Icicle Irrigation District, including an existing dam, diversion tunnel, and maintenance cabin at Square Lake.

The reservoir and associated improvements have been in existence for many years. They were covered by two old permits dated April 13, 1940, and September 5, 1940.

When approved and signed by the permittee the new permit will give us current, complete, and accurate coverage of the reservoir and its related facilities.

Enclosures

OVanderlin:zmc

E. W. GANO

since 1.08 / 1

cont next pag

forest officer in charge has approved, and has marked or otherwise designated that which may be removed or destroyed. Timber cut or destroyed will be paid for by the permittee as follows: Merchantable timber at appraised value; young-growth timber below merchantable size at current damage appraisal value; *provided* that the Forest Service reserves the right to dispose of the merchantable timber to others than the permittee at no stumpage cost to the permittee. Trees, shrubs, and other plants may be planted in such manner and in such places about the premises as may be approved by the forest officer in charge.

5. The permittee shall maintain the improvements and premises to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the forest officer in charge.

6. This permit is subject to all valid claims.

7. The permittee, in exercising the privileges granted by this permit, shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations which are applicable to the area or operations covered by this permit.

8. The permittee shall take all reasonable precautions to prevent and suppress forest fires. No material shall be disposed of by burning in open fires during the closed season established by law or regulation without a written permit from the forest officer in charge or his authorized agent.

9. The permittee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this permit, and shall pay the United States for any damage resulting from negligence or from the violation of the terms of this permit or of any law or regulation applicable to the national forests by the permittee, or by any agents or employees of the permittee acting within the scope of their agency or employment.

10. The permittee shall fully repair all damage, other than ordinary wear and tear, to national forest roads and trails caused by the permittee in the exercise of the privilege granted by this permit.

11. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this agreement or to any benefit that may arise herefrom unless it is made with a corporation for its general benefit.

12. Upon abandonment, termination, revocation, or cancellation of this permit, the permittee shall remove within a reasonable time all structures and improvements except those owned by the United States, and shall restore the site, unless otherwise agreed upon in writing or in this permit. If the permittee fails to remove all such structures or improvements within a reasonable period, they shall become the property of the United States, but that will not relieve the permittee of liability for the cost of their removal and restoration of the site.

13. This permit is not transferable. If the permittee through voluntary sale or transfer, or through enforcement of contract, foreclosure, tax sale, or other valid legal proceeding shall cease to be the owner of the physical improvements other than those owned by the United States situated on the land described in this permit and is unable to furnish adequate proof of ability to redeem or otherwise reestablish title to said improvements, this permit shall be subject to cancellation. But if the person to whom title to said improvements shall have been transferred in either manner provided as qualified as a permittee and is willing that his future occupancy of the premises shall be subject to such new conditions and stipulations as existing or prospective circumstances may warrant, his continued occupancy of the premises may be authorized by permit to him if, in the opinion of the issuing officer or his successor, issuance of a permit is desirable and in the public interest.

14. In case of change of address, the permittee shall immediately notify the forest supervisor.

15. The temporary use and occupancy of the premises and improvements herein described may be sublet by the permittee to third parties only with the prior written approval of the forest supervisor but the permittee shall continue to be responsible for compliance with all conditions of this permit by persons to whom such premises may be sublet.

16. This permit may be terminated upon breach of any of the conditions herein or at the discretion of the regional forester or the Chief, Forest Service.

17. In the event of any conflict between any of the preceding printed clauses or any provisions thereof and any of the following clauses or any provisions thereof, the following printed clauses will control.

2017-FS-R6-01590-F
2720 - Special Use Permit - Icicle Irrigation District - Reservoir - 8/26/68

18. This permit confers no right upon the permittee to the use of the water involved.

19. The Forest Service reserves the right to issue additional permits to increase the storage capacity of this site if such action proves feasible. No permit will be granted for additional facilities that will jeopardize the privileges granted by this permit. Any additional permits authorizing larger facilities will provide for payment of costs including the cost of construction of the original project works, on a cost-benefit ratio mutually agreeable to the permittee and the new applicant. If the permittee and applicant cannot agree on division of costs, the Regional Forester shall decide on an equitable division between the old and new works.

20. Permittee shall perform such maintenance on dam as necessary to bring it up to a standard acceptable to the Forest Officer in charge. This maintenance shall be completed by September 15, 1969.

21. The maintenance cabin shall be removed when no longer servicable. Decision as to serviceability and methods of removal is reserved to the Forest Supervisor.

22. This permit supersedes those certain permits issued by Walter H. Lund on April 13, 1940, and September 5, 1940; one for the purpose of construction of diversion tunnel into Square Lake, the other for the purpose of constructing and maintaining a cabin to be used in connection with the reclamation project.

Supervisor's Office, Wenatchee

2710

Charles F. Banko, District Ranger

February 26, 1968

Special Uses

Attached is an application from the Icicle Irrigation District for a special use permit at Square Lake.

1. Cabin
2. Small dam and operating valves
3. Diversion tunnel

This is in response to your memo regarding the Regional Attorney's opinion of their existing occupancy under a State of Washington hydrology permit.

Three (3) plats are being sent under separate cover. Please have them printed. Return the originals plus three (3) copies of each.

C.F.B. Gbd

since 1.08 / 1

cont next pg

District Ranger, Leavenworth

A. C. Wright, Forest Supervisor, By

Special-Use Permits (Icicle Irrigation District, Square Lake Dam)

In 1940 the State Public Lands Commissioner granted an easement to the Icicle Irrigation District which supposedly gave permission to construct a dam and overflow Square Lake. This easement was based on the premise that Square Lake was a navigable body of water and hence the shoreland belonged to the State.

In 1965 the Regional Attorney reviewed the case. Due to the size and location of the lake, and the fact that it is frozen over five to eight months of the year, it was his opinion that the lake would not be considered navigable and hence all lands used by the Irrigation District are National Forest owned and controlled.

The structures at Square Lake are in trespass unless covered by a special-use permit.

Please discuss a permit with the Irrigation District and furnish this office with a rough or penciled permit covering all facilities along with as built plans of existing improvements.

Next summer, after the permit is issued, you should schedule an inspection trip to the lake. At this time you could take representatives of the District along with you and work out an agreement for bringing the improvements up to standard.

If the Irrigation District refuses to accept a permit let us know. We will then recommend the navigability of the lake be decided in court.

Attached is a copy of Ed Sage's memorandum covering the facilities from an engineering standpoint. His comment on the cabin is applicable now since it is under special-use. The other items should be kept in mind and resolved when you make the joint visit to Square Lake.

Enclosure

cc: 7500 Square Lakes Dam

FRITZ M. MORRISON

FMorrison:zmc

since 1.08.1

cont next p

7500 Water Storage and Transportation
(2720)

new culture of this 5-11

Regional Forester, R-6

This is in answer to your letters of August 2, 1978, and January 30, 1980, relative to hazard ratings of permittee-owned dams in Class A and B categories.

We presently have nine dams in the A class, of which six are under the jurisdiction of the Bureau of Reclamation and one (Beehive Reservoir) under Corps of Engineers jurisdiction. The remaining two are presently rated as Moderate Hazard. Enclosed are classification narratives for the latter. Please note that Colchuck Dam is unchanged while Square Lake Dam is recommended for change, from Moderate to Low Hazard. Please let us know if you concur with this change.

We have one dam in the Moderate Hazard Class B category. Enclosed is our classification narrative retaining this structure in the Moderate Hazard class.

ALLEN THOMPSON
Engineering Staff Officer

Enclosures *DS*

CC:

Leavenworth R.D. w/enclosure Note: Suggest you place copy of classification write-up in appropriate permittee folder

Black notebook by Sage's desk w/enclosure

2720 Files
Icicle Irrigation District
Colchuck
Square Lake
H&H Reservoir

EASage:blg

SUPR	DR
DEP	100
P & AO	
AO	
PS	
Labor	
Fuel	
T.A.	
Pl.	
D.	

~~Sudden failure of this 5 foot high, 132 foot long dam would release a~~
surge of water (370 acre feet \pm) into Prospect Creek, a tributary to
Icicle Creek approximately 4.5 miles downstream. The streambed
gradient of Prospect Creek is very steep at first, dropping 790 feet
in the first 0.6 mile but then levels off for the remaining distance
to its confluence with Icicle, dropping another 1,000 feet.

The major storage of this lake (1,850 - 370 = 1,480 acre feet \pm) is
controlled by a 30 inch concrete pipe and gate which exits through a
5 foot by 7 foot tunnel carved through solid rock. Because of this
controlled outlet, large volumes of water are not involved if failure
to the pipe/control gate occurs.

Public hazard is considered minor as the access trail to the lake is
located well above the stream channel except at one bridge crossing.
This crossing is located approximately 2.4 miles downstream from the
lake. The dam itself serves as a bridge for access to a cabin and
control works of the project. It is very unlikely that loss of life
would occur if this dam were to fail. However, some damage to land
and one trail bridge would most likely result. Overall damage should
be considered minor, as project is located in undeveloped, remote area.

I recommend this Class "A" structure be placed in a Low Hazard
Classification.

Signed: EDWARD A. SAGE
Forest Civil Engineer

Date : March 1980

Hazard Rating For Squane Lake - Wenatchee NF

SUBJECT: Reservoir & Cabin, Icicle Irrigation District, 9/12/68

TO: District Ranger, Leavenworth



REPLY DUE SEPTEMBER 30, 1969

Clause 20 of the above permit states that the permittee shall perform such maintenance on dam as necessary to bring it up to a standard acceptable to the Forest Officer-in-charge. This maintenance shall be completed by September, 1969.

Please advise by the above due date as to the status of the completion of the necessary work.

A. C. WRIGHT
Forest Supervisor

By E. W. GANO

GUpham:zmc

E. W. Gano

since 1.00 / 1

cont. next page

Regional Forester

March 22, 1940

A. C. Wright, Forest Supervisor, By

Special-Use Permits (Reservoir - Icicle Irrigation District)

Attached for your review and approval are an original and two copies of a special-use permit for the Icicle Irrigation District, including an existing dam, diversion tunnel, and maintenance cabin at Square Lake.

The reservoir and associated improvements have been in existence for many years. They were covered by two old permits dated April 13, 1940, and September 5, 1940.

When approved and signed by the permittee the new permit will give us current, complete, and accurate coverage of the reservoir and its related facilities.

Enclosures

OVanderlin;zmc

E. W. GANO

since 1.08 / 1

cont⁴ next pag

UNITED STATES GOVERNMENT

Memorandum

TO : Supervisor's Office, Wenatchee

File No. 2710

FROM : Charles F. Banko, District Ranger

Date: February 26, 1968

SUBJECT: Special Uses

Your reference:

Attached is an application from the Icicle Irrigation District for a special use permit at Square Lake.

1. Cabin
2. Small dam and operating valves
3. Diversion tunnel

This is in response to your memo regarding the Regional Attorney's opinion of their existing occupancy under a State of Washington hydrology permit.

Three (3) plats are being sent under separate cover. Please have them printed. Return the originals plus three (3) copies of each.

Charles F. Banko.

since 1.08 / 1

cont next pag

UNITED STATES GOVERNMENT

Memorandum

P. O. BOX 3623
PORTLAND, OREGON 97208

COPIES

Rt

TO : Forest Supervisor, Wenatchee N. F.

File No. 2720

FROM : Philip L. Heaton, Assistant Regional Forester Date: August 9, 1968
Recreation, bySUBJECT: Special Use Permits (Icicle Irrigation
District, Square Lake Dam
4/13/40, 9/5/40)

Your reference: 3/20, 5/31

Your Multiple Use Survey Report has been reviewed, and it is a satisfactory record of the analysis of resource values involved in this application.

It is agreed that this permit can be granted within the proposed Wilderness because it was an existing use predating the Wilderness Act.

Some maintenance is needed on the dam. This work should be done before the Wilderness classification is completed.

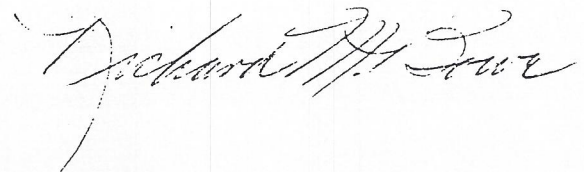
You should determine what disposition will be made of the cabin. We recommend that it be permitted for use until it is no longer serviceable or worth rebuilding. A clause to this effect is needed, and it should carefully reserve the decision for continued use or removal, to the Forest Supervisor.

Copies of the Multiple Use Survey Report were mailed to the Fish and Wildlife Service and the Washington State Department of Game for wildlife coordination. A copy of a reply from the Washington Department of Game is attached.

Your draft of the permit is approved with our marginal notes. You may issue it with the recommended changes. Please send us a copy of the permit as issued to complete the case file in this office.

Enclosure

cc: WS



since 1.08 / 1

cont next pg.

Regional Forester

July 2, 1968

A. C. Wright, Forest Supervisor, By

Your Ref: 6/21/68

Special Use Permits (Reservoir)--Icicle Irrigation District
Multiple Use Survey Reports

There seem to be a few questions remaining about this permit.

First--is the cabin needed? The answer is--not any longer. Its principal use any more is to provide shelter for working, hiking, or riding in the area. The cabin could be removed now or left until such time as it is no longer serviceable and/or safe.

Second--some maintenance is necessary on the dam itself. It is intended this work will be done this field season. The maintenance consists of grouting to check a leak in the dam.

Third--is the proposal likely to be controversial. The answer is no. We do not foresee any problems along this line.

Again, if you have any further questions, or need more information, please let us know.

OVanderlin:zmc

E. W. GANO

since 1.08 / 1

cont next pag

UNITED STATES GOVERNMENT

Memorandum

Department of Agriculture
P. O. Box 3623
Portland, Oregon 97208

TO : Forest Supervisor, Wenatchee National Forest File No. 2720
2140 (2500)

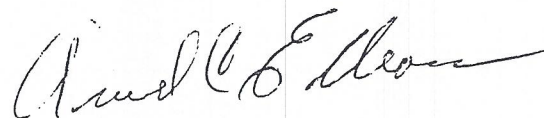
FROM : T. B. Glazebrook, Assistant Regional Forester Date: June 21, 1968
Watershed Management, By

SUBJECT: Special Use Permits (Reservoir)--Icicle
Irrigation District
Multiple Use Survey Reports Your reference:

Several questions have been raised about this case that were not covered by your Multiple Use Survey Reports. They are discussed in the attached correspondence. Would you please consider these points and respond to us at an early date?

Thank you.

Enclosures



since 1.08 / 1

cont next pag

UNITED STATES GOVERNMENT
Memorandum

P. O. Box 3623
 Portland, Oregon 97208

TO : T. B. Glazebrook, Assistant Regional Forester, File No. 2140(2500)
 Watershed Management

FROM : Philip L. Heaton, Assistant Regional Forester, Date: June 20, 1968
 Recreation

SUBJECT: Surveys (Multiple Use Survey Reports - Reser- Your reference: 6/4
 voir - Icicle Irrigation District)

We have reviewed the above multiple use survey report on the Wenatchee National Forest.

This project is within the Alpine Lakes Area which has been proposed for Wilderness, and we are directed to manage it as though it were classified. If this was a new project, we could not approve it. However, it is something that was in existence at the time the Wilderness Act was passed. The proposal is not to change the project itself in any way, but rather to change the permit. So long as the new permit does not authorize anything not already approved in existing permits, we see nothing wrong.

Existing special use permits cover the diversion tunnel and cabin. The only question we have is on the dam and overflow. This is not under special use permit, but is covered by an easement from the State of Washington. Our Regional Attorney has given the opinion that the easement is not valid because the lake is not a navigable body of water. The land involved is entirely National Forest so a special use permit would be the proper document.

Our feeling is that, while the dam was not previously covered by a special use permit, it was covered by an easement which was believed, at the time, to be the proper document. As far as intent was concerned it was approved and, as has been stated, the dam and overflow were in existence when the Wilderness Act was passed.

It is not clear as to whether or not the cabin is needed. If it is not needed, the permit should specify that it be removed now or that it be eliminated when it requires heavy maintenance or reconstruction. With this understanding, we approve the issuance of a new special use permit as recommended.

Philip L. Heaton

since 1.08 / 1

cont next pag

This is a revised special use for a reservoir and related facilities.

The applicant is the Icicle Irrigation District of Cashmere, Washington.

The area involved is within the State of Washington, Chelan County, on the Leavenworth Ranger District of the Wenatchee National Forest.

It is located at the head of the Prospect Creek drainage. This drainage becomes part of the Icicle Creek system.

The specific area in the permit is located in the SE $\frac{1}{4}$ of Section 22, T. 25 N., R. 13 E., W.M. (Squaw Lake)

This special use is for the maintenance and use of an existing dam, diversion tunnel with operating valves, etc., and a small maintenance cabin for irrigation water storage and utilization.

The facilities involved are limited to the minimum necessary to store and control release of the water. They are of native materials and blend well with the area. Attached are photos of the dam, storage area, tunnel entrance, and operating valves.

The area is completely in National Forest ownership. This permit replaces two older permits dated April 13, 1940, and September 5, 1940. These permits covered the diversion tunnel and cabin, respectively. In addition, the irrigation district also has an easement from the State of Washington for a dam and overflow. Our Regional Attorney, however, has given the opinion that this easement is not valid because the lake is not a navigable body of water. Hence, the land involved is entirely National Forest owned and controlled.

The purpose of this permit is to combine the two older permits and cover that area which was in the easement from the State of Washington.

This project is located in an area typical of the high Cascades. The elevation is from 5000' to 6700' with slopes averaging close to 70%. Area above the dam is about 1000 acres. Ground cover is about 50% rock and bare ground and 50% brush and small trees. Because the lake is within a mile of the Cascade crest, flood potential is very low.

Other than water storage, the area receives little use. Access is by trail only, and back-country hikers and riders are about the only visitors.

since 1.08 / 1

cont next pag

12/22/30 17/23/31 16/24/30 15/25/29 14/26/28 13/27/27 12/28/26 11/29/25 10/30/24 9/31/23 8/1/22 7/2/21 6/3/20 5/4/19 4/5/18 3/6/17 2/7/16 1/8/15

2017-FS-R6-01590-F

June 30, 1923.

Mr. A. H. Sylvester, Forest Supervisor,
Wenatchee, Wash.

Uses-Wenatchee Canal & Flume
Icicle Canal Co. 5/6/10

Dear Sir:-

I am in receipt of your favor of the 26th inst. I am asking Mr. Berger to prepare as soon as he can conveniently do so a plat or data concerning the alignment of the Icicle system and furnish you with the same for preparation of application for permit as outlined in your letter.

I have been under the impression that the site of the tunnels was privately owned land, although I will admit that formal right of way has not been secured.

Yours truly,

Hubert R. Rindley
H. R.

17, 1910. It is provided that the Icicle Canal Company should have been issued to over by the Icicle District, the Icicle District should have been advised that a new permit should have been issued to as the permit issued to the Icicle Canal Company contains clause saying that it is not transferable.

The permit to the Icicle Canal Company, moreover specified that it was for the purpose of constructing and a canal and flume, nothing being said about a tunnel, the I do not think the building of a tunnel is a serious infringement of the terms of the permit. However, I believe it be best for the Icicle District to make application for permit issued in its own name which shall permit not only flume and ditch but a tunnel. With making this application should like to receive a plat or other satisfactory information showing the location of the tunnel or tunnels. I will be to prepare and issue a new permit upon receipt of the plat and this information. If the course of the canal or flume been changed from the original location the new permit should cover such change so that information on this point should be furnished. This applies only, of course, to the location canal within the National Forest.

Very sincerely yours,

A. H. Sylvester
Forest Supervisor

SEE BACK FOR INSTRUCTIONS

June 26, 1922

Uses-Went to see
Canal & Flume
Icicle Canal Company.
6/6/10

Are the permits to still use sample 1 and 2

What action is necessary to correct any unsatisfactory conditions

Mr. Hubert Remley, Secretary,
Icicle Canal District,
Dryden, Washington.

REPORT ON CONDITIONS OF SPECIAL USE
Icicle Canal District
Water Transmission 6/20/22

Dear Mr. Remley;

The Special Use permit which authorized the use of National Forest lands for the construction and maintenance of the Icicle ditch was issued to the Icicle Canal Company June 17, 1910. It is probably my fault that when the Icicle Canal Company ceased to operate the Icicle ditch and it was taken over by the Icicle District, the Icicle District should have been advised that a new permit should have been issued to the Icicle Canal Company as the permit issued to the Icicle Canal Company contains a clause saying that it is not transferable.

SEE BACK FOR INSTRUCTIONS

The permit to the Icicle Canal Company, moreover specified that it was for the purpose of constructing and a canal and flume, nothing being said about a tunnel, though I do not think the building of a tunnel is a serious infringement on the terms of the permit. However, I believe it will be best for the Icicle District to make application for a permit issued in its own name which shall permit not only flume and ditch but a tunnel, with making this application should like to receive a plat or other satisfactory information showing the location of the tunnel or tunnels. I will be to prepare and issue a new permit upon receipt of the application and this information. If the course of the canal or flume has been changed from the original location the new permit should cover such change so that information on this point should be furnished. This applies only, of course, to the location of canal within the National Forest.

Very sincerely yours,

Forest

Dr.

SEE BACK FOR INSTRUCTIONS

16-60015-1

(PREPARE IN TRIPLICATE - 1 EACH FOR BUREAU, DISTRICT, AND REGIONAL OFFICE)
(REQUIRED ONLY FOR ALL PROJECTS ON OR PARTLY ON NATIONAL FOREST LANDS--
SUBMIT REVISION AFTER ANY MAJOR CHANGE IN PROJECT WORKS)

GENERAL INFORMATION

NAME OF PROJECT: Square Lake FOREST: Wenatchee
OWNER: Icicle Irrigation District DISTRICT: Leavenworth
AUTHORITY: Division of Hydraulics STREAM: Prospect Creek
PRIMARY PURPOSE: Reservoir Control YEAR CONSTRUCTED: 1939
(If Power Give HP Capacity)

LOCATION: Section 22; Township 25N; Range 13E; Meridian Willamette
DRAINAGE AREA: Total 1.3 Sq. Mi.; National Forest 1.3 Sq. Mi.
FULL POOL AREA: Total 74 Acres; National Forest 74 Acres
PERCENT OF DAM ON N.F. (OR L.U.) LAND: 100; GROSS STORAGE CAPACITY 1850 Ac. Ft.
ADMINISTRATIVE CLASSIFICATION, (FSM 5670.21); A X B (B) C
HAZARD CLASSIFICATION, (FSM 5670.22); High Moderate X Low (LOW)

DAM STRUCTURE DATA

LENGTH: 370¹⁰⁰ Feet; TOP WIDTH: 10³ Feet; HEIGHT: 72¹⁰ Feet
SIDE SLOPE: UPSTREAM 1/2 : 1; DOWNSTREAM 1/2 : 1
MATERIAL: Earth X Masonry grav. Concrete Wood Other
CORE WALL: Clay Masonry Concrete Metal None X

OUTLET DATA

TYPE: Tunnel; SIZE: 5' x 7'; CAPACITY: 310 cfs
TYPE OF OUTLET CONTROL Gate

EMERGENCY SPILLWAY DATA

DESIGN DISCHARGE: None cfs.; cfs/sq.mi.
WIDTH (AT CREST): BOTTOM Ft. In.; TOP Ft. In.
DEPTH OF DESIGN FLOW IN SPILLWAY: Ft., In.; FREEBOARD: Ft. In.
MATERIAL: Concrete Wood Rock Masonry Earth Gravel Other
DATA COLLECTED BY: Ed Sage High. Engr. August 3, 1959
(Name) (Title) (Date)

FSM
1500.1
7500.2

Please advise us as to the status of the Memorandum of Understanding with the Bureau of Sport Fisheries and Wildlife. We have enclosed a copy of your July 21, 1971, letter and extra copy of the agreement.

UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

Wenatchee National Forest
Supervisor's Office

REPLY TO: 5540 - Land Transfers

April 14, 1972

SUBJECT: Memorandum of Understanding, Bureau of Fisheries
and Wildlife

TO: Regional Forester



Please advise us as to the status of the Memorandum of Understanding with the Bureau of Sport Fisheries and Wildlife. We have enclosed a copy of your July 27, 1971, letter and extra copy of the agreement.

A. C. WRIGHT
Forest Supervisor

By E. W. GANO

Enclosures

cc:
District Ranger, Leavenworth

ZChappelle:zmc

ge F

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICEWenatchee National Forest
P.O. Box 811, Wenatchee, Washington

REPLY TO: 5540 Land Transfers

January 4, 1972

SUBJECT: Memorandum of Understanding, Bureau of Fisheries and
Wildlife

TO: Regional Forester



We would like to explore other means of obtaining a necessary document to permit the Forest Service to manage the trails and the portions of the lake shore that are heavily used by the public on the Bureau's land. Hopefully we could obtain a cooperative agreement or memorandum of understanding such as many other governmental agencies use that occupy National Forest land. Reference is made to the memorandums of understanding and coop agreements between Bonneville Power Administration and the Forest Service that permits the B.P.A. to construct facilities on National Forest land.

As a last resort we may have to consider an easement on those lands that require expenditure of National Forest funds to accommodate the public on trails and associated use areas. We hope this last method is not a necessity. Any advice and counsel would be appreciated.

A. C. WRIGHT
Forest Supervisor

E. W. GANO

By

cc: D.R., Leavenworth w/attachments

PBInt-Hout:rs

To: Wenatchee

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
REGION 6
P. O. Box 3623, PORTLAND, OREGON 97208

2017 PS-R6-01590-1
DEC 22 1971
COPIES
R&U...
WS...
B&F...
Res...
AS...
P.M....
I&E...
Rgr

REPLY TO: 5540 Land Transfers

August 27, 1971

SUBJECT: Memorandum of Understanding, Bureau of Fisheries
and Wildlife



JB
KS
RAM
TO: Lands

We have reviewed the proposed Memorandum of Understanding between the Bureau of Sport Fisheries and Wildlife and the United States Forest Service transmitted with your memorandum of July 21.

We cannot agree to the conditions proposed. We have no authority to spend monies appropriated to the Forest Service for the care, protection and development of land under the jurisdiction of another Federal agency. Presumably the Bureau of Sport Fisheries and Wildlife is funded for the necessary care and protection of lands in their custody.

A similar arrangement which we have been advised exists in Region 1 has been reviewed with their Fiscal Agent. The agreement in Region 1 was never referred to the Division of Fiscal Control for review and they were unaware of its existence. However, they advised that the agreement is improper and would not have been approved if submitted for review. They are presently taking the necessary action to close out any improper arrangements.

Unless the Bureau of Sport Fisheries is able to transfer the land to the Forest Service, there is nothing we can do toward using appropriated funds for development of any improvements or care and maintenance of their land. If we have a trail or road crossing the land and have obtained the necessary easement or right-of-way, it will be satisfactory to continue operation and maintenance of existing facilities or to construct new facilities.

If we can be of any further assistance, please let us know.

Omer E. Riehl

OMER E. RIEHL
Acting Regional Fiscal Agent

cc: Wenatchee w/replies to 7/21 memo
Chief (for info.)
(R-6 L&M, 12/20/71, ks)

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

REGION 6
P. O. BOX 3623, PORTLAND, OREGON 97208

REPLY TO: 5540 Land Transfers

July 27, 1971

SUBJECT: Memorandum of Understanding, Bureau of Sport Fisheries and
Wildlife

TO: Lands and Minerals



SB-8
LW
RD
W
The May 14, 1971 proposed Memorandum of Understanding between the
Bureau of Sport Fisheries and Wildlife and the Forest Service,
which will permit the Forest Service to manage certain parcels
of land, meets the needs of fish and wildlife. It has our
approval.

for *Ken Murphy*
WILLIAM E. PINT
Acting Assistant Regional Forester
Range and Wildlife Management

Enclosure

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
REGION 6
P. O. Box 3623, PORTLAND, OREGON 97208

REPLY TO: 5540 Land Transfers

July 26, 1971


AB
KS SUBJECT: Memorandum of Understanding, Bureau of
Fisheries and Wildlife

TO: Division of Lands and Minerals



We have reviewed the proposed Memorandum of Understanding with the Bureau of Sport Fisheries and Wildlife and concur that it will do the job.

You may wish to consider preparing the agreement for signature by the Regional Forester although this may depend upon how closely the Forest Supervisor has worked with the Bureau (FSH 2741.12).


ROBERT E. CAREY
Assistant Regional Forester
Operation

Enclosure

Wenatchee N. F.
P. O. Box 811, Wenatchee, Washington 98801

5540 Land Transfers
(2150)

February 20, 1973

Bureau of Sport Fisheries and Wildlife

Forest Supervisor
Snoqualmie National Forest
Attention: Dick Buscher

As you are aware, there are 657.33 acres in and around Snow Lakes in your wilderness proposals belonging to the Bureau of Sport Fisheries and Wildlife.

We tried four years ago to have this land transferred to the Forest Service. We were informed that this was impossible, in that the Bureau acquired these lands, "to carry out the National Bird Management Program." Note correspondence attached.

They may be hampered by regulations on transferring these lands, but there should be nothing to prevent the same Act of Congress that establishes the Wilderness, also, to transfer these lands to the National Forest.

We believe that it would be advisable to propose this transfer. We would then be legal in whatever administrative use that would be required.

A. C. WRIGHT
Forest Supervisor

P. B. Int-Hood

By

Enclosure

cc: Jack Wright

JCFeigal:jd

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Region 6

P.O. Box 3623, Portland, Oregon 97208

WENATCHEE N. F. RECD
2017-FS-R6-01690-Res.
NOV 16 1972
B&F...
Res...
P.M...
I&E...
Rgr...
COPIES
R&U...
WS....

REPLY TO: 5540 Land Transfer
(2740)

November 13, 1972

SUBJECT: Memorandum of Understanding, Bureau of Sports Fisheries
and Wildlife

TO: Forest Supervisor, Wenatchee



Reference is made to the past correspondence on the proposed transfer of certain Bureau of Sports Fisheries and Wildlife lands to the Forest Service.

We have again gone the complete gamut of possibilities to resolve this problem with Fiscal Control and the Regional Attorney's Office. We find no relief.

We therefore suggest you obtain rights-of-way for the trails in the area built on the Sports Fisheries' lands as well as a right-of-way for a strip of land 200 ft. deep and a half-mile long or whatever length you need on the shore of Snow Lake for public use of the lake.

We have discussed this with the Bureau of Sports Fisheries and they say their representative in charge of the hatchery can grant you such an easement.

J. H. Brillhart

J. H. BRILLHART
Branch Chief, Land Adjustments
L&M

*SUGGEST WE PLAY
IT INTO THE WILDERNESS
ACT FOR TRANSFER TO
THE FOREST SERVICE.*



United States
Department of
Agriculture

Forest
Service

LEAVENWORTH R.D.

2017-FS-R6-01590-F

OCT 2 '81

Supr	✓	Dep	✓
LMP		Eng	
AC		Lds	
Fin		Min	
Fit		LA	
ISE		RWS	
IP		Soil	
Per		WS	
Rec			
Tbr		DR	
		TC	
		Rpt	

Reply to: 5400 - Landownership

Date: September 30, 1981

Subject: USDI - Fish and Wildlife Service Lands (Snow and Nada Lakes)

To: Forest Supervisor, Wenatchee N.F.

I recently met with Ralph Malsam, Manager of the Leavenworth National Fish Hatchery. One of the discussion topics was the management of FWS lands surrounding Snow and Nada Lakes. My desire is to see those lands transferred to the National Forest for continuity of administration, site rehabilitation and enforcement of regulations. To my surprise, Ralph thought the lands were already under N.F. jurisdiction. His position is that the FWS neither wants to administer them nor are they able to do it.

The lands and waters are located in Sections 9, 17, 18, 19, and 20, T.23N., R.17E., and total about 700 acres more or less. Mr. Malsam vaguely remembers some type of past written agreement on administration of the area, as did Orville Vanderlin. Apparently it had been searched for, about fifteen years ago, but was not found in files of the District, S.O. or R.O.

The only concern of the FWS is that they be able to retain flexibility to draw down the lakes if necessary during low water years. Mr. Malsam indicated he would look again for a copy of any existing agreement and I indicated we would do the same. If nothing can be found (and we cannot find one here), I suggest we start a proposal back through the proper procedure. This is consistent with the Alpine Lakes Act which states in Section 4 (a):

"Notwithstanding any other provision of law, any Federal property located within the management unit may, with the concurrence of the agency having custody thereof, be transferred without consideration to the administrative jurisdiction of the Secretary for use by him in carrying out the purposes of this Act."

Now that this matter has been reopened, we would like to pursue it. A similar case I am familiar with in Missoula resulted in an Executive Order being issued transferring jurisdiction from the Dept. of Defense to the Dept. of Agriculture.

Please check the records again for any existing agreements and advise us as to what the next steps should be to affect the transfer.

Stephen L. Morton

STEPHEN L. MORTON
District Ranger



Wenatchee
National
Forest

2017-FS-R6-01590-F
301 Yakima Street
P.O. Box 811
Wenatchee, WA 98801

5540 Land Transfers

October 9, 1981

USDI - Fish and Wildlife Service Lands within Alpine Lakes
Wilderness (Snow and Nada Lakes)

District Ranger, Leavenworth RD

This letter is in response to your proposal of September 30. I concur with your proposal to transfer the Fish and Wildlife Service lands to the National Forest Service.

The first step should be a letter from the F&WS documenting their willingness to make the transfer. You can probably do this best working through Ralph Malsom.

A land transfer report as outlined in FSM 5541.22 (Amend. #5, 3/73) will be needed. We can rough this out in this office and coordinate it with both you and the Regional Office.

We will also need to know what method the F&WS used to acquire the land. There may have been management constraints in the title. If so, we need to know what they are. Again, you can best initiate this through Ralph.

We have made a search of our records for a copy of the 1968 memorandum of understanding. No copy was found. We made a similar search in 1979 with the same results. At that time, we also consulted with the Regional Office and the USF&WS offices in Portland and Seattle. No signed copy of the memorandum of understanding was found. (A copy of a 1979 note from Kelly Huff, Land Status Specialist in the R.O., is enclosed.)

If a memorandum of understanding is needed, I suggest we make a final check with the Region and the F&WS. If we do not turn up a copy, a new memorandum of understanding would seem to be in order.

Please let me have your thoughts on how you wish to proceed.

DONALD H. SMITH
Forest Supervisor

Enclosure *BS*

SUPR	PER
LMP	ENG
AO	FOLD
AS	L&S
Fisc	DR
FR	LA
I&E	W&S
IP	DR
Per	DR
Rec	
Tbr	DR
	IC
	DR

Vanderlin jclbg

TO

WENATCHEE NF
Orv Vanderlin

1

May 7 1979
2017-FS-R6-01590-F

FROM

RO - Lands and Minerals

SUBJECT

5540 Transfers
Memorandum of Understanding
Bureau of Fisheries and Wildlife
(Snow Lakes)

MESSAGE (WRITE CONCISE MESSAGE. SIGN AND FORWARD PARTS 1 AND 2 TO ADDRESSEE. RETAIN PART 3)

This is to confirm our telephone conversation on this date. I have been unable to locate a signed copy of the proposed memorandum of understanding (see above).

I have searched the 2740 files in this office as well as talked to Walt Bennett about this file.

As a further search, I have contacted RO Fish and Wildlife, Watershed Management, and Range Management (since Range and Wildlife were once one unit). In addition, I called the U. S. Fish and Wildlife office in Portland. They do not have a signed copy. They contacted their field office and were unable to locate a signed copy.

If you have any further suggestions of people I might be able to contact I will be glad to make further search, but am at a complete loss now.

SIGNATURE

Kelly Shuff

REPLY (USE THIS SPACE FOR REPLY. SIGN AND DATE, RETURN PART 2 TO SENDER. RETAIN PART 1)

WENATCHEE NF

MAY 10 '79

SUPR	DR
DEP	TCD
P & AO	
AO	ENG
	FIRE
PS <i>21K</i>	LD 2 M'N
CONT	V'S
FISC	WS
I & E	R & WL
PER	REC
PROG	TBR
	SOILS
LU PLN	
TBR INV	

SIGNATURE

DATE

SPOKANE DISTRICT - WENATCHEE RA
CHELAN COUNTY

STATUS OF PUBLIC DOMAIN
LAND AND MINERAL TITLES
AND ACQUIRED LANDS

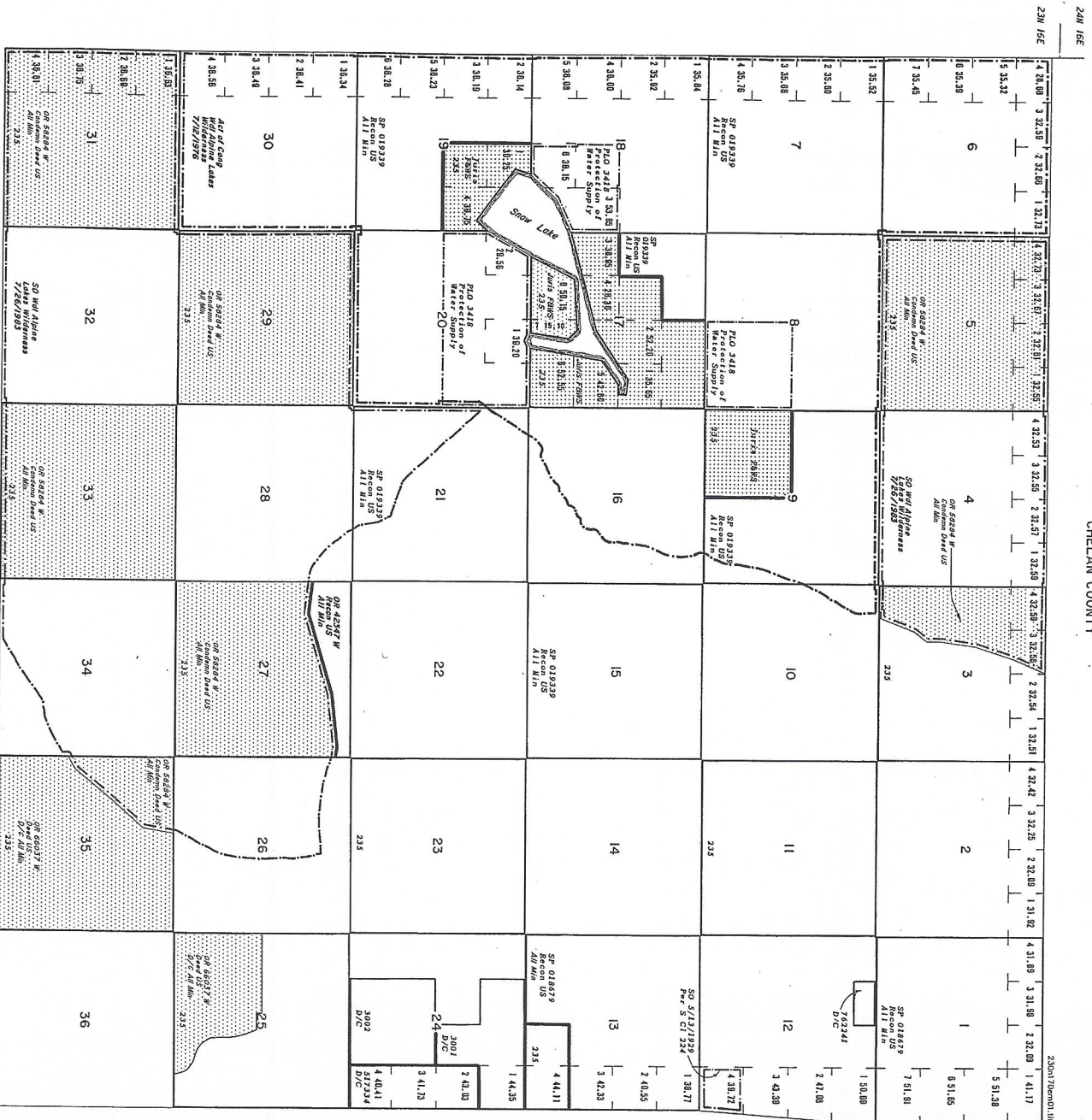
MT PLAT

[illegible]

FOR ORDERS AFFECTING DISPOSAL OR USE OF
UNIDENTIFIED LANDS WITHDRAWN FOR CLASSIFICATION
MINERAL, WATER AND/OR OTHER PUBLIC PURPOSES,
REFER TO INDEX OF MISCELLANEOUS DOCUMENTS.

Refer to HI for PL 167, R/W, Esmt, 44LD513, on all lands, see MTP and HI for US rights on private land

All Tr included in Wdl Wenatchee NF



WARNING STATEMENT

FILE REF:	2300Z00010	ACAO Map2000/STX	Revised 6.0
COMMENT #REF:	04/27/2000	BY: N. GORD	
LAST UPDATE:	08/06/2009	BY: D. LEAVENWORTH	
POSTED TO PUBLIC RECORDS:	03/08/2009		
SURVEYED TOWNSHIP			
SURVEYED ORIGINAL SOURCE:			
GCED NAD 83 CURRENT TO:			N/A
IMAGE SOURCE:			
PRODUCTIVE ELEVATION:			N/A
SOURCE FOR METERS & BOUNDS:			N/A
NOTES:			

T. 23 N.
R. 17 E.

FOREST SERVICE

REGION 5

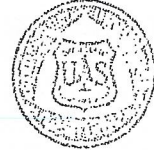
P. O. Box 5422, Portland, Oregon 97208

REPLY TO: 5540 Land Transfers

July 21, 1971

SUBJECT: Memorandum of Understanding, Bureau of Fisheries
and Wildlife

TO: Operation, Fiscal Control, and Range & Wildlife



Since 1969 the Wenatchee National Forest has been working with the Bureau of Sports Fisheries & Wildlife on the possibility of transfer of certain BFEW lands to the jurisdiction of the Forest Service (see copy of Banko's memo - 7/1/69).

It has been determined by the Regional Attorney that the Fish & Wildlife Coordination Act of March 10, 1934, can not be used to transfer such lands to the Forest Service. As an alternative, it has been determined a Memorandum of Understanding could be used which would permit the Forest Service to manage the Bureau's land under the "multiple-use concept including recreation use and development."

Such a Memorandum has been drawn up by the Wenatchee National Forest. A copy is attached for your review and comments.

If this Memorandum of Understanding meets with your approval, we will initiate action to have it signed by the Regional Director and Regional Forester. Please return the attached copy of the Memorandum with your reply.

LOYD H. WARNER

J. H. BRILLHART

Branch Chief, Land Adjustments
Lands and Minerals

Enclosure

cc: Wenatchee

JHBrillhart:pah

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

REGION 6
P. O. Box 3623, PORTLAND, OREGON 97208

2017-AS-RE-01595-CP

ADVISORY

A.O.

Eng.

Rec.

Tr.

JUL 22 1971

COPIES

R&U.

WS.

B&F.

Res.

AS.

P.M.

I&E.

Ref.

2140
REPLY TO: 5540 Land Transfers

July 21, 1971

SUBJECT: Memorandum of Understanding, Bureau of Fisheries
and Wildlife

TO: Operation, Fiscal Control, and Range & Wildlife

Since 1969 the Wenatchee National Forest has been working with the Bureau of Sports Fisheries & Wildlife on the possibility of transfer of certain BF&W lands to the jurisdiction of the Forest Service (see copy of Banko's memo - 7/1/69).

It has been determined by the Regional Attorney that the Fish & Wildlife Coordination Act of March 10, 1934, can not be used to transfer such lands to the Forest Service. As an alternative, it has been determined a Memorandum of Understanding could be used which would permit the Forest Service to manage the Bureau's land under the "multiple-use concept including recreation use and development."

Such a Memorandum has been drawn up by the Wenatchee National Forest. A copy is attached for your review and comments.

If this Memorandum of Understanding meets with your approval, we will initiate action to have it signed by the Regional Director and Regional Forester. Please return the attached copy of the Memorandum with your reply.

LLOYD H. WARNER

For J. H. BRILLHART
Branch Chief, Land Adjustments
Lands and Minerals

Enclosure

✓ cc: Wenatchee



ce how
1-26-71
Jef

MEMORANDUM OF UNDERSTANDING

between

BUREAU OF SPORT FISHERIES AND WILDLIFE

AND

UNITED STATES FOREST SERVICE

THIS AGREEMENT, made and entered into this _____ day of _____, 1971, between the Bureau of Sport Fisheries and Wildlife, Department of the Interior, hereinafter referred to as the Bureau, and the Forest Service, United States Department of Agriculture, hereinafter referred to as the Service,

WITNESSETH that,

WHEREAS THE BUREAU has sole jurisdiction and control of the following described land:

T. 23 N., R. 17 E., Willamette Meridian

Section 9, SW $\frac{1}{4}$

Section 17, Government Lots 1, 2, 3, 4, 5, 6, 7 and 8,
N $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$

Section 19, Government Lots 1 and 4, SE $\frac{1}{4}$ NE $\frac{1}{4}$

WHEREAS THE SERVICE is desirous of obtaining use of the subject tract;

NOW, THEREFORE, it is mutually understood and agreed by and between the parties hereto that the Bureau's prime interest in the tract is for watershed, water quality control and carry out the National Bird Management Program.

That the Service will be permitted to manage the land under the multiple use concept including recreational use and development.

In consideration of the use privileges contained herein the Service agrees to the following terms and conditions:

1. All use and development will be consistent with the Bureau's use and objectives and subject to the Bureau's concurrence.
2. Water use requirements of the Service will be subject to the Bureau's approval.
3. Care and protection of the land surface from all causes will be the responsibility of the Service.

JMD
5/14/71

Page 1 of 2

4. Neither party shall assume herein any obligation without legal authority. Nothing contained herein shall require either agency to expend funds in excess of appropriations.

5. No cutting or clearing will be done without written approval of the Bureau.

6. This Memorandum of Understanding may be amended at any time by mutual consent and can be terminated in 90 days upon delivery of a written notice of intent to terminate.

IN WITNESS WHEREOF the Bureau and the Service have through their respective officials hereinafter affixed their signatures.

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF SPORT FISHERIES AND WILDLIFE

Date: _____

By _____
Regional Director

UNITED STATES DEPARTMENT OF AGRICULTURE

WENATCHEE NATIONAL FOREST

Date: _____

By _____
Forest Supervisor

APPENDIX G

**Changing Streamflow in Icicle,
Peshastin, and Mission Creeks**

and

**Flow Charts of Instream Flow
Benefit per Alternative Based on
Climate Change Modeling**

Changing Streamflow in Icicle, Peshastin, and Mission Creeks



Eightmile Lake, Chelan County, Washington

Prepared by

Guillaume Mauger, UW Climate Impacts Group
Se-Yeun Lee, UW Climate Impacts Group
Jason Won, UW Climate Impacts Group

May 12th, 2017



Contents

1	Purpose of this project	4
2	Streamflow Change Datasets	6
2.1	Greenhouse gas scenarios	6
2.2	Global Climate Models	7
2.3	Downscaling	8
2.4	Hydrologic model	8
2.5	Time Periods	9
2.6	Datasets	9
2.6.1	MACA	9
2.6.2	bcMACA	9
2.6.3	WSU	10
2.6.4	HB2860	10
2.6.5	bcWRF	10
2.6.6	Summary of Datasets	11
3	Approach	12
3.1	Streamflow sites	12
3.2	Streamflow	13
3.3	Extremes statistics	13
4	Results	15
4.1	Comparison with Observations	15
4.1.1	Streamflow Observations	15
4.2	Projections	17
4.3	Average projections for Icicle Creek	22
5	Interpreting the Results	23
5.1	None of the models were calibrated	23
5.2	The hydrologic simulations assume no change in land cover	23
5.3	“Average of the averages” is just one approach	23
5.4	Can I trust these projections?	24
6	Project Outputs	26
6.1	Data Archive	26
6.2	Tableau Tool	26
	References	28

Recommended citation format: Mauger, G.S., Lee, S.-Y., Won, J.S. (2017). *Changing Streamflow in Icicle, Peshastin, and Mission Creeks*. Report prepared for Chelan County. Climate Impacts Group, University of Washington, Seattle.

Funding: This project was funded by Chelan County's Department of Natural Resources.

Cover photo source: <http://blog.theclymb.com/passions/places-and-adventure-travel/6-great-hikes-to-alpine-lakes-in-the-pacific-northwest/>

1 Purpose of this project

As part of the Icicle Work Group (IWG), a diverse set of stakeholders have been working to identify collaborative solutions to water management in Icicle Creek. Water management decisions that are made today will have implications for decades to come. Given the large changes in climate and hydrology anticipated in the coming decades, such plans will need to account for the effects of climate change if they are going to be robust.

The purpose of this project is to leverage existing hydrologic change datasets to estimate future changes in streamflow in Icicle, Peshastin, and Mission Creeks as well as seven regulated alpine lakes (Figure 1). These will be used to evaluate proposed alternatives for managing water in Icicle Creek.

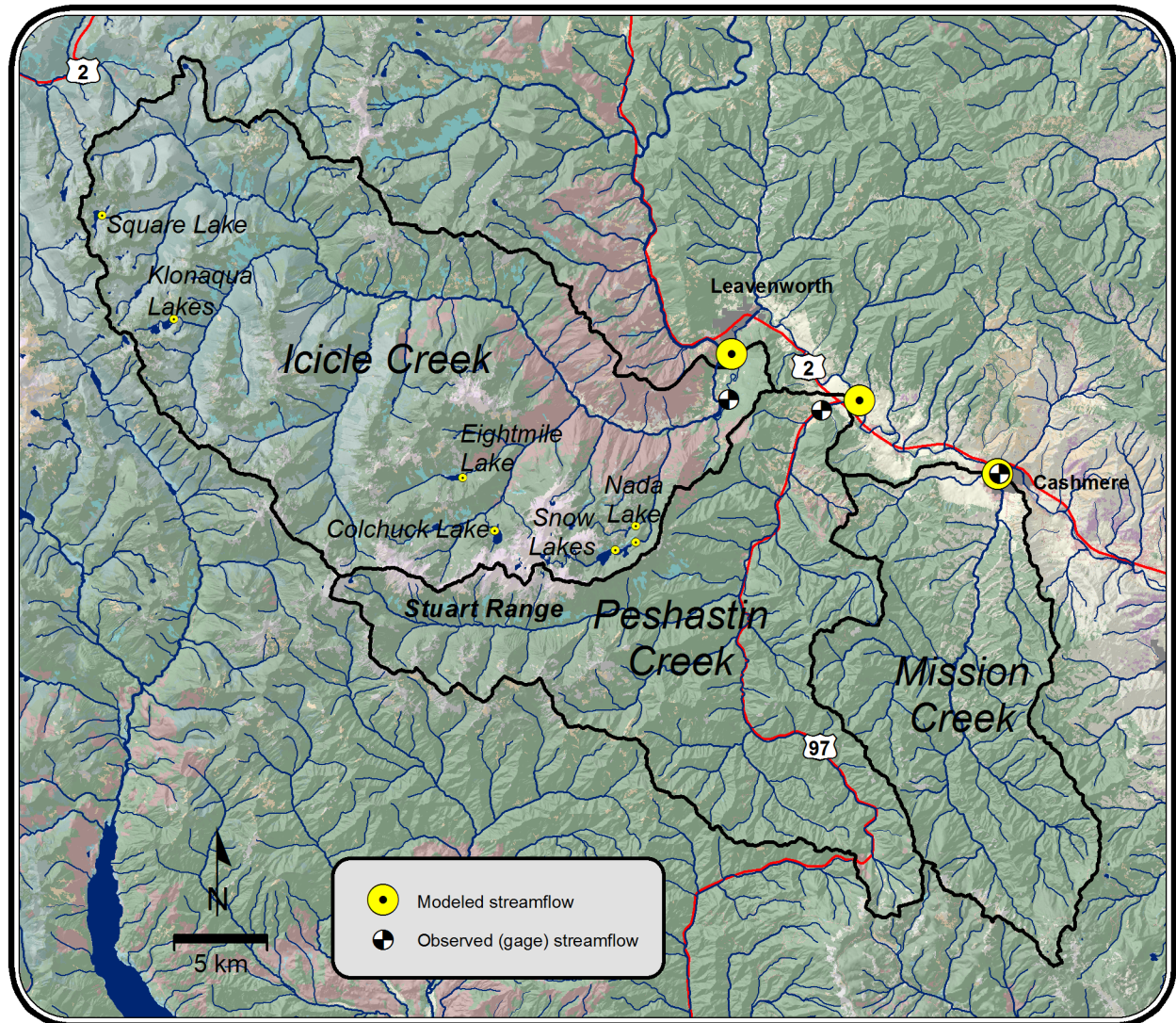


Figure 1. Map of the study locations, including the three watersheds – Icicle, Peshastin, and Mission Creeks, along with the locations of the seven Alpine lakes for which flows are regulated in summer.

2 Streamflow Change Datasets

Hydrologic projections are derived by transforming coarse-scale global climate model results, via downscaling, to fine-scale climate projections, which are then used to drive a hydrologic model (Figure 2; More information on climate scenarios can be found in Chapter 3 of Snover et al. 2013).

The datasets used in this project differ at each of the first three steps in Figure 2: they are based on different greenhouse gas scenarios, different global climate models, and different downscaling approaches. The hydrologic model is the same throughout, although slightly different versions of the model were used for each dataset.

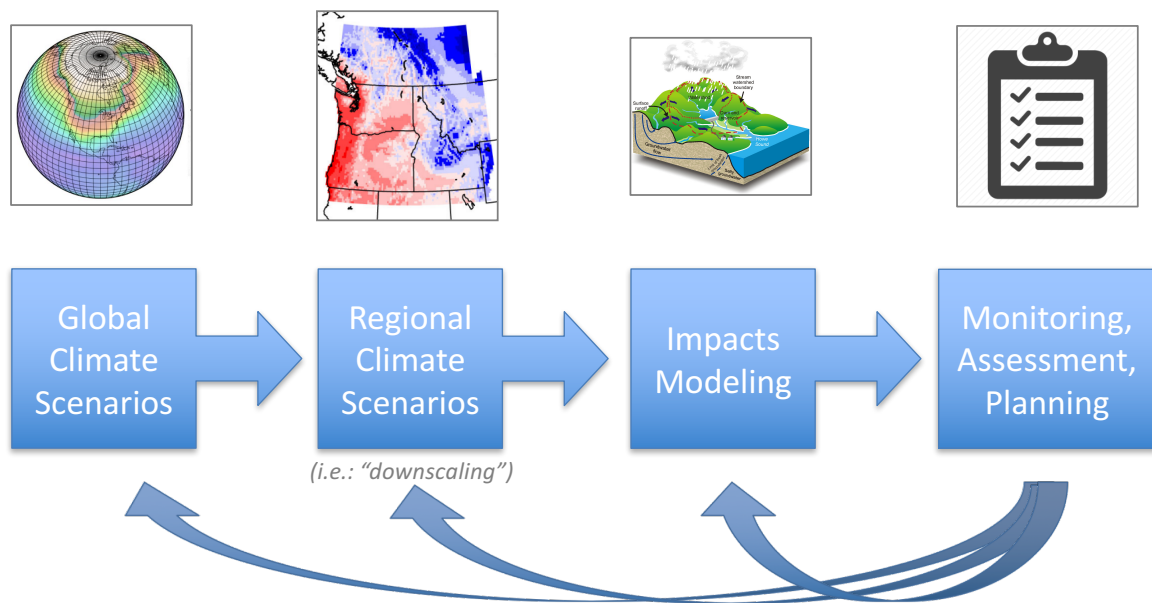


Figure 2. Modeling chain from global climate scenarios to impacts. This section describes the first three steps in the chain.

2.1 Greenhouse gas scenarios

Greenhouse gas scenarios are plausible scenarios of future greenhouse gas emissions that are used to drive global climate models. High scenarios assume continued increases in greenhouse gas emissions throughout the century, with concentrations more than quadrupling by 2100, relative to pre-industrial conditions. Low scenarios assume that multiple factors conspire to

reduce the rate of emissions over time, ultimately resulting in about a doubling of greenhouse gas concentrations by 2100. Differences among greenhouse scenarios do not have a big effect on climate projections until after 2050.

The newest set of scenarios was developed for use in the latest Intergovernmental Panel on Climate Change report (IPCC, 2013). These are called Representative Concentration Pathways (RCPs, Van Vuuren et al. 2011). Scenarios used in the current study include both a low and a high greenhouse gas scenario (RCPs 4.5 and 8.5, respectively; Table 1). An older set of scenarios, used in the previous IPCC report, stem from the Special Report on Emissions Scenarios (SRES, Nakicenovic et al. 2000). Two of the datasets in this study are based on the SRES A1B scenario, a moderate greenhouse gas scenario in which emissions stabilize towards the end of the century.

Table 1. Greenhouse gas scenarios used in this report.

<i>Scenario</i>	<i>Scenario characteristics</i>	<i>Description</i>	<i>Citation</i>
<i>RCP 4.5</i>	A low scenario in which greenhouse gas emissions stabilize by mid-century and fall sharply thereafter.	“Low”	<i>Van Vuuren et al. 2011</i>
<i>A1B</i>	A medium scenario in which greenhouse gas emissions increase gradually until stabilizing in the final decades of the 21 st century	“Moderate”	<i>Nakicenovic et al. 2000</i>
<i>RCP 8.5</i>	A high scenario that assumes continued increases in greenhouse gas emissions until the end of the 21 st century	“High”	<i>Van Vuuren et al. 2011</i>

2.2 Global Climate Models

Greenhouse gas scenarios are used to drive global climate models, or GCMs, which simulate processes in the atmosphere, ocean, and land surface, along with the interactions between each. Coordinated experiments are regularly conducted in which international modeling groups agree to produce climate simulations using the same sets of conditions. This allows for intercomparisons among models and more robust estimates of future changes in climate. These experiments are called Climate Modeling Intercomparison Projects (CMIP).

The datasets used in this study stem from two CMIP generations: Phase 3 (CMIP3, Meehl et al. 2007) and Phase 5 (CMIP5, Taylor et al. 2012). The CMIP3 experiments use the older SRES greenhouse gas scenarios (in our case, the moderate A1B scenario), while the CMIP5 experiments make use of the newer RCPs (for this study, RCPs 4.5 and 8.5). Although the models in the more recent CMIP5 dataset include new features and improvements, they show the

same sensitivity to greenhouse gas emissions as the older CMIP3 projections (i.e., they model the same amount of warming per unit of emissions).

2.3 Downscaling

Since GCMs are coarse in spatial scale, these must often be “downscaled” in order to produce climate projections at a scale that is compatible with the impacts that are to be assessed (labeled “regional climate scenarios” in Figure 2). All of the datasets used in this study were downscaled to a spatial resolution of 0.0625-degree (about 2.9 x 4.3 mi, or 12.6 sq. mi.).

Downscaling approaches generally fall into two categories: statistical downscaling and dynamical downscaling. Statistical approaches use empirical relationships derived by relating surface observations to coarse-scale global climate model fields. Dynamical approaches use a physical model that simulates the climate and weather processes occurring at the finer scales. Table 2 lists the three downscaling approaches used in this project.

Table 2. Downscaling methods used in this study.

ID	Name	Type	Citation
MACA	Multivariate Adaptive Constructed Analogs	Statistical	Abatzoglou and Brown 2012
BCSD	Bias Correction and Spatial Disaggregation	Statistical	Wood et al. 2004
WRF	Weather Research and Forecasting Mesoscale Climate Model	Dynamical	Skamarock et al. 2008, Salathé et al. 2010

Downscaling methods typically require an observationally-based historical dataset: either as a basis for the statistical downscaling or for applying corrections to the dynamically downscaled projections. All of the datasets used in this study are based on either the Livneh et al. (2013) or Hamlet et al. (2013) estimates of daily gridded meteorological fields.

2.4 Hydrologic model

A hydrologic model is used to translate from downscaled climate projections to changes in hydrology: snowpack, soil saturation, runoff, baseflow, etc. All of the datasets in this study were developed using the Variable Infiltration Capacity (VIC) macroscale hydrologic model (<http://vic.readthedocs.io>, Liang et al. 1994). VIC is a distributed model, providing gridded estimates of surface and sub-surface flows (runoff and baseflow, respectively), which can then be processed to estimate streamflow at select locations (see Section 3.2, below). Although there are differences in the model version and parameters used in each implementation, the datasets used in this study are all similar in terms of the VIC model configuration.

2.5 Time Periods

Flow projections were assessed for three future time periods: the 2030s (2020-2049), 2050s (2040-2069), and 2080s (2070-2099). However, not all datasets extended through 2099. In those cases, summaries were only created for the future time periods for which data exist. Future changes were assessed relative to 1970-1999, with the exception of the WSU dataset, as described below.

2.6 Datasets

2.6.1 MACA

A set of hydrologic projections that were developed as part of the Integrated Scenarios of the Future Northwest Environment project (Mote et al. 2014). Climate projections stem from the statistically downscaled MACA approach, and are based on the latest global climate model projections (CMIP5, Taylor et al. 2012). The MACA downscaling is applied to the top 10 GCMs based on the ranking of Rupp et al. (2013), each for both a low and a high greenhouse gas scenario (RCPs 4.5 and 8.5, respectively), for a total of 20 future climate scenarios. The projections extend from 1950-2099. Hydrologic simulations were made using VIC version 4.1.2.

Citation: Mote et al. 2014

URL: <http://climate.nkn.uidaho.edu/IntegratedScenarios>
<http://maca.northwestknowledge.net>

2.6.2 bcMACA

A modified version of the MACA dataset in which average monthly temperature and precipitation was adjusted (or bias-corrected, hence *bcMACA*) to match the estimates derived from the observationally-based Parameter-Elevation Regressions on Independent Slopes dataset (PRISM, version AN81M monthly, Daly et al. 2008). Over the U.S. the monthly time series was used to apply the adjustments, while over Canada the long-term average for each month was adjusted to match the long-term average from PRISM.

Projections are based on the same models and scenarios as MACA. Hydrologic simulations were made using VIC version 4.1.2.

Citation: Mauger et al. 2016

URL: <https://cig.uw.edu/datasets/hydrology-in-the-chehalis-basin/>
<http://cses.washington.edu/rocinante/MACA/bc/>

2.6.3 WSU

A new set of hydrologic projections developed for the 2016 Columbia River Basin Long-term Water Supply and Demand Forecast (Hall et al. 2016). Hydrologic model simulations are driven by the same MACA projections described in Section 2.6.1 above, except that only five of the 10 GCMs were used, each again for both a low and a high greenhouse gas scenario, adding up to a total of 10 future scenarios. Hydrologic simulations are performed using VIC-CropSyst v2.0 and run for two 31-year time periods: 1981-2011 and 2020-2050. This means that future changes are only available for the 2030s, and that changes for this time period are assessed relative to 1981-2010 instead of 1970-1999 as with each of the other datasets.

Citation: Hall et al. 2016

URL: <http://www.ecy.wa.gov/programs/wr/cwp/2016Forecast.html>

2.6.4 HB2860

A previous set of projections, developed with funding from Washington State House Bill #2860 (HB2860, Hamlet et al. 2013). Climate projections stem from the statistically downscaled BCSD approach, and are based on the previous set of global climate model projections (CMIP3, Meehl et al. 2007). The BCSD downscaling was applied to seven GCMs based on the ranking of Mote and Salathé (2010). In this project we analyzed results for a moderate greenhouse gas scenario (A1B). The projections extend from 1950-2099. Hydrologic simulations were made using VIC version 4.0.7.

Citation: Hamlet et al. 2013

URL: <http://warm.atmos.washington.edu/2860/>

2.6.5 bcWRF

Regional Climate Model simulations using the WRF model (Skamarock et al. 2008, Salathé et al. 2010). Projections stem from two GCMs selected from the previous set of global climate model projections (CMIP3, Meehl et al. 2007), both for a moderate greenhouse gas scenario (A1B). Daily temperature and precipitation from the WRF model were bilinearly interpolated to the 0.0625-degree grid, and bias-corrected (hence *bcWRF*, see Mauger et al. 2016) to match the daily statistics from Livneh et al. 2013 and the long-term monthly averages from PRISM (Daly et al. 2008). The projections extend from 1970-2069, meaning that future changes are not available for the 2080s. Hydrologic simulations were performed using VIC version 4.1.2.

Citation: Salathé et al. 2010

URL: <http://cses.washington.edu/rocinante/WRF/>

2.6.6 *Summary of Datasets*

Table 3 summarizes the details related to each of the five datasets used in this study. Note that even with the same VIC model version, simulations can result in different estimates of hydrologic conditions. Specifically, differences in the soil characteristics, vegetation properties, and the specification of sub-grid scale topographic variations can all have an effect on the model simulations. These have not been compared as part of the current study.

Table 3. Summary of the features of each of the five datasets used in this study. The column “Climate Models” lists the number of global climate model projections included in the projections.

	Greenhouse Gas Scenario			Climate Models		Downscaling		Hydrologic Model			Years		
	Low	Moderate	High	New (CMIP5)	Old (CMIP3)	Statistical	Dynamical	VIC v4.0.7	VIC v4.1.2	VIC-CropSyst v2.0	2030s	2050s	2080s
MACA	✓		✓	10		✓			✓		✓	✓	✓
bcMACA	✓		✓	10		✓			✓		✓	✓	✓
WSU	✓		✓	5		✓				✓	✓		
HB2860		✓			7	✓		✓			✓	✓	✓
bcWRF		✓			2		✓		✓		✓	✓	

3 Approach

The VIC hydrologic model produces gridded estimates of surface runoff and sub-surface flows on the model grid. Since any particular streamflow site may contain multiple grid cells within its catchment area, an additional step is needed to estimate total streamflow at each location. This process is referred to as streamflow “routing”, because flows are routed through the stream network. Once daily streamflow estimates have been obtained at each site, an additional step is needed to estimate daily streamflow extremes. This section describes the post-processing steps used to obtain estimates of streamflow for select sites and metrics.

3.1 Streamflow sites

We assessed changes in streamflow for the three creeks and seven alpine lakes listed in Table 4. Daily flows were estimated at the mouth of the three creeks, while monthly average flows were assessed for the alpine lakes. The drainage area for each alpine lake is small compared to the spatial resolution of the datasets we are using (the area of each grid cell is about 12.6 sq. mi.). Since the smaller scales may result in greater uncertainties, projections for the alpine lakes were only evaluated at monthly time scales. As discussed in Section 4, this may be the most appropriate focus for the three creeks as well.

Table 4. Streamflow projections were developed for each of these sites. The final column lists the time step used for the projections (monthly or daily). The latitude and longitude refers to the output point of each lake or creek.

<i>Site</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Area</i>	<i>Freq.</i>
Icicle Creek	47.58002N	120.66620W	214 sq. mi.	Daily
Peshastin Creek	47.55748N	120.57460W	136 sq. mi.	Daily
Mission Creek	47.52159N	120.47606W	93 sq. mi.	Daily
Square Lake	47.64692N	121.11992W	1.6 sq. mi.	Monthly
Klonaqua Lakes	47.59455N	121.06960W	1.3 sq. mi.	Monthly
Eightmile Lake	47.52035N	120.86521W	5.9 sq. mi.	Monthly
Colchuck Lake	47.49196N	120.83358W	1.5 sq. mi.	Monthly
Upper Snow Lake	47.48216N	120.75726W	4.2 sq. mi.	Monthly
Lower Snow Lake	47.48454N	120.74580W	4.8 sq. mi.	Monthly
Nada Lake	47.49611N	120.73874W	1.5 sq. mi.	Monthly

This analysis uses off-the-shelf models which were calibrated for these locations. In addition, the models do not account for flow regulation. Both factors could impact the absolute flow estimates (i.e.: the flow rate, in cfs). As a result, this analysis emphasizes relative changes in streamflow at each site. This information can be combined with knowledge of both existing and proposed flow

modifications in order to produce absolute estimates of future flows under various management alternatives.

3.2 Streamflow

VIC simulations of surface and sub-surface flows from each grid cell (sometimes referred to as runoff and baseflow, respectively) were used to produce the routed streamflows at each site using a daily-time-step routing model developed by Lohmann et al. (1996). The within-cell routing uses a Unit Hydrograph (UH) approach to represent the temporal distribution of flow at the outlet point from an impulse input at each source point. The channel routing uses the linearized Saint-Venant equation to represent the flow at a downstream point as a function of the water velocity and the diffusivity, both of which may be estimated from geographical data (Lohmann et al. 1998). The river routing model assumes all runoff and baseflow exit a cell in a single flow direction.

A predetermined routing network provides the upstream-downstream linkage between VIC model grid cells. The three creeks listed in Table 4 were then located on the developed streamflow routing network and verified based on their true latitude-longitude location, the cited watershed area by the USGS and the World Hydro Reference Overlay Map showing flow of the rivers.

Since the catchments for the alpine lakes are all less than half of the area of a single 0.0625-degree grid cell (about 12.6 sq. mi.), routing is not needed for these sites. Instead, we used an area-weighted average for any grid cells that overlap with the catchment area for each lake. Since the gridded climate estimates are not designed for sub-grid scales, where unresolved microclimates may be important, these data are only produced at monthly time scales. Averaging from daily to monthly likely minimizes the impacts of any systematic differences between the climate datasets and the actual conditions present within each catchment.

3.3 Extremes statistics

In addition to monthly average flows, daily streamflow projections were synthesized according to the following metrics:

1. The 10% non-exceedance value (10-year event) for annual daily minimum flows, and
2. The 50%, 10%, and 1% exceedance value (2-, 10-, and 100-year events, respectively) for annual daily maximum flows.

To calculate extreme statistics, the Extreme Value type 1 distribution described Gumbel (EV1), the Log-Pearson type 3 (LP3) and the Generalized Extreme Value (GEV) distribution with L-

moments are commonly used. In this study, we apply the GEV distribution with L moment to estimate flood and low flow statistics – following the methodology described in Salathé et al. 2014 and Tohver et al. 2014. These distributions are selected based on findings that indicate it is superior to the LP3 distribution (Rahman et al. 1999 & 2015, Vogel et al. 1993, Nick et al. 2011). Flood flows were computed for return intervals of 2, 10, and 100 years (50%, 10%, and 1% exceedance values). To estimate flood magnitude, the maximum daily flows were extracted for each water year (October to September) at each site. These were ranked for each 30-year period and fitted to the GEV with L-moments (Wang, 1997; Hosking and Wallis 1993; Hosking 1990). Similarly, the low flow statistic was calculated by taking the minimum daily streamflow in each water year and estimating the 10-year extreme (10% non-exceedance value).

4 Results

This section summarizes the results of the analysis. Although the emphasis of this project is on relative changes in flows, comparisons with observations provide useful context for interpreting the results from each dataset. Subsequent sections show the projections, along with one example of a way to synthesize the results.

All of the results presented in this report concern monthly average flows. Changes in daily extremes were also estimated, and these are available on the project website. However, given the approximate nature of the projections, our recommendation is to base decisions on the monthly average flow projections, since these are likely to provide more robust estimates of future conditions.

4.1 Comparison with Observations

4.1.1 *Streamflow Observations*

We obtained daily gauge observations of streamflow at sites on each of the three creeks (Table 5). As is evident from the observations shown in Figure 3, streamflow in all three creeks is heavily influenced by snowpack. This is particularly true for Icicle Creek, for which flows remain quite low for almost the entire year, then rise sharply for May and June before falling again to low values for the summer.

Figure 3 shows that the various datasets generally do a good job of capturing the seasonal cycle of streamflow for the three creeks. The absolute differences are large in some cases, but overall the timing and distribution of streamflow closely resembles the observations. This is important, since the seasonal pattern of streamflow is governed by the proportion of precipitation that is captured in the snowpack as well as the rate of snow accumulation and melt. A model that does not adequately capture these processes may not be able to accurately represent the consequences of warming for snowpack and, by extension, streamflow.

Table 5. Streamflow gauges used for comparison with model results.

<i>Site</i>	<i>ID</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Years</i>
Icicle Creek	USGS #12458000	47.54111N	120.71889W	1936-2016
Peshastin Creek	Ecology #45F070	47.55250N	120.60170W	2002-2016
Mission Creek	Ecology #45E070	47.52140N	120.47470W	2002-2016

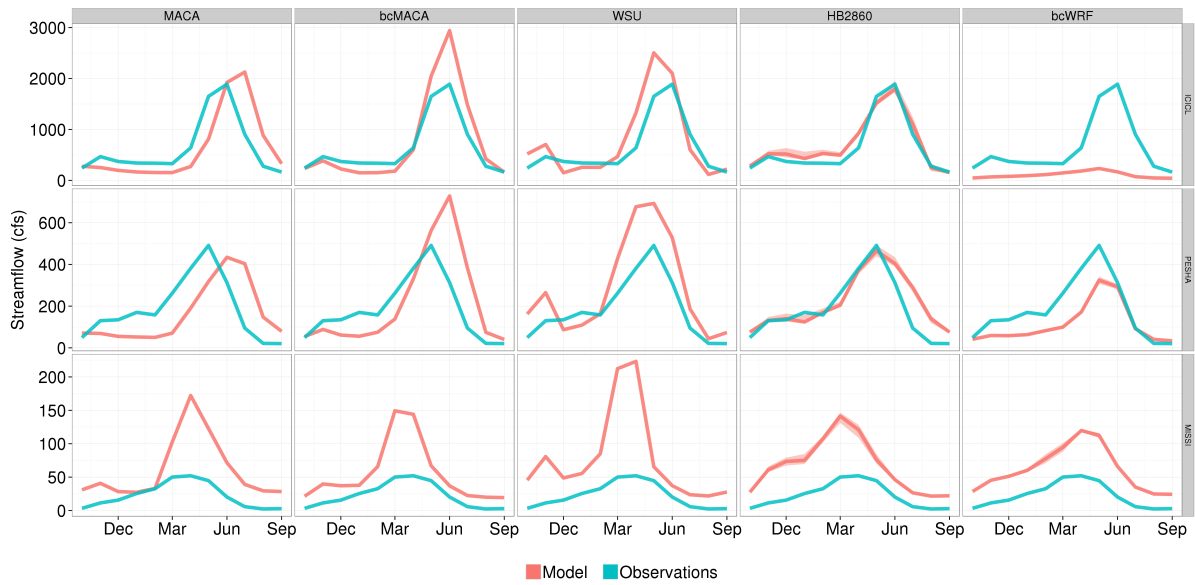


Figure 3. Comparing observed (blue) and simulated (orange) monthly streamflow for each of the five datasets (from left to right: MACA, bcMACA, WSU, HB2860, bcWRF) for Icicle (top), Peshastin (middle), and Mission (bottom) Creeks. Each plot shows the long-term average of monthly flows. For simulated streamflow, the average is for 1970-1999, with the exception of the WSU dataset, for which the 1981-2010 average is shown. For the observed flows, the average is for 1950-2015 for Icicle Creek and 2002-2016 for Peshastin and Mission Creeks.

4.2 Projections

In this section, we focus on the percent changes in monthly streamflow for each streamflow site. Figures 4, 5, and 6 show the projected changes for the three Creeks for the 2030s, 2050s, and 2080s, respectively. The magnitude of the change differs substantially from one dataset to the next. This reflects the uncertainties associated with representing changes in local climate and hydrology; this uncertainty would likely be reduced with careful calibration and improvements to model inputs (climate, soil, and vegetation). On the other hand, the overall pattern of change is remarkably consistent and reflects the expected reductions in snowpack with warming. Warming elevates the snowline, increasing the proportion of precipitation that falls as rain which results in reduced snow accumulation in winter. The combination of reduced snowpack and higher temperatures result in an earlier and less pronounced spring peak in streamflow, along with lower flows throughout the melt season and summer. Each of the datasets shows the same changes in the seasonal cycle of streamflow: increased flow in winter, an earlier peak in streamflow, and decreased flow in summer.

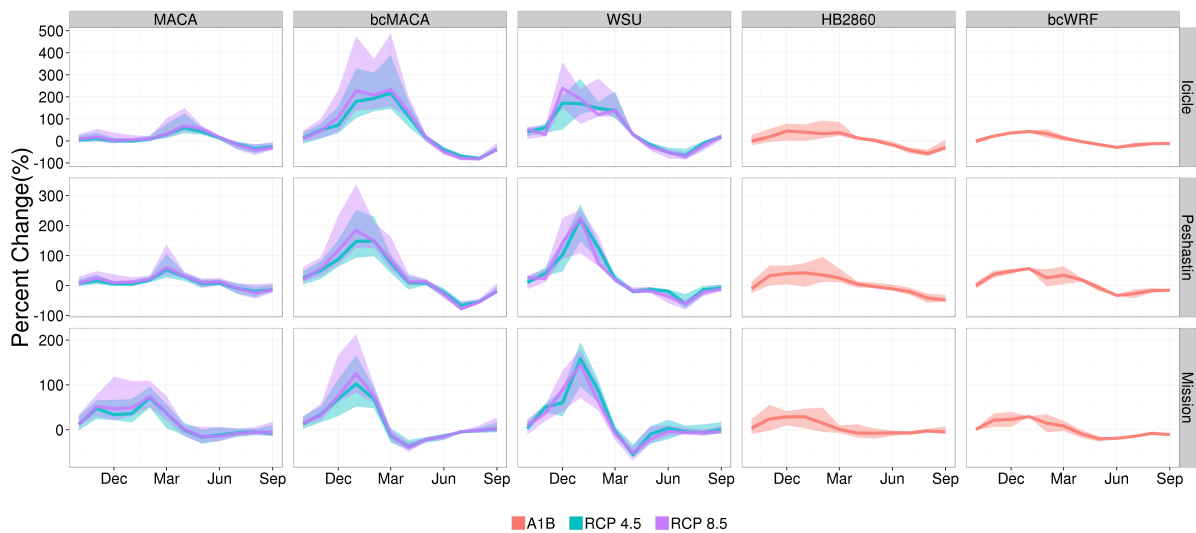


Figure 4. Projected changes in streamflow for the 2030s (2020-2049), relative to historical (see Section 2.5 for details), for Icicle (top), Peshastin (middle), and Mission (bottom) Creeks. Plots show the percent change in streamflow for each month for each of the five datasets (from left to right: MACA, bcMACA, WSU, HB2860, bcWRF). Thick lines show the average projection, while the shaded area shows the range among models for each dataset.

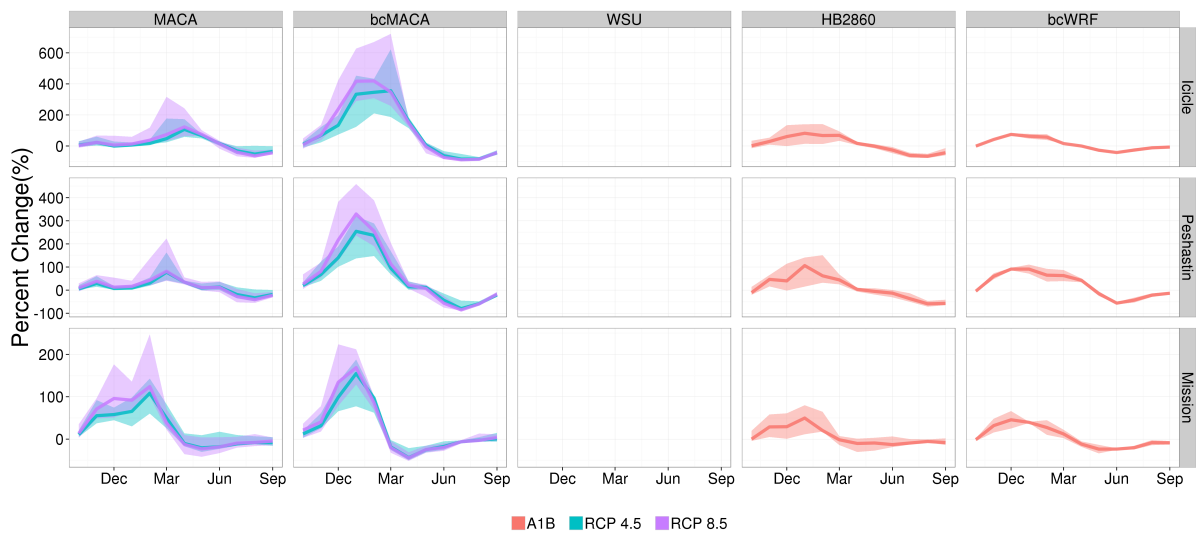


Figure 5. As in Figure 4 except showing results for the 2050s. The WSU plots are blank because the dataset does not include projections for the 2050s.

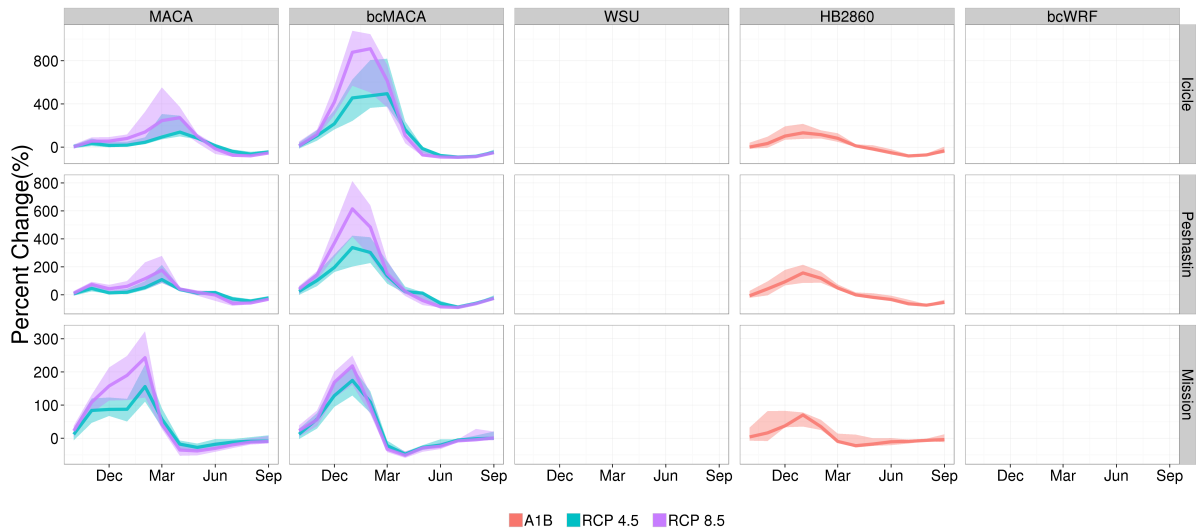


Figure 6. As in Figure 4 except showing results for the 2080s. The WSU and bcWRF plots are blank because neither dataset includes projections for the 2080s.

Changes for the seven regulated alpine lakes are shown in Figures 7, 8, and 9 (2030s, 2050s, and 2080s, respectively). These show a pattern of change that is consistent with the three creeks. This is likely a result of the fact that these are cold high-elevation catchments, which will continue to effectively retain snow in the future.

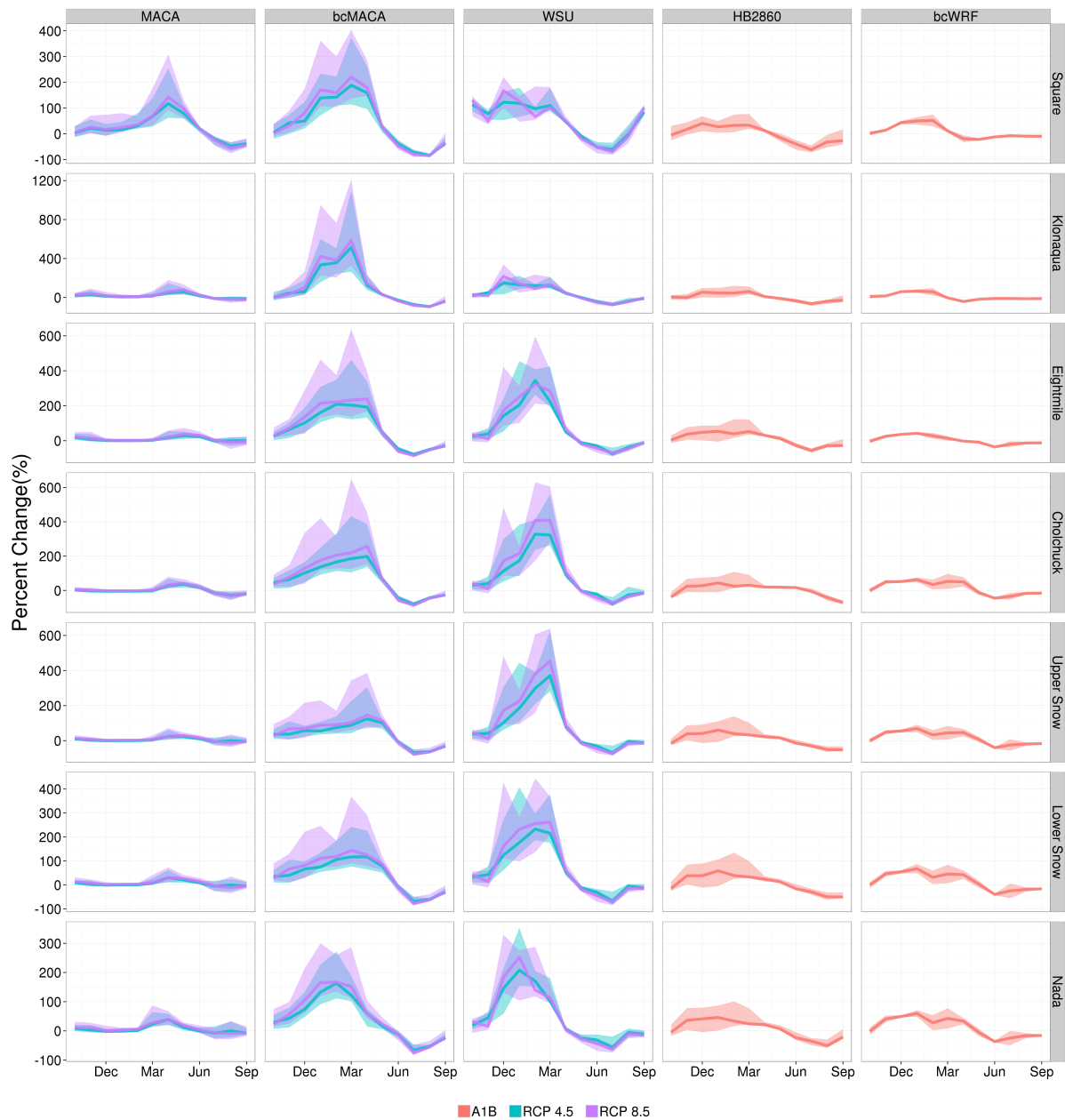


Figure 7. Projected changes in streamflow for the 2030s (2020-2049), relative to historical (see Section 2.5 for details), for the seven Alpine lakes with flow regulation. Plots show the percent change in streamflow for each month for each of the five datasets (from left to right: MACA, bcMACA, WSU, HB2860, bcWRF). Thick lines show the average projection, while the shaded area shows the range among models for each dataset.

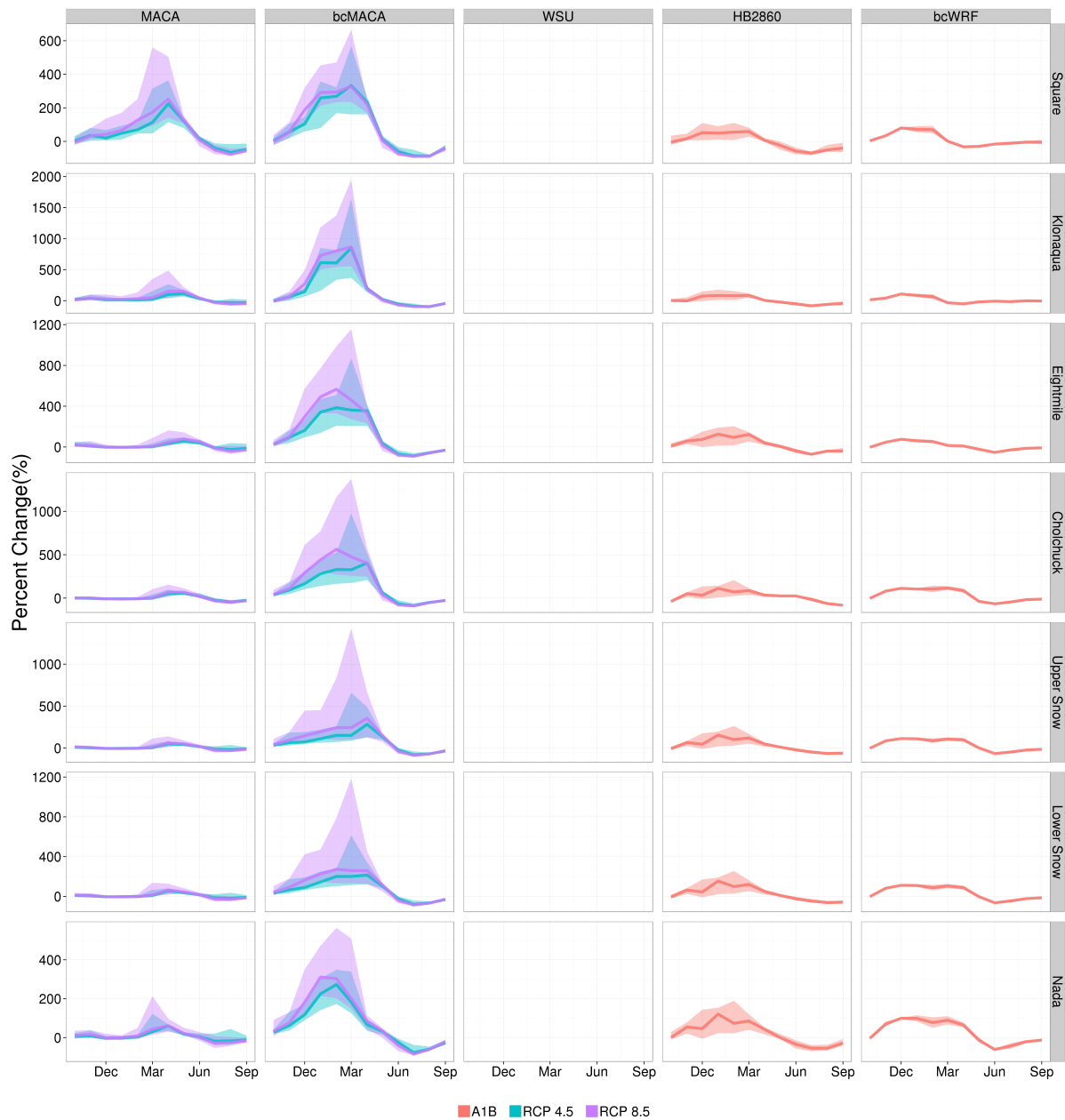


Figure 8. As in Figure 7 except showing results for the 2050s.

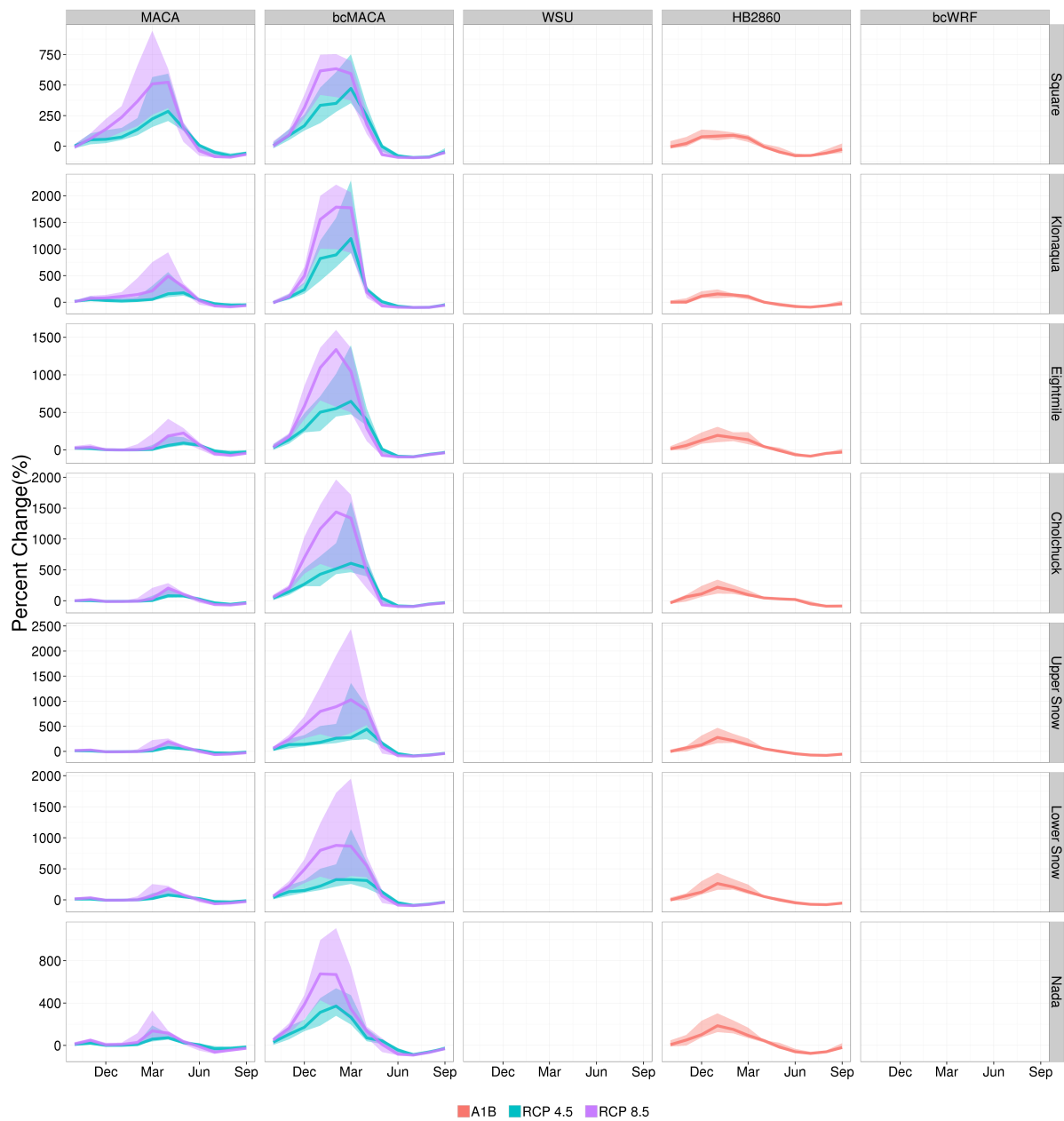


Figure 9. As in Figure 7 except showing results for the 2080s.

4.3 Average projections for Icicle Creek

The purpose of this project is to provide first estimates of changing hydrology in Icicle, Peshastin, and Mission Creeks. To do this we are using five different off-the-shelf datasets, each with its own set of models and assumptions, and none of which is calibrated for this area. Given the large number of future streamflow scenarios, it is not surprising that there is a wide range among the projections.

Although robust decisions can be made in spite of a large range among projections, it can be helpful to simplify the projections for the purpose of evaluating the impacts. Since the projections will primarily be used for a screening-level assessment of proposed infrastructure and management changes, one simple way to distill the results is by considering the average projection for each dataset. This is a very simplistic approach, since it involves averaging over different numbers of models for each dataset (Table 3) and, in some cases, averaging results from two different greenhouse gas scenarios.

Figure 10 shows the average (“average of the averages”) and interquartile range for the average projected changes from each of the five datasets. These again reflect the expected patterns of decreased snow accumulation in winter, earlier melt, and dramatic decreases in streamflow in summer.

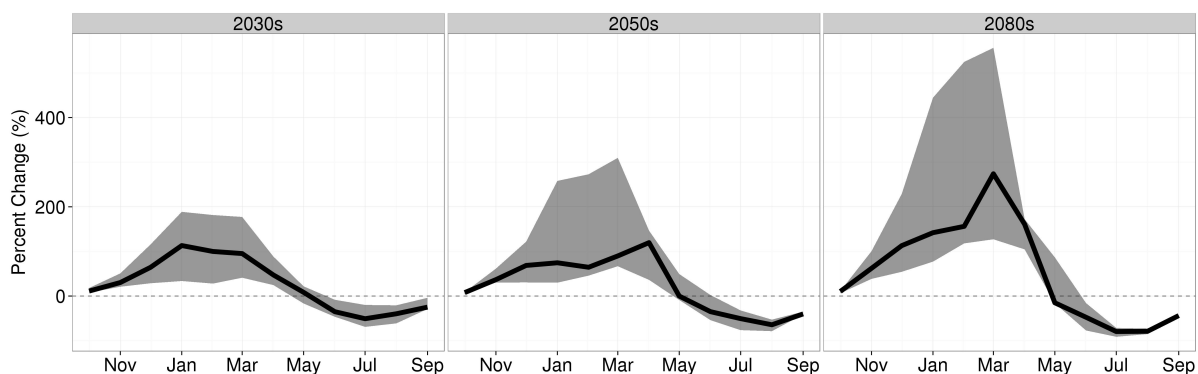


Figure 10. Projected changes in streamflow for the average among all scenarios within each dataset. The thick line is the “average of the averages”, while the shaded area shows the interquartile range among the five average projections constructed from each dataset. Results are shown for 2030s (left), 2050s (middle), and 2080s (right), relative to historical (see Section 2.5 for details).

5 Interpreting the Results

This section describes some of the factors that should be considered in interpreting the results of this analysis.

5.1 None of the models were calibrated

The datasets used in this analysis were all previously developed in other projects without specific considerations given to Icicle, Peshastin, and Mission Creeks. As a result, no special attention was given to optimizing the models for these areas. This means two things: (1) the model inputs – the climate, soil, and vegetation patterns assumed for these locations – were not optimized to best represent the conditions found in the three creeks, and (2) the models were not calibrated to ensure that streamflow estimates match observed flows at each location. As a result, the absolute flows estimated for each location are not expected to match the observations exactly. In general, however, the models are expected to capture the seasonal cycle of flows (i.e.: relative changes in flows from month to month), even if the absolute flows do not match the observations. Daily streamflow estimates are more sensitive to deficiencies in model inputs or the model itself, and should also be regarded with greater caution than monthly average flows.

5.2 The hydrologic simulations assume no change in land cover

Streamflow is influenced by more than just temperature and precipitation; changes in soils and vegetation can also have an important influence on flows. The simulations analyzed here do not include such changes: land cover and soil characteristics are expected to remain the same throughout the simulations. Landslides and wildfires can reduce vegetation cover and soil water retention. If these or other related changes were to occur these could result in greater changes in streamflow than the current projections imply. If there are areas that are currently experiencing forest regrowth or densification these could also affect streamflow, though the net impact would depend on the balance between changes in snow accumulation, soil water retention, and changes in vegetative water demand as trees mature.

5.3 “Average of the averages” is just one approach

In the previous section, we presented results in which the average projection for each dataset was used. This is just one approach to synthesizing the results, and may not be the best approach for every application. In this case, averaging was deemed appropriate because of the screening-level nature of the Programmatic Environmental Impact Statement (PEIS) and the fact that none of the models had been calibrated for these watersheds.

In general, however, averaging across models is not recommended because it suppresses the range among model projections, which can provide important information for planning. For example, some planning contexts may require consideration of the worst-case scenario, while others may involve identifying approaches that are robust across a broad range of projections. In such cases, it would not be appropriate to consider only the average projections as opposed to the full range among different models and greenhouse gas scenarios.

Another reason one might want to take a different approach is if one dataset is considered more accurate than the others. This could be based on knowledge about how the datasets were developed, or based on the comparisons with observations. In this case, projections from just that dataset could be considered in lieu of lumping all datasets together as equals.

Ultimately, the best approach is to have a well-calibrated model that accurately represents the climate, soil, and vegetation characteristics of the watershed, and to be cognizant of potential biases in either the inputs or the model itself in order to appropriately interpret its results. The purpose of our current analysis is to provide a preliminary estimate of the impacts of climate change, the implications of which will help determine if more detailed modeling is necessary.

5.4 Can I trust these projections?

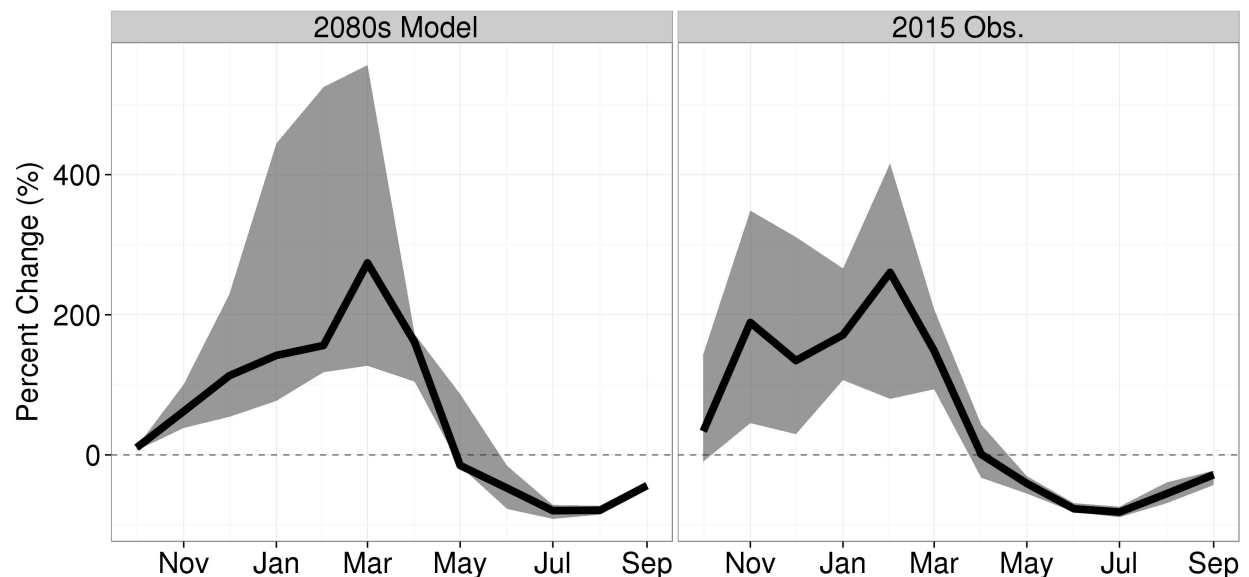


Figure 11. Comparing the projected changes for the 2080s (relative to 1970-1999, left panel) to the percent difference for 2015 flows relative to observed monthly flows for 1950-1999 (right panel). For each month, the average is shown (thick line) as well as the interquartile range (shaded area). For the 2080s projections (left), these are calculated from the five average projections constructed from each dataset. For the 2015 flows, the average and interquartile range is calculated by comparing monthly flows in 2015 to monthly flow for 1950-1999.

Model biases can lead to projections that are outside of the realm of what is physically possible. This is likely to be the case for a number of the individual model projections presented in the previous section. But which ones? This can be a challenging question to answer. Although many issues could be at play (ranging from hydrologic model formulation to greenhouse gas scenarios),

one quick way to evaluate results is to compare model simulations to observed flows under similar conditions. For example: how does the model represent changes in streamflow during warm vs. cool years, and how does that compare to what we see in the observations? The same question could be asked about wet and dry years, or years with big vs. relatively low intensity rain events.

One specific example is the year 2015, in which statewide average temperatures for December through February exceeded the historical average by 4.6°F. These warmer temperatures led to drastically lower snow accumulation, earlier snowmelt, and a dramatic decrease in summer streamflow. Climate models project that temperatures will increase by 4.6°F, on average, by somewhere in between 2050 and 2100. On average, models project that 2015 conditions will become routine by the 2070s.

Figure 10 shows the percent difference between monthly flows for the year 2015 and the average, from observations, for the years 1950-1999. This longer time period was necessitated by the fact that the Icicle Creek gauge was not in operation from 1971-1993. Results were nearly identical for other choices of the historical reference period (e.g., 1950-2015). Alongside this plot are the 2080s projections; this figure is identical to the right-hand panel in Figure 10 above. In order to facilitate a direct comparison, Table 6 lists the average projection for the 2080s alongside the average monthly changes for 2015. Although the timing appears shifted by about one month, the overall magnitudes are very similar. This suggests that the model projections we presented above are robust, and is just one example of a way to produce an independent check on the results of this study.

Table 6. Projected changes shown in Figure 11.

Month	2080s	2015
Oct	+10% (+6 to +11%)	+34% (-10 to +144%)
Nov	+62% (+38 to +101%)	+189% (+45 to +349%)
Dec	+113% (+54 to +229%)	+135% (+30 to +311%)
Jan	+142% (+77 to +444%)	+171% (+107 to +266%)
Feb	+156% (+118 to +525%)	+260% (+80 to +416%)
Mar	+274% (+127 to +556%)	+149% (+94 to +208%)
Apr	+161% (+105 to +172%)	+1% (-33 to +43%)
May	-15% (-16 to +87%)	-41% (-55 to -30%)
Jun	-48% (-77 to -16%)	-77% (-82 to -69%)
Jul	-80% (-91 to -72%)	-82% (-89 to -74%)
Aug	-79% (-85 to -73%)	-55% (-69 to -39%)
Sep	-44% (-50 to -42%)	-28% (-43 to -22%)

6 Project Outputs

The following subsections describe the project outputs. These can all be accessed at the project website: https://cig.uw.edu/icicle_work_group_projections/

6.1 Data Archive

An online archive contains all of the observed and modeled streamflow data used in this study, as well as figures synthesizing the results. This includes the raw gridded hydrologic model projections as well as the streamflow time series for each of the 10 sites. All streamflow files are stored in a comma-delimited format (.csv) with a header line that describes the file's contents.

6.2 Tableau Tool

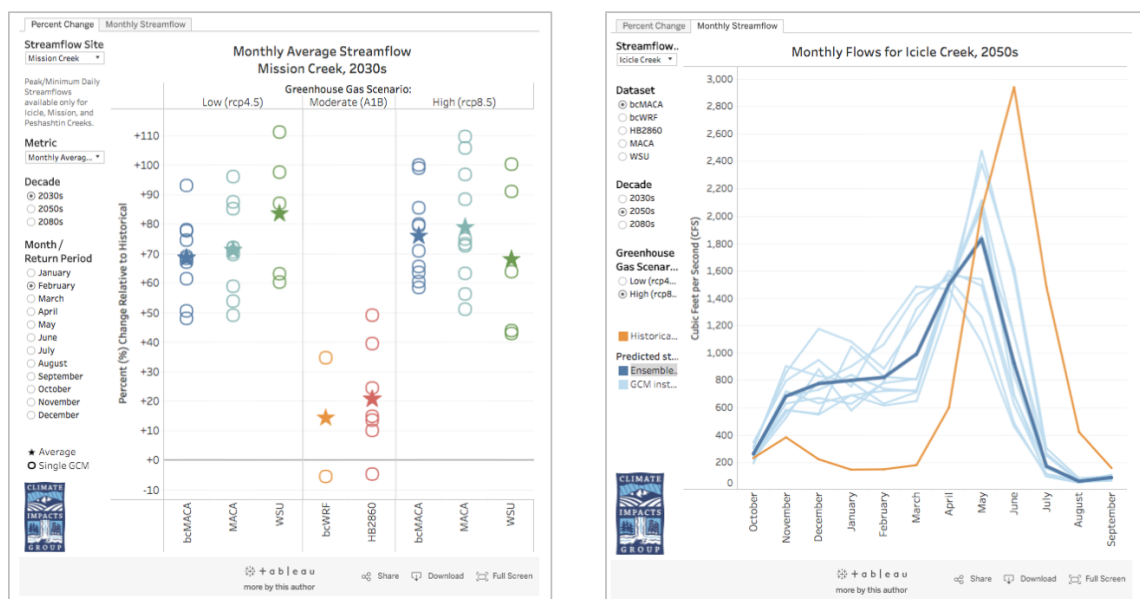


Figure 11. Screenshot of the online tool. The tool has two tabs: one showing the percent changes for each metric, facilitating comparisons across all datasets, and the other showing the full seasonal cycle of historical and future monthly flows, in which only one dataset and scenario can be viewed at a time.

As a complement to the reference data products, we have also produced a tool that is intended to allow users to easily visualize and query the projections across all datasets (Figure 11). The tool includes two tabs: one for viewing percent changes across all datasets, another for viewing the change in the seasonal cycle for one particular dataset and scenario. In each, users can select a streamflow site (Table 4) and a future time period (2030s, 2050s, 2080s) to visualize.

The percent changes tab is designed to facilitate comparisons across datasets. Users select a streamflow site (Table 4), a future time period, and a metric (e.g. January average streamflow). The visualization shows the percent changes for each of the five datasets, organized by greenhouse gas scenario. Individual model projections are shown, as well as the model averages.

The monthly streamflow tab is designed to allow users to view the change in the seasonality of streamflow with warming. Users select a streamflow site (Table 4), a future time period, a dataset, and a greenhouse gas scenario. The visualization shows historical and future monthly average streamflow for the water year (Oct-Sep) for all models included in the selected dataset.

References

- Abatzoglou, J. T., & Brown, T. J. (2012). A comparison of statistical downscaling methods suited for wildfire applications. *International Journal of Climatology*, 32(5), 772-780.
- Daly, C., Halbleib, M., Smith, J. I., Gibson, W. P., Doggett, M. K., Taylor, G. H., ... & Pasteris, P. P. (2008). Physiographically sensitive mapping of climatological temperature and precipitation across the conterminous United States. *International journal of climatology*, 28(15), 2031-2064.
- Hamlet, A. F., Elsner, M. M., Mauger, G. S., Lee, S. Y., Tohver, I., & Norheim, R. A. (2013). An overview of the Columbia Basin Climate Change Scenarios Project: Approach, methods, and summary of key results. *Atmosphere-ocean*, 51(4), 392-415.
- Hosking, J. R. M., & Wallis, J. R. (1993). Some statistics useful in regional frequency analysis. *Water Resources Research*, 29(2), 271-281.
- Hosking, J.R.M., 1990. L-moments: analysis and estimation of distributions using linear combinations of order statistics. *Journal of the Royal Statistical Society, Series B*, 52,105-124.
- IPCC, 2013: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp, doi:10.1017/CBO9781107415324
- Liang, X., D. P. Lettenmaier, E. F. Wood, and S. J. Burges (1994), A simple hydrologically based model of land surface water and energy fluxes for general circulation models, *J. Geophys. Res.*, **99**(D7), 14415–14428, [doi:10.1029/94JD00483](https://doi.org/10.1029/94JD00483)
- Lohmann, D., R. Nolte-Holube, and E. Raschke, 1996: A large-scale horizontal routing model to be coupled to land surface parametrization schemes, *Tellus*, **48**(A), 708-721.
- Lohmann, D., E. Raschke, B. Nijssen and D. P. Lettenmaier, 1998: Regional scale hydrology: I. Formulation of the VIC-2L model coupled to a routing model, *Hydrol. Sci. J.*, **43**(1), 131-141.
- Mauger, G.S., S.-Y. Lee, C. Bandaragoda, Y. Serra, J.S. Won, 2016. Refined Estimates of Climate Change Affected Hydrology in the Chehalis basin. Report prepared for Anchor QEA, LLC. Climate Impacts Group, University of Washington, Seattle. doi:10.7915/CIG53F4MH
- Meehl, G. A., C. Covey, T. Delworth, M. Latif, B. McAvaney, J. F. B. Mitchell, R. J. Stouffer, and K. E. Taylor, 2007: The WCRP CMIP3 multi-model dataset: A new era in climate change research, *Bulletin of the American Meteorological Society*, **88**, 1383-1394.

- Mote, P., J. Abatzoglou, D. Lettenmaier, D. Turner, D. Rupp, D. Bachelet, D. Conklin, 2014. Final Report for Integrated Scenarios of climate, hydrology, and vegetation for the Northwest. Climate Impacts Research Consortium, Corvallis, Oregon.
<http://climate.nkn.uidaho.edu/IntegratedScenarios/pages/publicationsreports/IntegratedScenariosFinalReport2014-10-07.pdf>
- Mote, P. W., & Salathe, E. P. (2010). Future climate in the Pacific Northwest. *Climatic Change*, 102(1-2), 29-50.
- Nakicenovic, N. et al. 2000. *Special Report on Emissions Scenarios: A Special Report of Working Group III of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, U.K., 599 pp. Available online at:
<http://www.grida.no/climate/ipcc/emission/index.htm>
- Nick, M., Das, S. and Simonovic, S.P. 2011. The Comparison of GEV, Log-Pearson Type 3 and Gumbel Distributions in the Upper Thames River Watershed under Global Climate Models, the University of Western Ontario Department of Civil and Environmental Engineering, Report No:077.
- Rahman, A., Karin, F, and Rahman, A. 2015. Sampling Variability in Flood Frequency Analysis: How Important is it? 21st International Congress on Modelling and Simulation, Gold Coast, Australia, Nov 29-Dec 4, 2015, 2200-2206.
- Rahman, A., Weinmann, P.E. and Mein, R.G. (1999). At-site flood frequency analysis: LP3-product moment, GEV-L moment and GEV-LH moment procedures compared. In: Proceeding Hydrology and Water Resource Symposium, Brisbane, 6–8 July, 2, 715–720.
- Rupp, D. E., Abatzoglou, J. T., Hegewisch, K. C., & Mote, P. W. (2013). Evaluation of CMIP5 20th century climate simulations for the Pacific Northwest USA. *Journal of Geophysical Research: Atmospheres*, 118(19).
- Salathé Jr, E. P., Hamlet, A. F., Mass, C. F., Lee, S. Y., Stumbaugh, M., & Steed, R. (2014). Estimates of 21st century flood risk in the Pacific Northwest based on regional climate model simulations. *Journal of Hydrometeorology*, (2014).
- Salathé, E. P., Leung, L. R., Qian, Y., & Zhang, Y. (2010). Regional climate model projections for the State of Washington. *Climatic Change*, 102(1), 51-75.
- Salathé, E. P. (2005). Downscaling simulations of future global climate with application to hydrologic modeling. *International Journal of Climatology*, 25, 419–436.
- Skamarock, W. C., & Klemp, J. B. (2008). A time-split nonhydrostatic atmospheric model for weather research and forecasting applications. *Journal of Computational Physics*, 227(7), 3465-3485.
- Snover, A.K, G.S. Mauger, L.C. Whitely Binder, M. Krosby, and I. Tohver. 2013. *Climate Change Impacts and Adaptation in Washington State: Technical Summaries for Decision*

Makers. State of Knowledge Report prepared for the Washington State Department of Ecology. Climate Impacts Group, University of Washington, Seattle.

Taylor, K. E. et al. 2012. An overview of CMIP5 and the experiment design. *Bulletin of the American Meteorological Society*, 93(4), 485-498, doi:10.1175/BAMS-D-11-00094.1

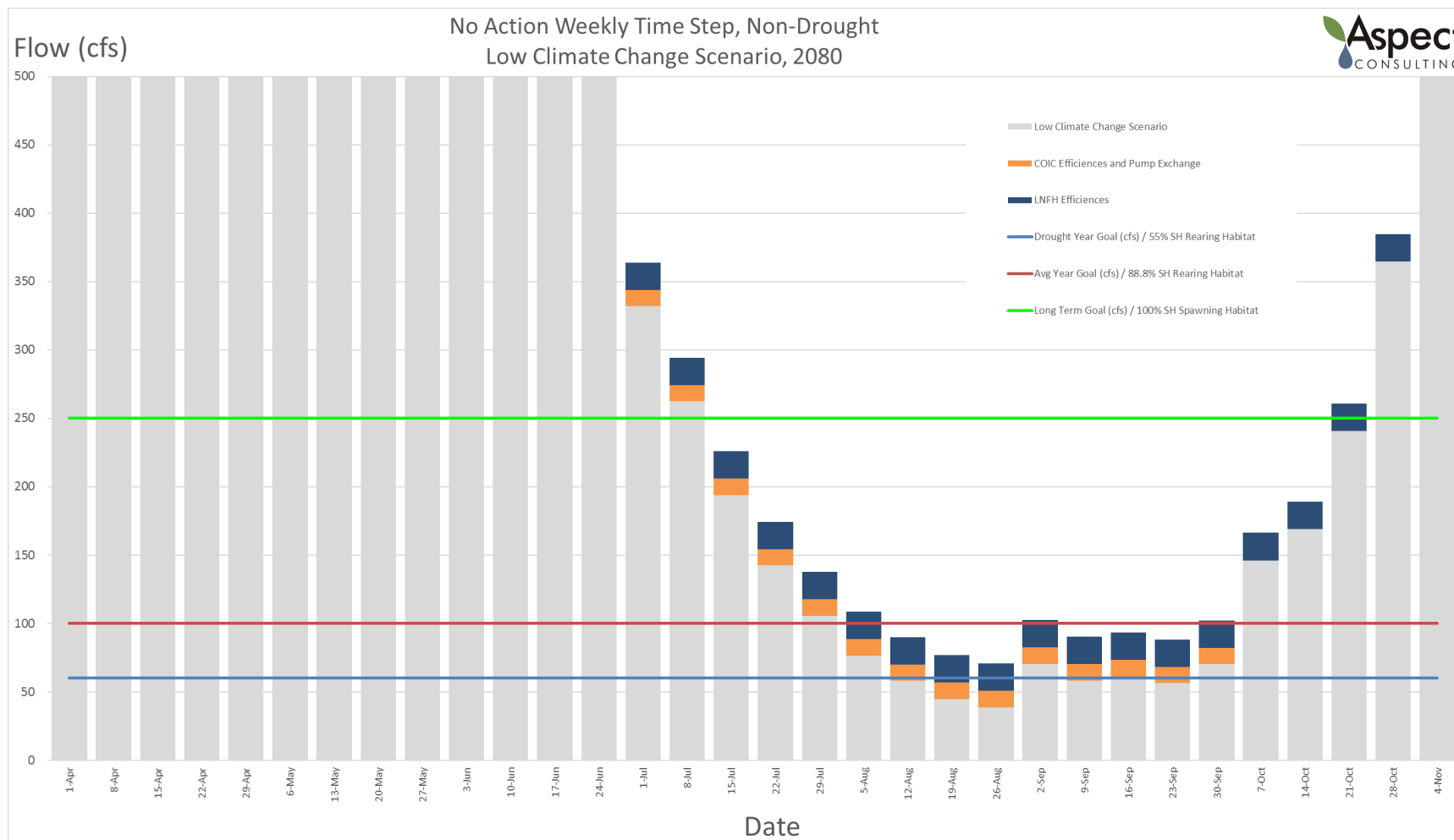
Tohver, I. M., Hamlet, A. F., & Lee, S. Y. (2014). Impacts of 21st-Century Climate Change on Hydrologic Extremes in the Pacific Northwest Region of North America. *JAWRA Journal of the American Water Resources Association*, 50(6), 1461-1476.

Van Vuuren, D. P. et al. 2011. The representative concentration pathways: An overview. *Climatic Change* 109(1-2): 5-31.

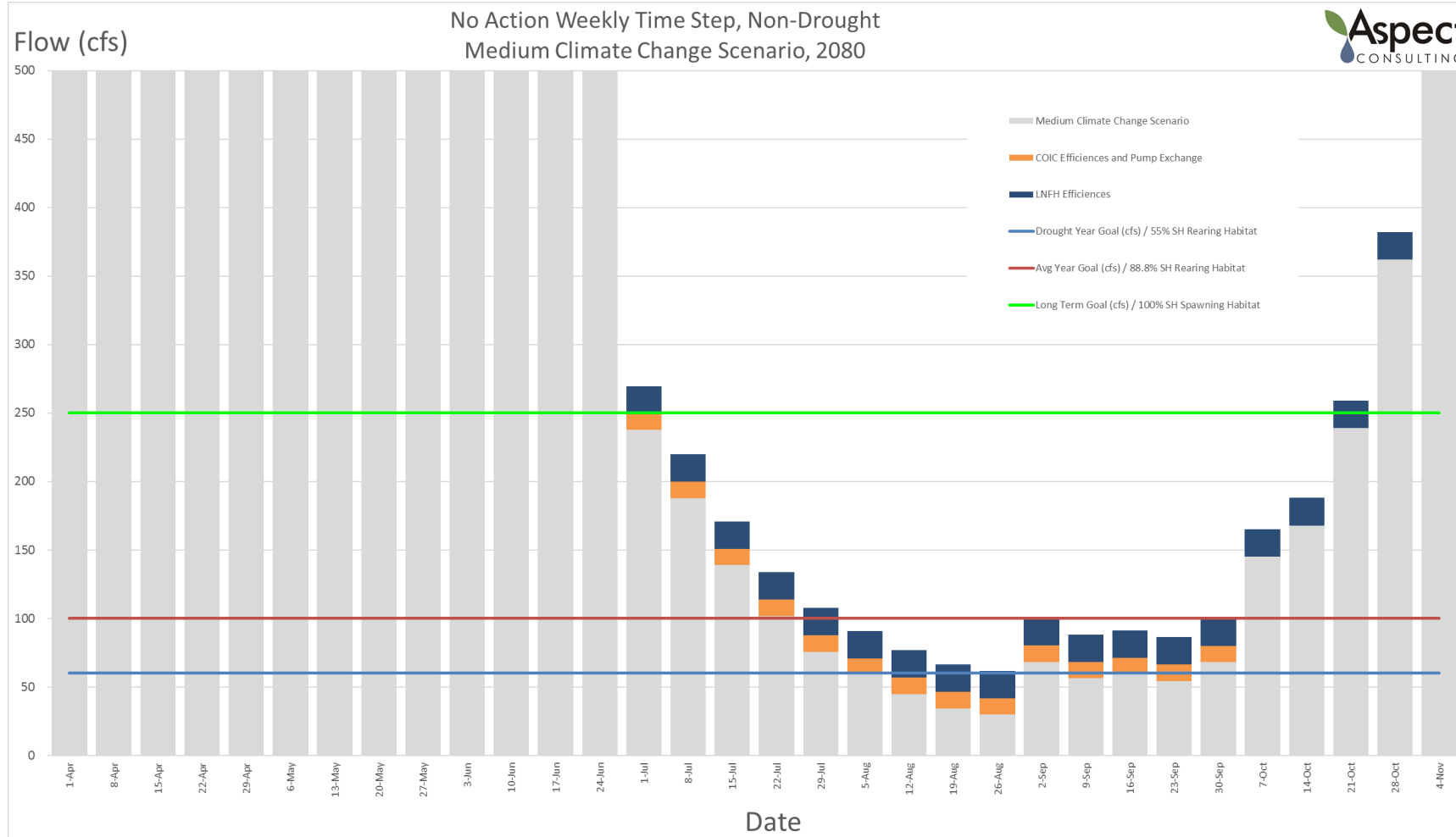
Vogel, R.M., McMahon, T.A. and Chiew, F.H.S. (1993). Flood flow frequency model selection in Australia, *Journal Hydrology*, 146, 421-449.

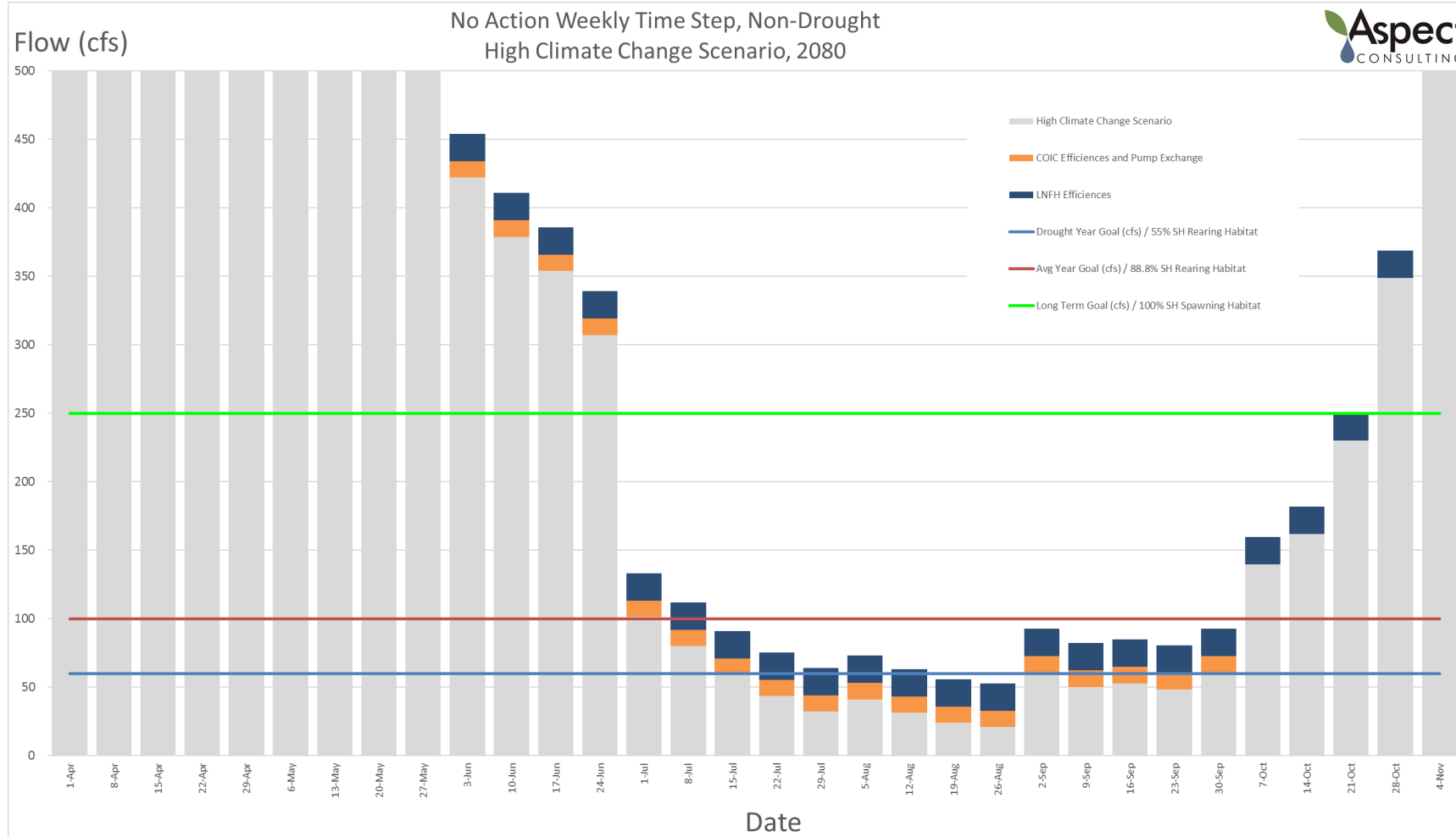
Wang, Q.J. 1997. LH moments for statistical analysis of extreme events. *Water Resour Res*, 33(12), 2841- 2848.

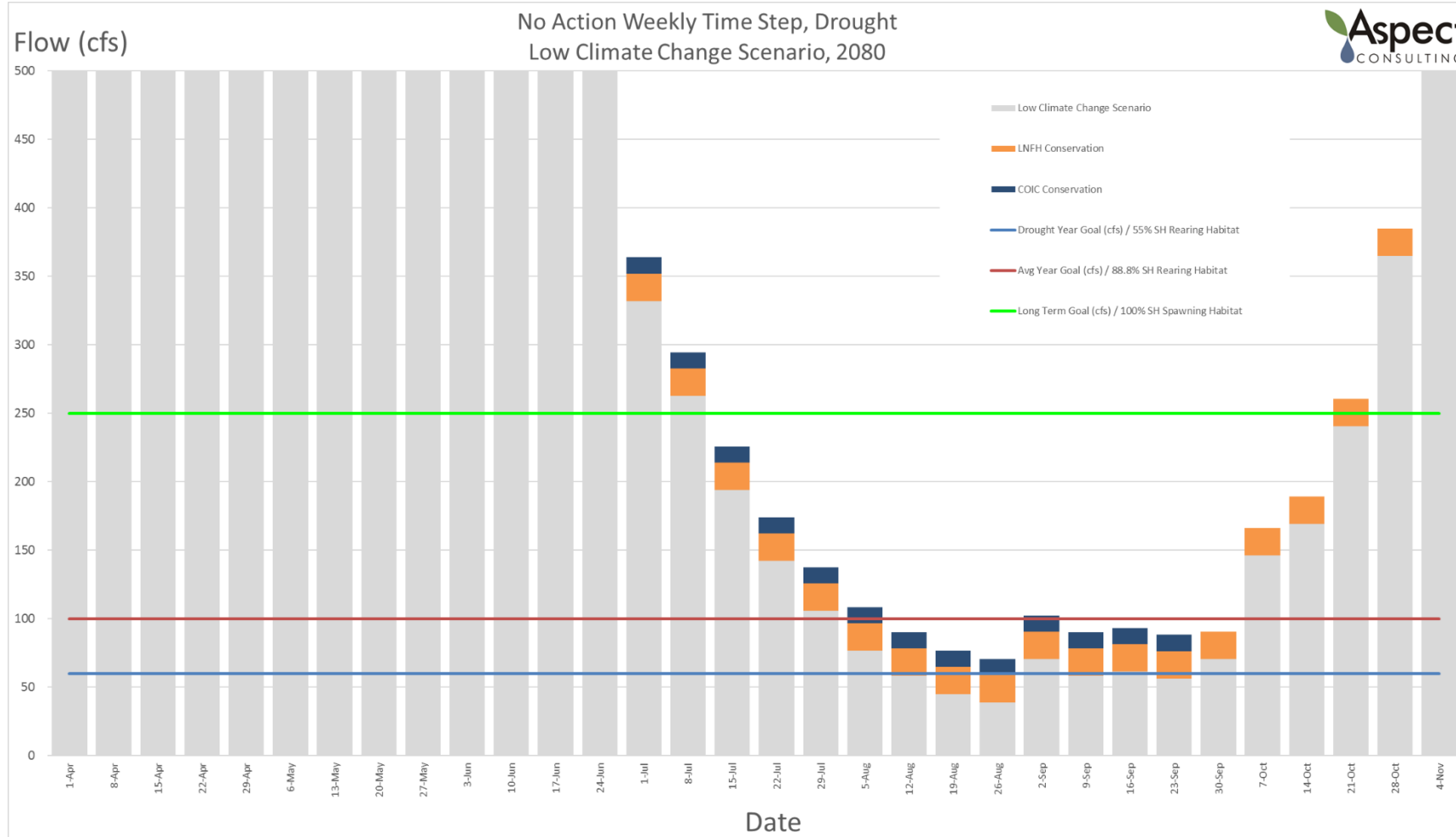
Wood, A. W., Leung, L. R., Sridhar, V., & Lettenmaier, D. P. (2004). Hydrologic implications of dynamical and statistical approaches to downscaling climate model outputs. *Climatic change*, 62(1), 189-216.

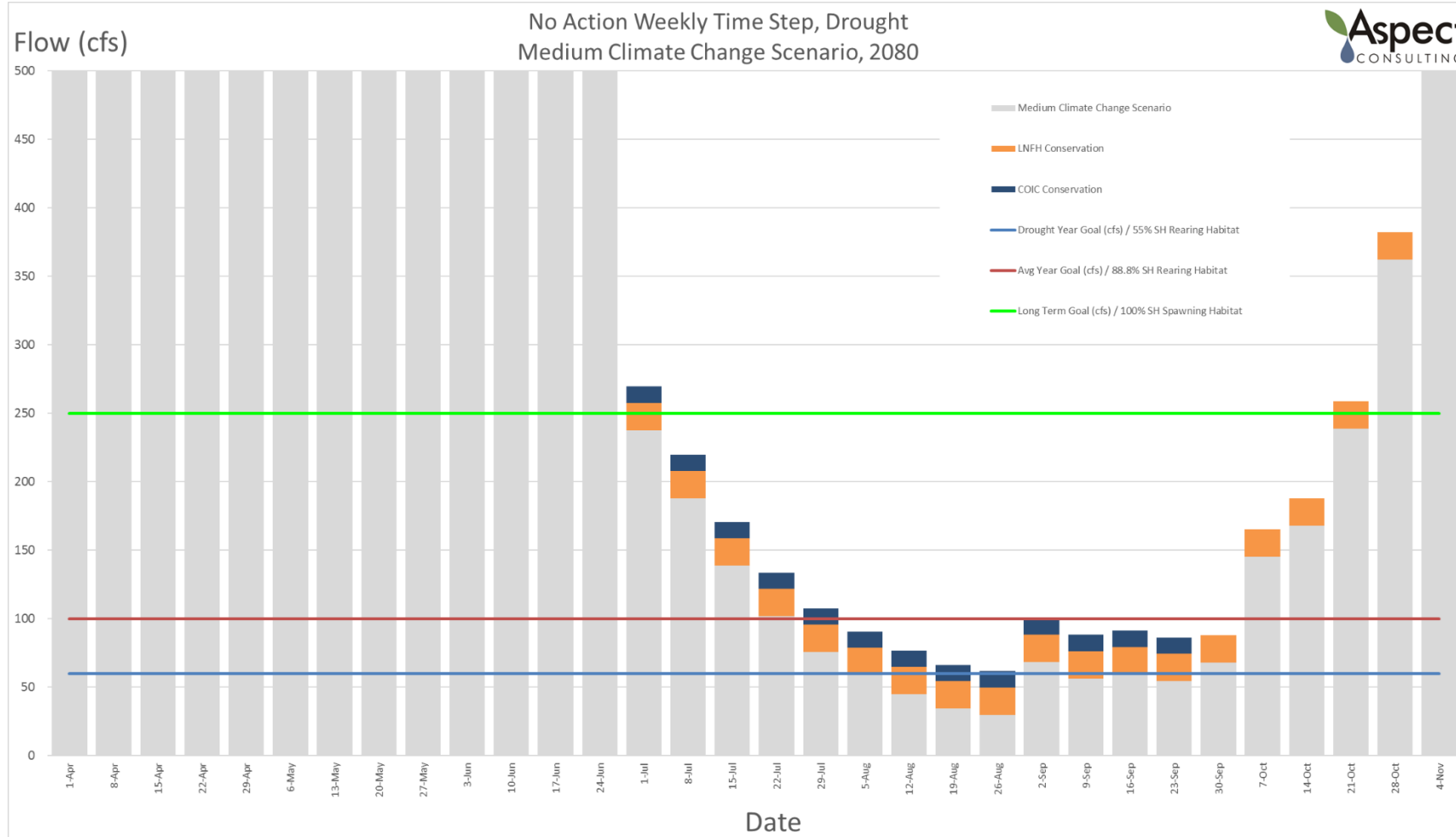


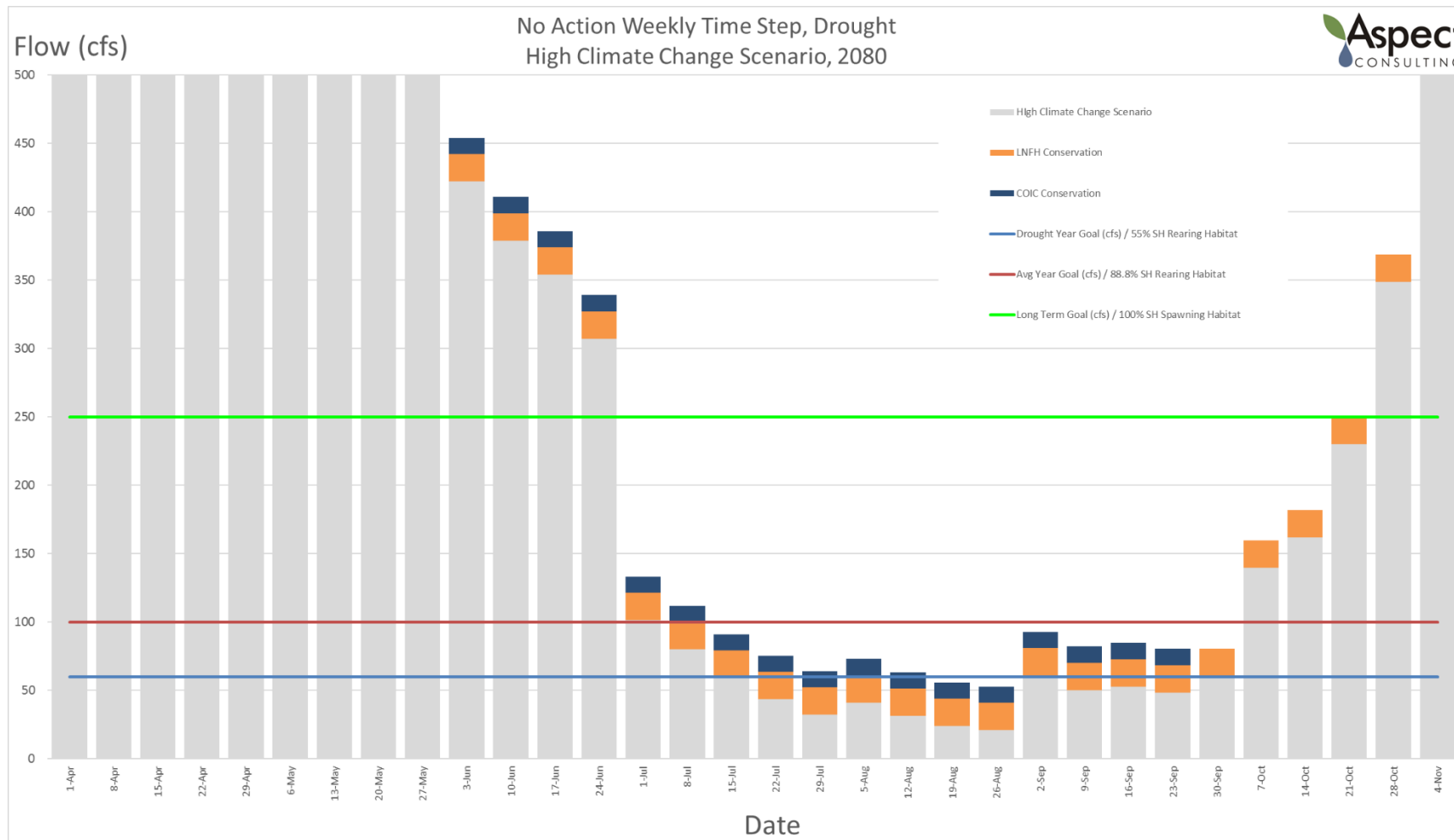
Note: Flow charts developed with the estimated percent change (average output of CIG model work) and the average weekly stream flow as recorded at the USGS gaging station (1997-2016). Projected streamflow benefits were added to these data to estimate the performance of the alternatives for projects available in both drought and non-drought years under predicted climate change conditions.

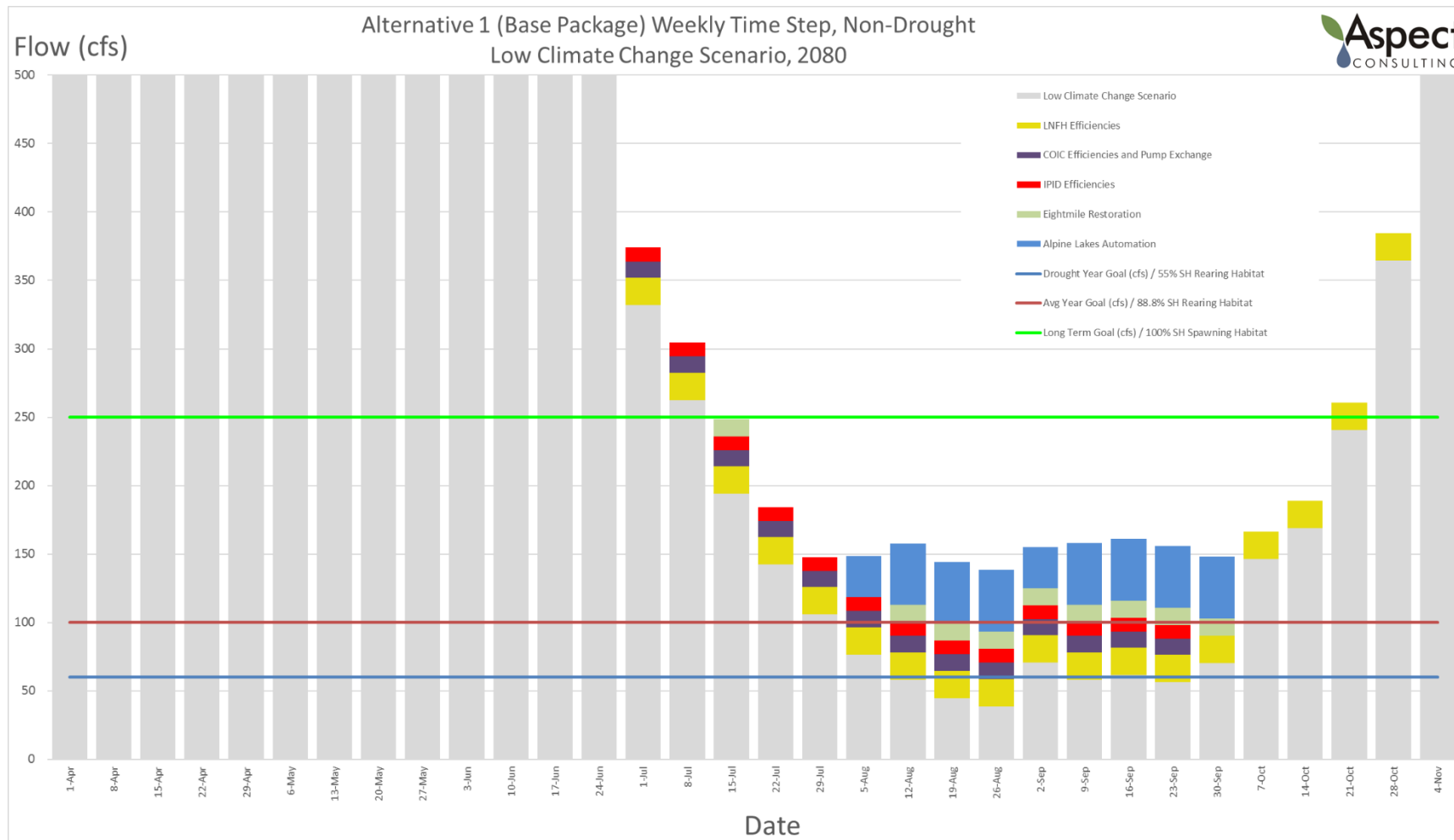


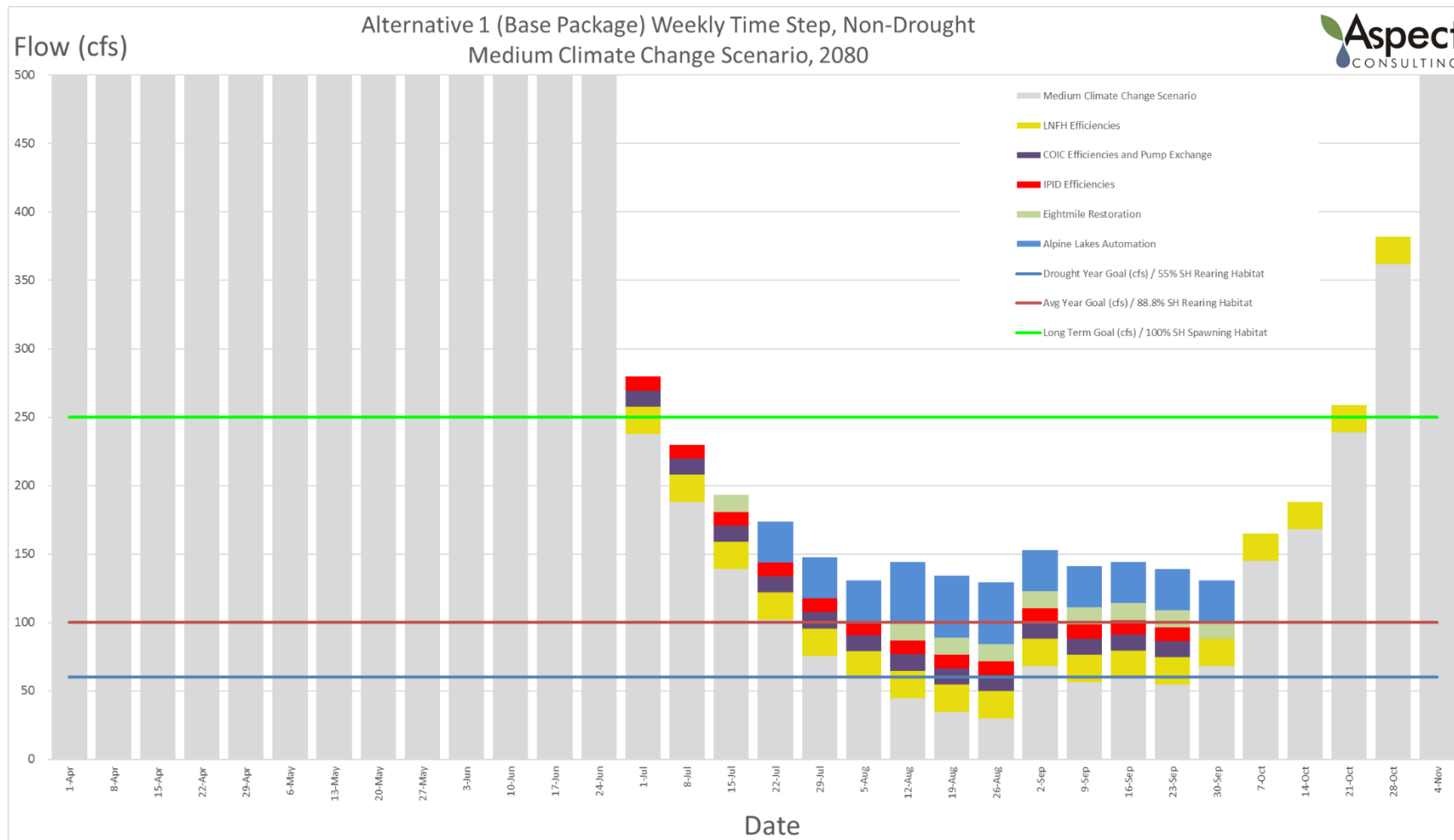


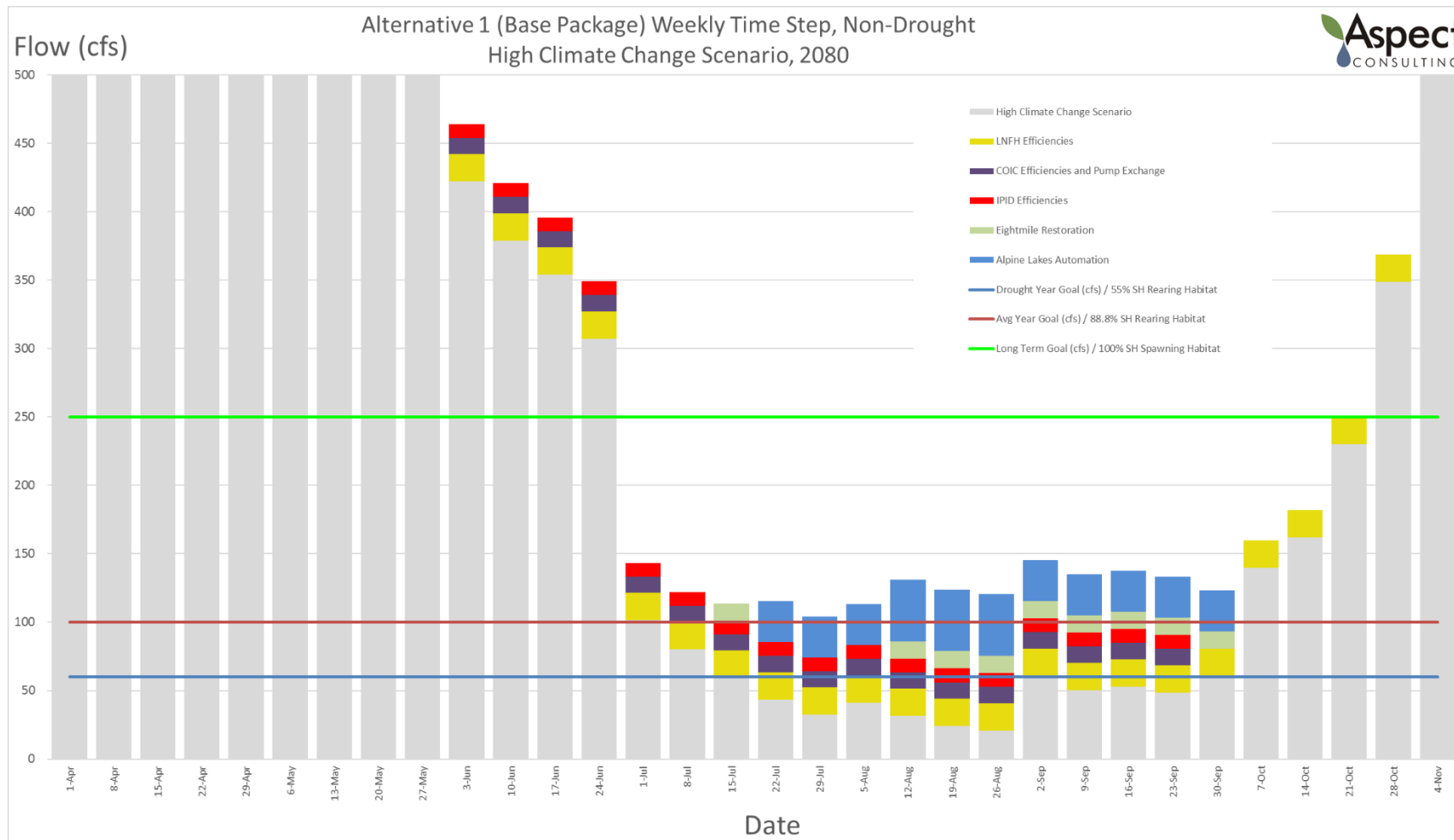


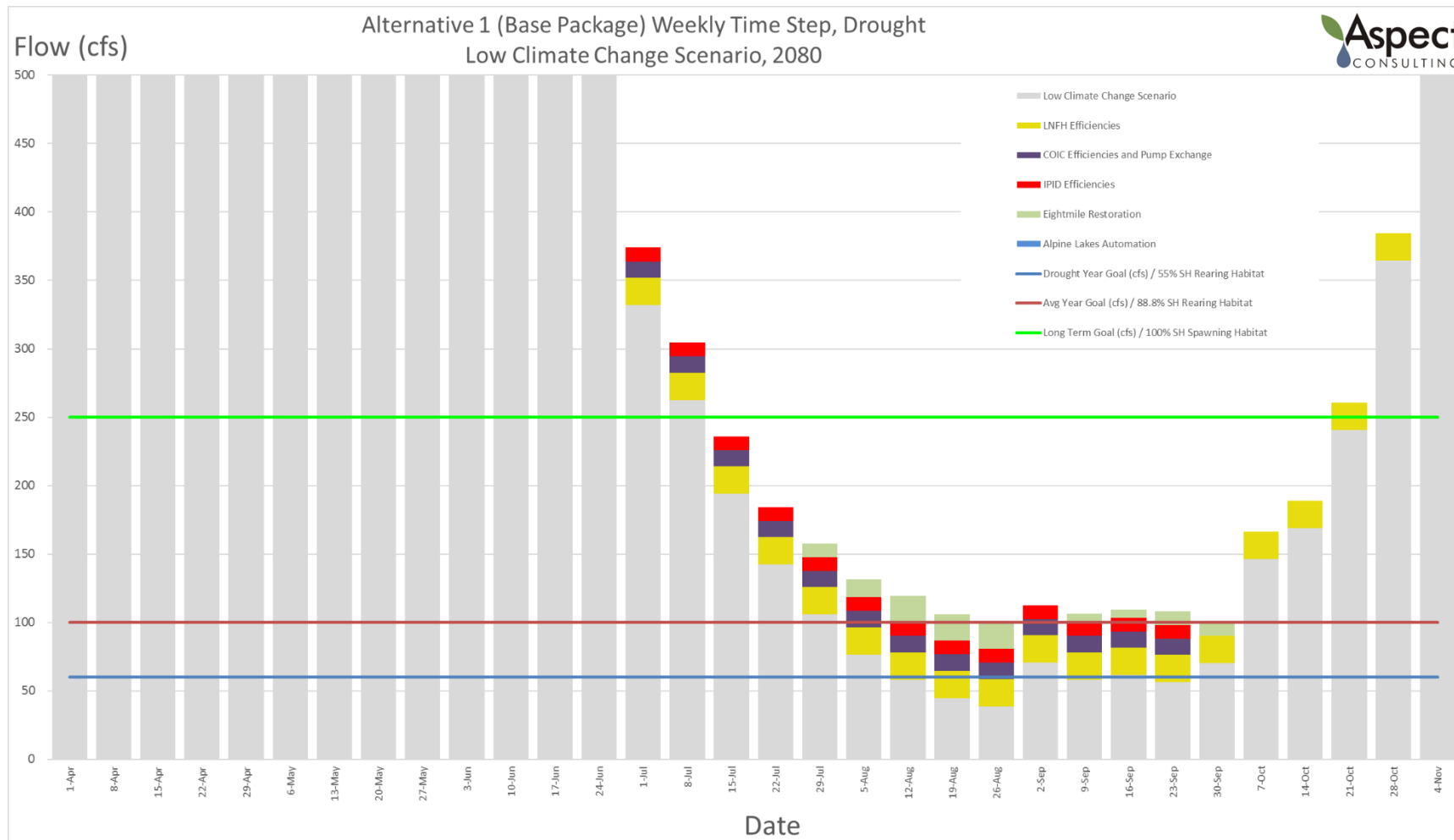


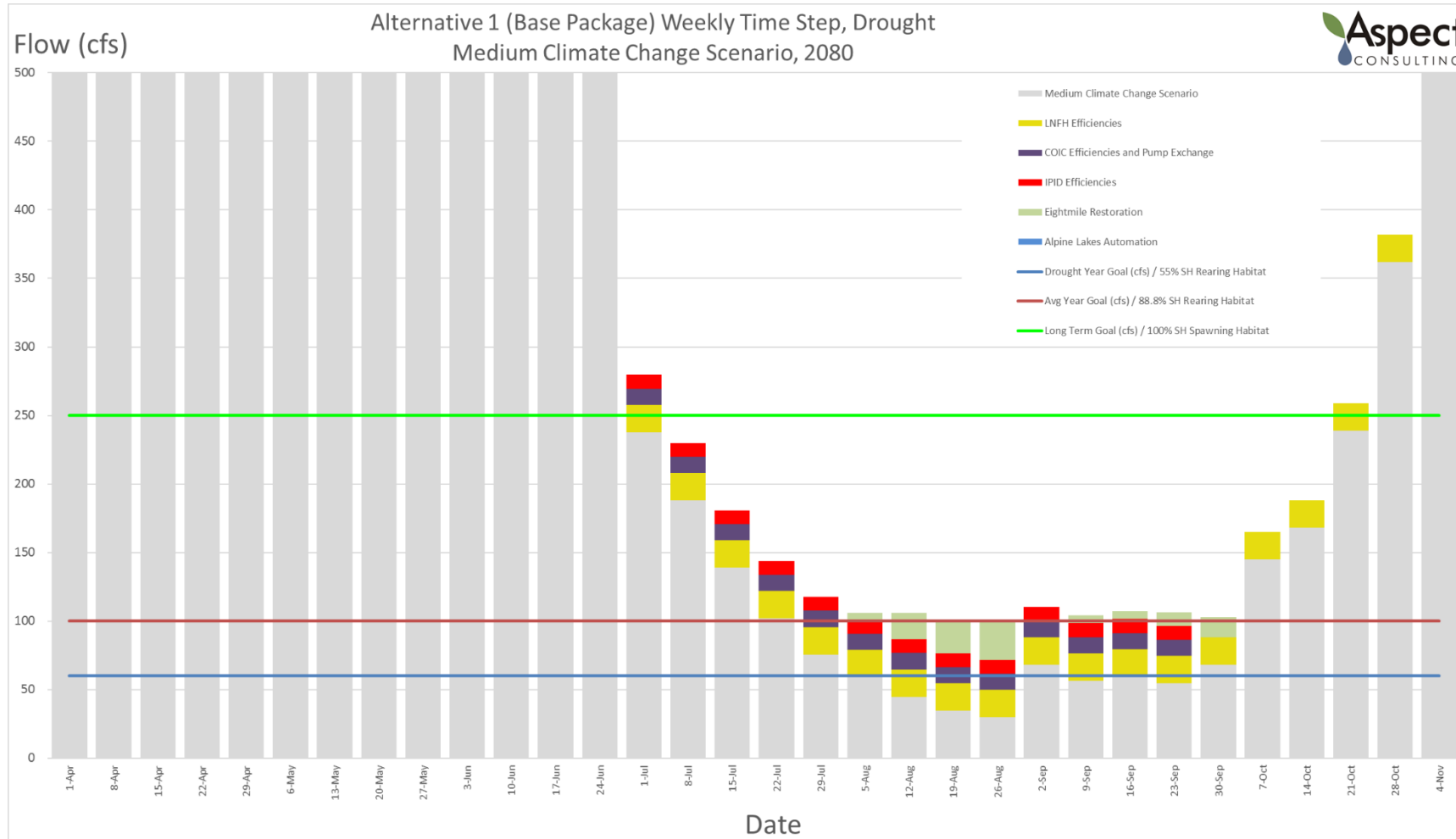


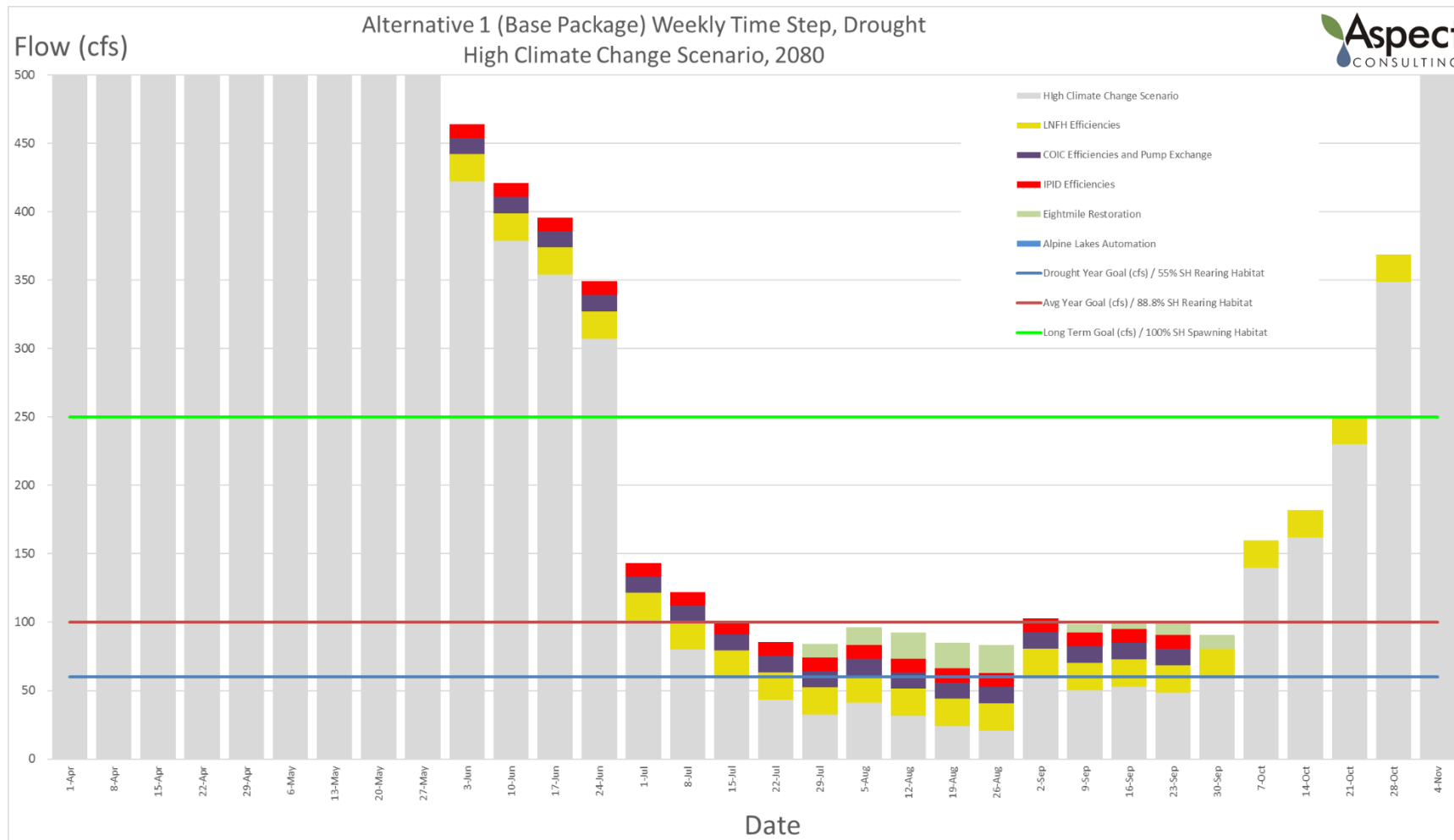


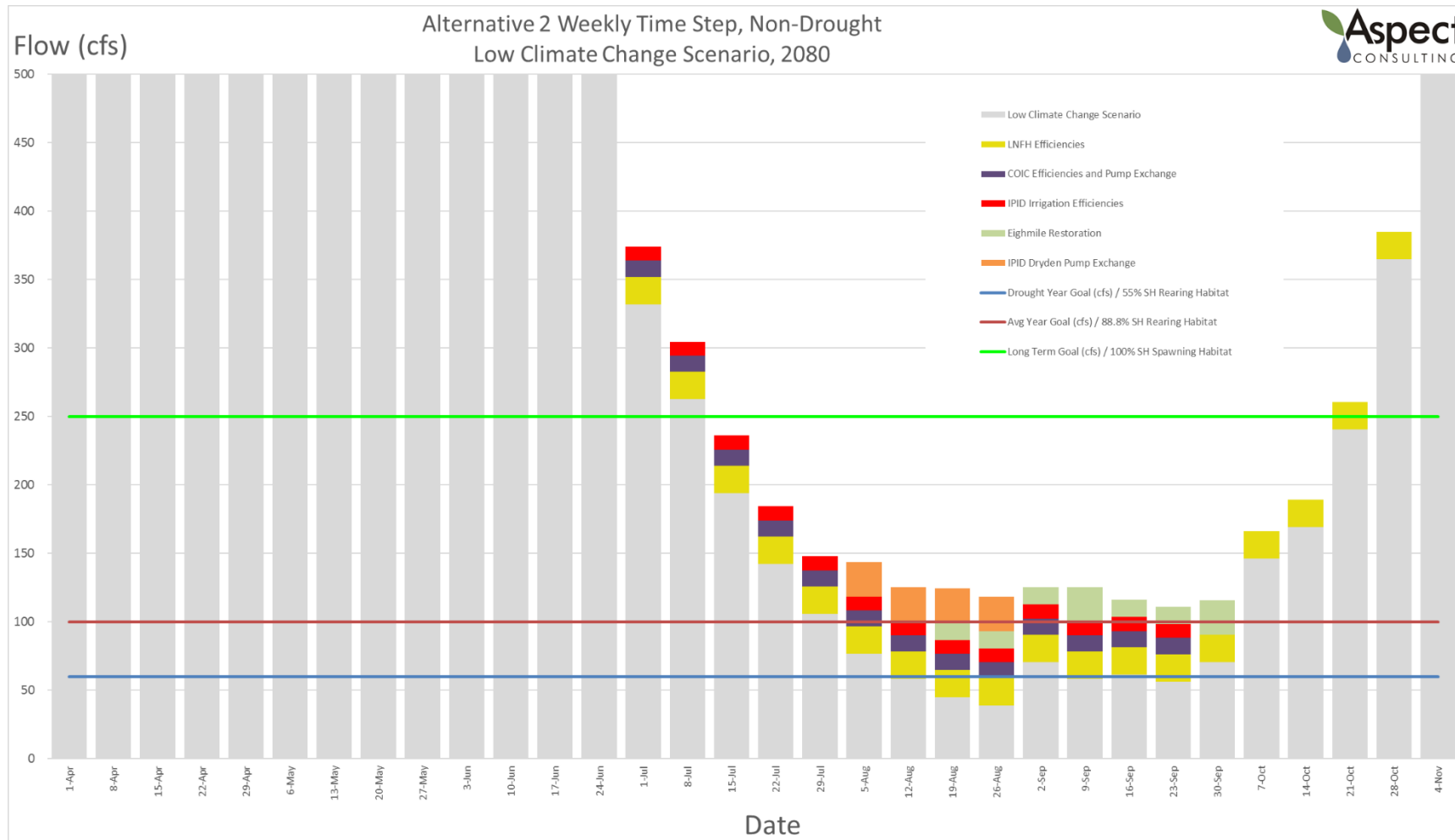


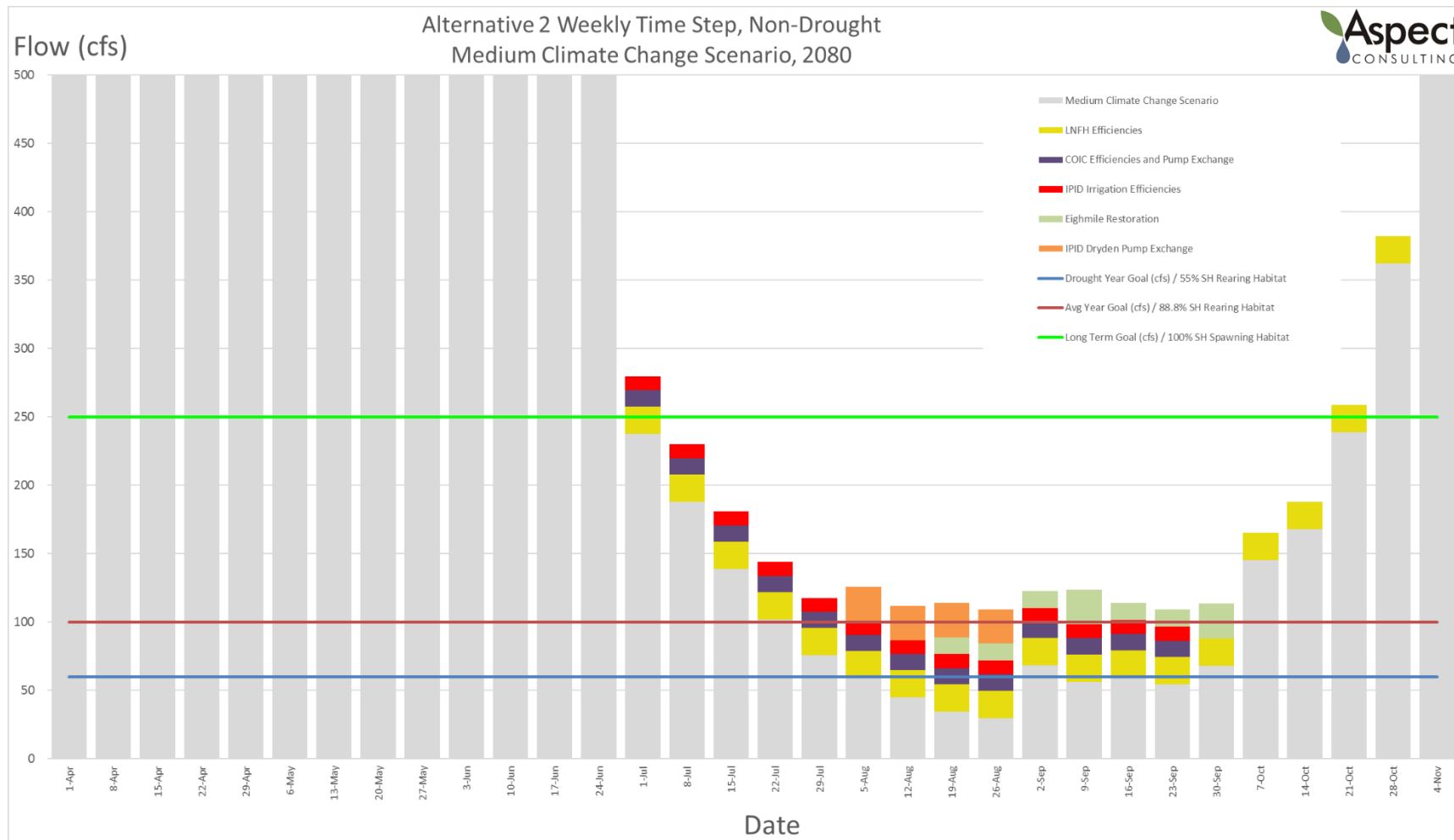


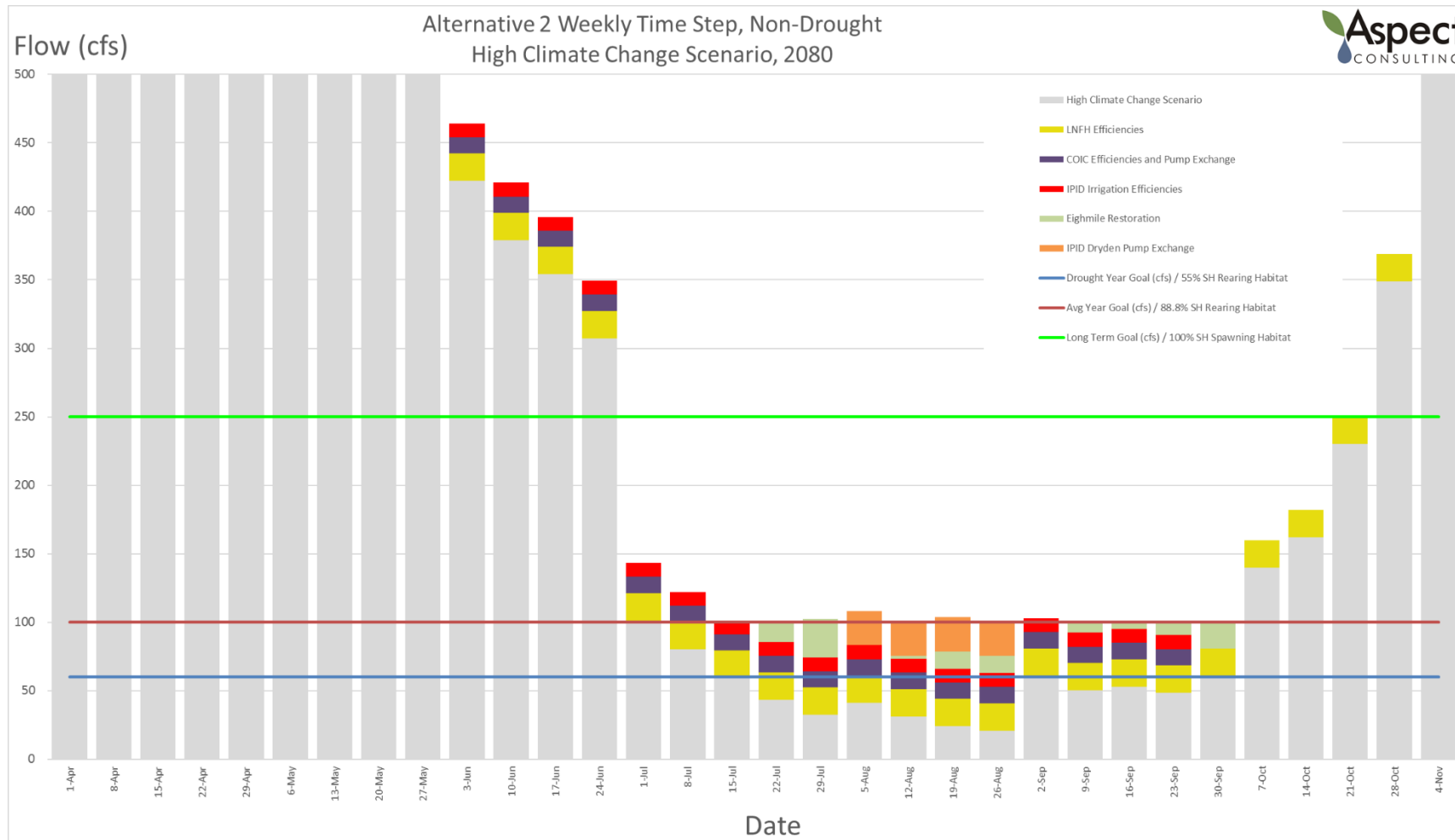


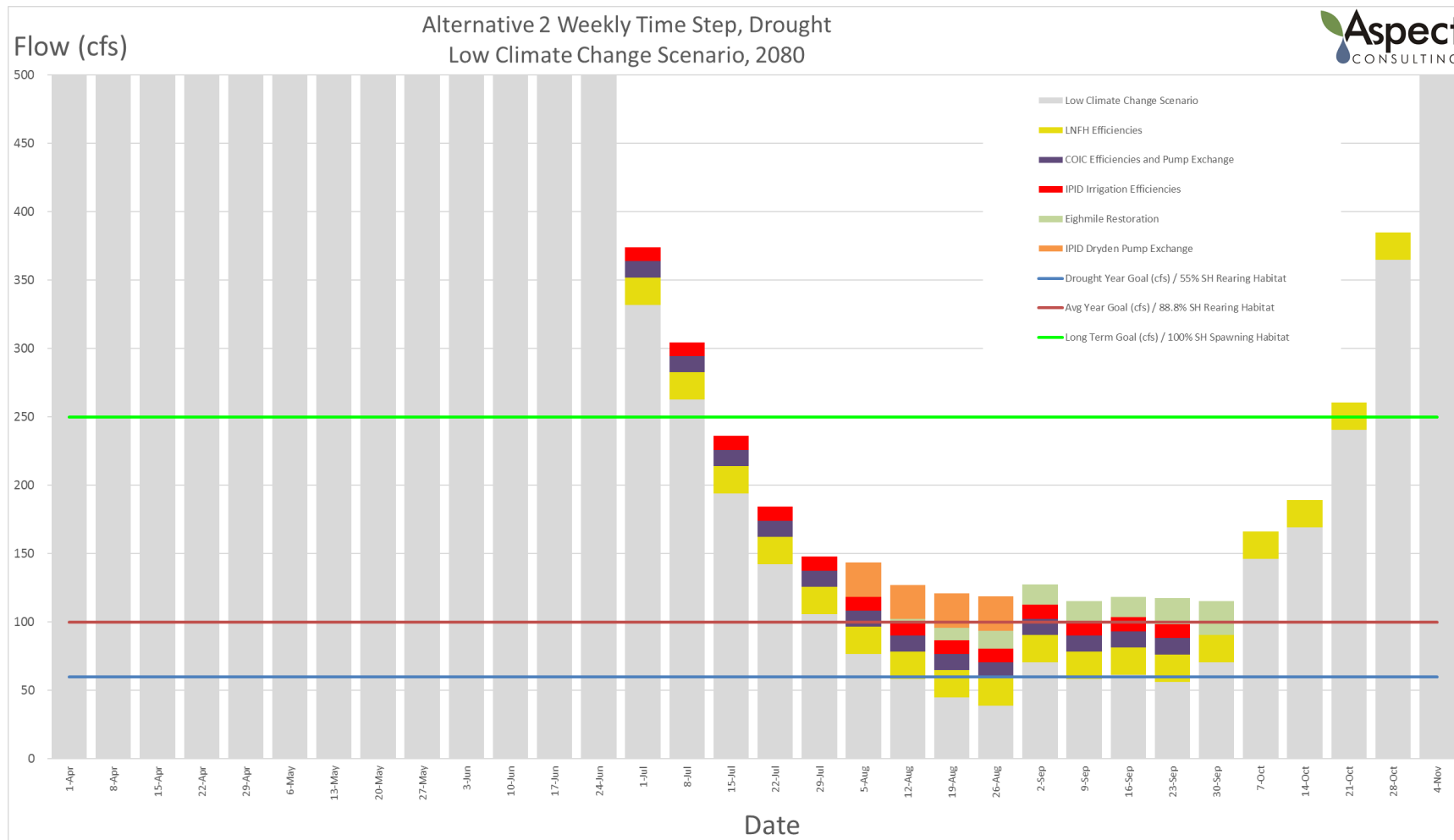


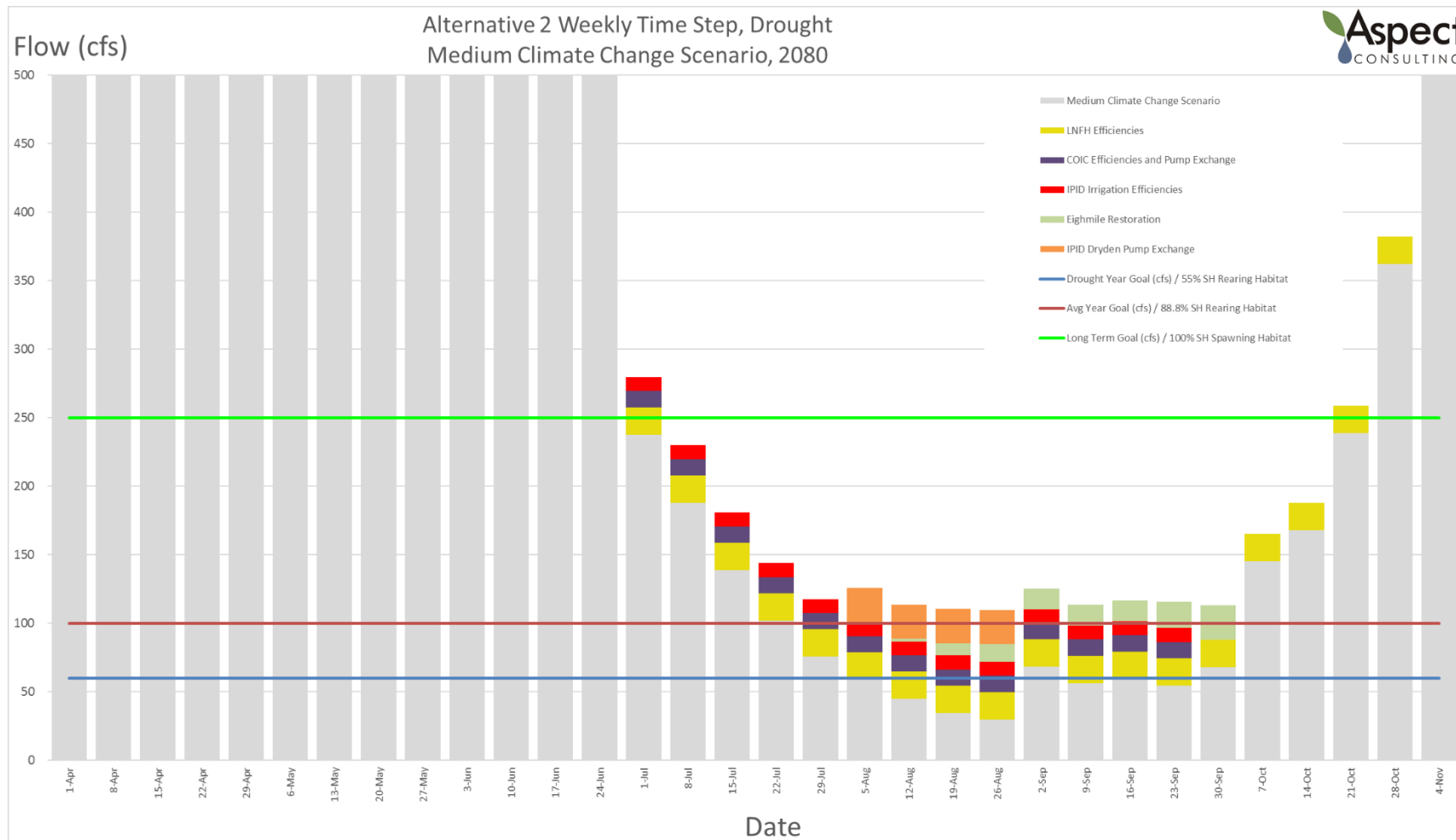


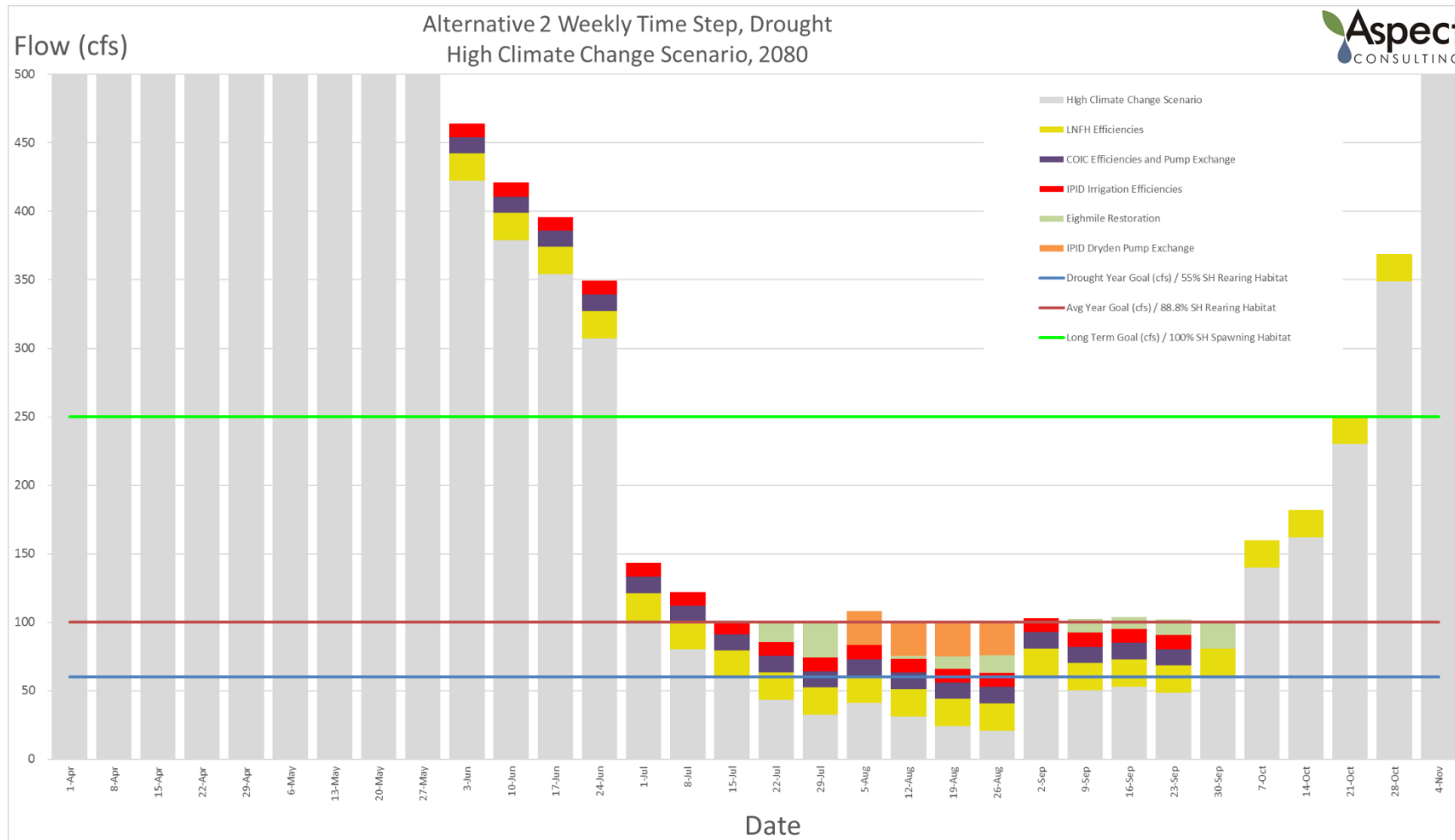


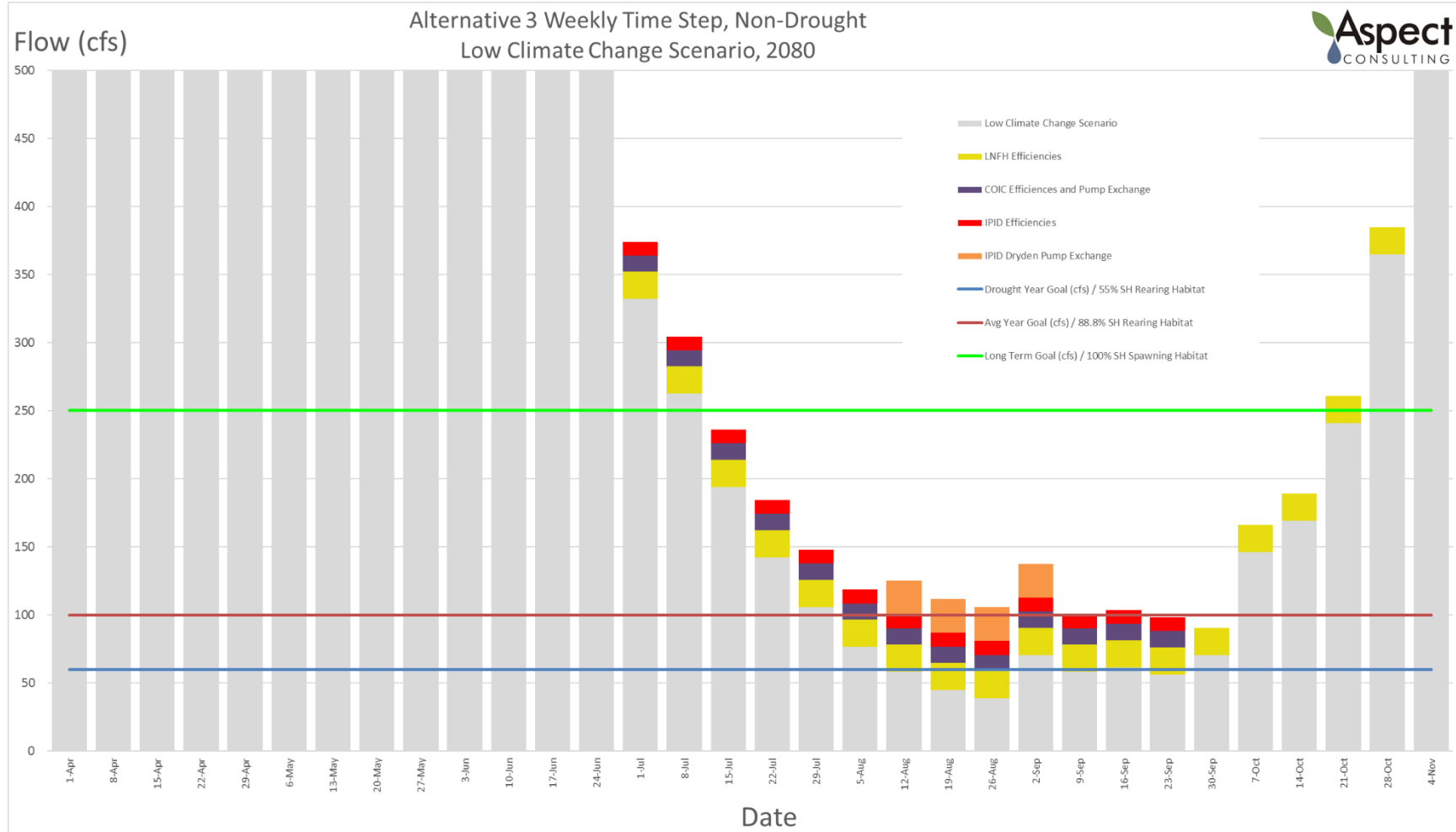












Alternative 3 Weekly Time Step, Non-Drought Medium Climate Change Scenario, 2080

Flow (cfs)

