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Subj: November Hatchery and Natural Production Report

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Cc: Distribution list.

HATCHERY ACTIVITIES

All populations at the Wells and Methow hatcheries were held on 100% well water during the month.

2020 Twisp Spring Chinook Salmon

A total of 23,861 fish were on-station at the end of the month with eight additional fish reported as mortalities. These fish had a mean fork length of 108 mm (Table 1) and were approximately 27 fish per pound (FPP). The number of fish on-station that apply to Douglas PUD HCP, Chelan PUD HCP, and Grant PUD Salmon and Steelhead Settlement Agreement (SSSA) mitigation obligations is listed in Appendix A.

2020 Methow Composite Spring Chinook Salmon

A total of 212,784 fish were on-station at the end of the month with 180 additional fish reported as mortalities. These fish had mean fork lengths between 105.4 and 110.4 mm (Table 1) and were between 26-31 FPP. These fish will support releases from the Chewuch Acclimation Pond (CAP; release target = 60,516), Goat Wall Acclimation Pond (GWAP; release target = 25,000), and from Methow Hatchery (release target = 110,295). The number of fish on-station that apply to Douglas PUD HCP, Chelan PUD HCP, and Grant PUD Salmon and Steelhead Settlement Agreement (SSSA) mitigation obligations is listed in Appendix A.

2021 Spring Chinook Salmon Brood Collection

At the end of October, Methow Hatchery had 235,468 eyed eggs for Methow Composite releases and 29,245 eyed eggs for the Twisp program on-station, and those progeny remained in incubation through the month of November.

Table 1. 2020 brood spring Chinook Salmon length and weight sampling at Methow Hatchery during the month of November. MC = MetComp.

| Raceway | Brood year | Stock-release | Fork length (mm) | | | | FPP |
|---------|------------|---------------|------------------|----------|-----|-----|------|
| | | | Mean | <i>N</i> | SD | CV | |
| 1 | 2020 | Twisp | 108.6 | 104 | 7.2 | 6.6 | 27.3 |
| 2 | 2020 | Twisp | 108.3 | 103 | 8.5 | 7.8 | 27.5 |
| 3 | 2020 | MC-Goat Wall | 109.0 | 106 | 7.0 | 6.4 | 26.3 |
| 4 | 2020 | MC-Goat Wall | 109.8 | 111 | 7.9 | 7.2 | 25.4 |
| 5 | 2020 | MC-Chewuch | 107.8 | 109 | 7.9 | 7.3 | 28.5 |
| 6 | 2020 | MC-Chewuch | 108.9 | 107 | 8.5 | 7.8 | 27.7 |
| 7 | 2020 | MC-Chewuch | 105.4 | 103 | 8.3 | 7.8 | 31.0 |
| 8 | 2020 | MC-on-station | 110.4 | 103 | 6.9 | 6.3 | 27.1 |
| 9 | 2020 | MC-on-station | 107.5 | 102 | 8.1 | 7.5 | 28.3 |
| 10 | 2020 | MC-on-station | 106.8 | 105 | 8.0 | 7.4 | 29.2 |
| 11 | 2020 | MC-on-station | 107.8 | 106 | 8.5 | 7.9 | 28.9 |
| 12 | 2020 | MC-on-station | 108.0 | 107 | 7.5 | 6.9 | 28.7 |

2020 Summer Chinook

Wells Hatchery had a total of 355,320 parr for the yearling program on-station at the end of the month and seven additional fish were reported as mortalities during November. These fish were at approximately 18 FPP at the end of the month. Summer Chinook are being reared to fulfill Wells HCP mitigation obligations (Appendix A).

2021 Summer Chinook

Spawning of the 2021 brood summer Chinook Salmon at Wells Hatchery was initiated on 28 September and completed on 13 October with 930 fish spawned over all programs. Spawning produced and estimated 456,000 eggs for the Wells yearling program, and 1,821,600 eggs for subyearling programs including releases for the Douglas PUD inundation compensation program, the State of Washington Orca program, and the Pacific Salmon Treaty program. All 2021 brood summer Chinook progeny remained in incubation during the month of November.

2021 Summer Steelhead

Wells Hatchery had 174,848 parr for the Columbia safety-net program, 102,870 parr for the Methow safety-net program, 23,509 parr for the Methow conservation program and 27,209 parr for the Twisp conservation program on-station during November. Mortalities totaled 33 and 19 fish for the Columbia and Methow safety-net groups, respectively, and 30 and 15 fish for the Methow and Twisp conservation groups, respectively. The hatchery also had 77,986 Okanogan hatchery parr and 24,876 Omak Creek conservation program parr on-station in November and these populations experienced monthly mortality of 110 and 9 fish respectively. Steelhead progeny are being reared to fulfill Douglas PUD Wells HCP mitigation obligations and to fulfill Grant PUD SSSA mitigation obligations.

2021 Kamloops Rainbow Trout

Wells Hatchery had 36,608 fry on-station at the end of the month after accounting for 64 mortalities. These progeny will be released as catchable trout in 2022. Kamloops Rainbow Trout are reared under the Off-License Settlement Agreement between Douglas PUD and WDFW (Appendix B).

2020 Methow Coho

Wells Hatchery had 26,027 Methow Coho parr on-station at the end of November. These fish were at approximately 46 FPP, and an additional eight parr were reported as mortalities during the month. The 2020 brood Coho will be reared at Wells Hatchery until transfer to the Twisp Acclimation Pond as pre-smolts in spring 2022. These fish were reared to meet Wells HCP mitigation obligations (Appendix A).

2021 White Sturgeon

Wells Hatchery had 2,092 juvenile White Sturgeon on-station at the end of November. These fish were between 4 and 50 FPP and an additional 15 fish were reported as mortalities during November. White Sturgeon progeny are reared at Wells Hatchery under the Wells Aquatic Settlement Agreement (Appendix C).

NATURAL PRODUCTION ACTIVITIES

PIT Tag Antenna Arrays

Data collected at all Methow basin PIT tag interrogation sites operated under this program, including Twisp (TWR), lower Methow (LMR), Lower Chewuch (CRW), Gold Creek (GLC), Libby Creek (LBC), and Wolf Creek (WFC) are uploaded to the PTAGIS database regularly, and can be viewed at the following website: <http://www.ptagis.org/data/quick-reports/small-scale-site-detections>

2021 Smolt Trapping

River conditions were favorable for trapping at both the Methow and Twisp sites during the majority of November. A substantial rain event caused the river and debris levels to rise drastically and trapping activities at both locations were paused from 15 to 16 November. Both traps operated for the remainder of the month with no interruptions. During the month, subyearling wild Chinook parr and wild steelhead parr were the primary species captured at the Methow and Twisp trap sites, respectively (Table 2). Biological data collected from trapped fish is detailed in Table 3. Methow River discharge for the period operated ranged from 16.5 to 152.3 m³s, providing expected trap efficiencies of less than 1.5 percent. Twisp River discharge for the period operated ranged from 2.7 to 28.2 m³s, providing expected trap efficiencies between 4.2 and 12.9 percent.

Table 2. Monthly salmonid captures at Methow Basin smolt traps in 2021.

| Species/origin | Methow | | | Twisp | | | Basin total |
|-----------------------|----------|-----|-----|----------|-----|-----|-------------|
| | Feb-Sept | Oct | Nov | Mar-Sept | Oct | Nov | |
| Precocial Chin/wild | 0 | 0 | 0 | 7 | 0 | 0 | 7 |
| Precocial Chin/hatch | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Yearling Chin/wild | 269 | 0 | 0 | 251 | 0 | 0 | 520 |
| Yearling Chin/hatch | 8,117 | 0 | 0 | 1,857 | 0 | 0 | 9,974 |
| Sub Chin/wild-parr | 511 | 31 | 219 | 125 | 463 | 345 | 1,694 |
| Sub Chin/wild-fry | 6,397 | 0 | 0 | 166 | 0 | 0 | 6,563 |
| SHR/wild-transitional | 312 | 0 | 0 | 297 | 0 | 0 | 609 |
| SHR/wild-parr | 170 | 12 | 68 | 291 | 114 | 347 | 1,002 |
| SHR/wild-fry | 510 | 1 | 0 | 19 | 0 | 1 | 531 |
| Steelhead/hatchery | 1,597 | 0 | 0 | 3,108 | 0 | 0 | 4,705 |
| Coho/wild-smolt | 40 | 0 | 0 | 43 | 0 | 0 | 83 |
| Coho/wild-parr | 88 | 0 | 57 | 174 | 61 | 218 | 598 |
| Coho/wild-fry | 234 | 0 | 0 | 163 | 0 | 0 | 397 |
| Coho/hatchery | 3,587 | 0 | 0 | 10,270 | 0 | 0 | 13,857 |
| Bull Trout | 1 | 0 | 2 | 12 | 3 | 6 | 24 |
| Cutthroat Trout | 0 | 0 | 0 | 4 | 1 | 0 | 5 |
| Rainbow Trout | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Sockeye/wild-fry | 136 | 0 | 0 | 2 | 0 | 0 | 138 |
| Total | 21,969 | 44 | 346 | 16,791 | 642 | 917 | 40,709 |

Table 3. Biological sampling of juvenile salmonids captured at Methow Basin smolt traps during November.

| Species/stage | Location | Length (mm) | | | Weight (g) | | | Mean K-factor |
|-----------------------|----------|-------------|------|-----|------------|------|-----|---------------|
| | | Mean | SD | N | Mean | SD | N | |
| Sub Chinook/wild/parr | Methow | 95.0 | 7.4 | 219 | 9.9 | 2.4 | 219 | 1.13 |
| Sub Chinook/wild/parr | Twisp | 92.0 | 7.6 | 329 | 8.7 | 2.2 | 329 | 1.10 |
| Steelhead/wild/parr | Methow | 118.4 | 40.6 | 68 | 23.2 | 20.5 | 68 | 1.06 |
| Steelhead/wild/parr | Twisp | 94.8 | 32.1 | 323 | 12.4 | 14.4 | 323 | 1.07 |
| Steelhead/wild/fry | Twisp | 46.0 | -- | 1 | -- | -- | -- | -- |
| Coho/wild/parr | Methow | 98.3 | 7.0 | 57 | 11.0 | 2.5 | 57 | 1.14 |
| Coho/wild/parr | Twisp | 89.3 | 8.8 | 214 | 8.0 | 2.3 | 214 | 1.09 |
| Bull Trout | Methow | 205.0 | 12.7 | 2 | 86.9 | 9.1 | 2 | 1.01 |
| Bull Trout | Twisp | 196.2 | 18.0 | 5 | 75.8 | 23.0 | 5 | 0.98 |

Appendix A. Number of fish reared at Wells and Methow hatcheries to meet Douglas County PUD’s Wells Habitat Conservation Plan mitigation objectives and other hatchery rearing agreements. Values are derived by applying fixed mitigation levels to the entire population on-station, and do not necessarily reflect separate rearing or release strategies.

| Brood year | Species | Life stage | Program | Target release No. | Month | | | | | | | | | | | | Total released /transfer |
|------------|------------------|----------------|--|----------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------------------------|
| | | | | | Dec '20 | Jan '21 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | |
| 2019 | Spring Chinook | Yearling smolt | CCPUD NNI | 60,516 <i>released</i> | 64,820 | 64,647 | 64,514 | 64,311 | -- | -- | -- | -- | -- | -- | -- | -- | 63,562 |
| 2019 | Spring Chinook | Yearling smolt | GCPUD Priest Rapids NNI | 134,126 <i>released</i> | 143,665 | 143,282 | 142,987 | 142,538 | -- | -- | -- | -- | -- | -- | -- | -- | 140,877 |
| 2019 | Spring Chinook | Yearling smolt | DCPUD Wells NNI | 29,123 <i>released</i> | 31,194 | 31,111 | 31,047 | 30,950 | -- | -- | -- | -- | -- | -- | -- | -- | 30,589 |
| 2020 | Spring Chinook | Yearling smolt | CCPUD NNI | 60,516 <i>released</i> | 65,287 | 65,110 | 64,953 | 64,907 | 64,896 | 64,105 | 64,097 | 64,081 | 64,074 | 64,063 | 64,050 | 63,999 | -- |
| 2020 | Spring Chinook | Yearling smolt | GCPUD Priest Rapids NNI | 134,126 <i>released</i> | 144,700 | 144,308 | 143,959 | 143,859 | 143,835 | 142,082 | 142,064 | 142,027 | 142,011 | 141,988 | 141,959 | 141,845 | -- |
| 2020 | Spring Chinook | Yearling smolt | DCPUD Wells NNI | 29,123 <i>released</i> | 31,419 | 31,334 | 31,258 | 31,236 | 31,231 | 30,850 | 30,847 | 30,839 | 30,835 | 30,830 | 30,824 | 30,799 | -- |
| 2019 | Summer Chinook | Yearling smolt | DCPUD Fixed Hatchery Compensation | 320,000 <i>released</i> | 367,527 | 367,277 | 367,027 | 366,682 | -- | -- | -- | -- | -- | -- | -- | -- | 366,552 |
| 2020 | Summer Chinook | Yearling smolt | DCPUD Fixed Hatchery Compensation | 320,000 <i>released</i> | 375,479 | 375,479 | 375,479 | 375,479 | 373,967 | 372,146 | 359,214 | 358,932 | 355,327 | 355,327 | 355,327 | 355,320 | -- |
| 2020 | Summer Chinook | Sub-yearling | DCPUD Fixed Hatchery Compensation | 484,000 <i>released</i> | -- | 557,477 | 523,359 | 496,338 | 491,048 | -- | -- | -- | -- | -- | -- | -- | 436,532 |
| 2020 | Summer steelhead | Yearling smolt | DCPUD Fixed Hatchery Compensation ¹ | 300,000 <i>released</i> | 326,589 | 326,325 | 326,093 | 325,870 | -- | -- | -- | -- | -- | -- | -- | -- | 325,762 |
| 2020 | Summer steelhead | Yearling smolt | DCPUD Wells NNI ¹ | 8,000 <i>released</i> | 8,709 | 8,702 | 8,696 | 8,690 | -- | -- | -- | -- | -- | -- | -- | -- | 8,687 |
| 2020 | Summer steelhead | Yearling smolt | GCPUD Priest Rapids NNI | 80,000 <i>released</i> | 87,091 | 87,020 | 86,958 | 86,899 | -- | -- | -- | -- | -- | -- | -- | -- | 86,870 |

Appendix A. Continued.

| Brood year | Species | Life stage | Program | Target release No. | Month | | | | | | | | | | | | Total released /transfer |
|------------|------------------|----------------|--|------------------------------|---------|---------|--------|-----|--------|--------|---------|---------|---------|---------|---------|---------|--------------------------|
| | | | | | Dec '20 | Jan '21 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | |
| 2020 | Summer steelhead | Yearling smolt | GCPUD Priest Rapids NNI | 20,000 <i>transferred</i> | 12,168 | 12,160 | 12,156 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 12,155 |
| 2021 | Summer steelhead | Yearling smolt | DCPUD Fixed Hatchery Compensation ¹ | 300,000 <i>released</i> | -- | -- | -- | -- | -- | -- | 328,751 | 326,403 | 325,601 | 328,786 | 313,463 | 314,244 | -- |
| 2021 | Summer steelhead | Yearling smolt | DCPUD Wells NNI ¹ | 8,000 <i>released</i> | -- | -- | -- | -- | -- | -- | 8,767 | 8,704 | 8,683 | 8,768 | 8,359 | 8,380 | -- |
| 2021 | Summer steelhead | Yearling smolt | GCPUD Priest Rapids NNI | 80,000 <i>released</i> | -- | -- | -- | -- | -- | -- | 87,667 | 87,041 | 86,827 | 87,676 | 83,590 | 83,798 | -- |
| 2021 | Summer steelhead | Yearling smolt | GCPUD Priest Rapids NNI | 20,000 <i>transferred</i> | -- | -- | -- | -- | -- | -- | 24,221 | 23,910 | 23,898 | 23,889 | 24,885 | 24,876 | -- |
| 2019 | Methow Coho | Yearling smolt | DCPUD Mitigation | 37,000 <i>released</i> | 39,865 | 39,831 | 39,805 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 39,770 |
| 2020 | Methow Coho | Yearling smolt | DCPUD Mitigation | 37,000 <i>released</i> | -- | -- | -- | -- | 26,935 | 26,881 | 26,814 | 26,787 | 26,047 | 26,040 | 26,035 | 26,027 | -- |

¹40,000 Inundation steelhead to be released in the Twisp or Methow with 8,000 NNI fish to total 48,000. 100,000 inundation steelhead to be released in the Methow as a safety net program. 160,000 inundation steelhead to be released directly to the Columbia.

Appendix B. Fish reared at Wells or Methow hatcheries under the Off-License Settlement Agreement.

| Brood year | Species | Life stage | Program | Target (pounds) disposition | Month | | | | | | | | | | | | Total released /transfer |
|------------|------------------------|------------|-----------------|---------------------------------------|---------|---------|---------|----------|----------|--------|--------|--------|---------|---------|--------|--------|--------------------------|
| | | | | | Dec '20 | Jan '21 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | |
| 2019 | Kamloops Rainbow trout | Juv. | WDFW sport fish | Number (pounds) released | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) | (--) | 53,290 |
| 2020 | Kamloops Rainbow trout | Juv. | WDFW sport fish | Goal is 20,000 pounds annual combined | 34,979 | 32,879 | 34,967 | 34,778 | 30,377 | 62 | -- | -- | -- | -- | -- | -- | -- |
| | | | | | (921) | (3,653) | (8,742) | (17,389) | (16,914) | (62) | (--) | (--) | (--) | (--) | (--) | (--) | (--) |
| 2021 | Kamloops Rainbow trout | Juv. | WDFW sport fish | Goal is 20,000 pounds annual combined | -- | -- | -- | -- | 25,905 | 25,700 | 25,719 | 25,660 | 25,623 | 63,037 | 36,672 | 36,608 | |
| | | | | | (--) | (--) | (--) | (--) | (9) | (31) | (214) | (467) | (1,601) | (5,131) | (18) | (84) | 20,688 |
| | | | | | -- | -- | -- | -- | -- | -- | -- | -- | -- | 20,688 | -- | -- | (5,591) |

Appendix C. Fish reared at Wells Hatchery pursuant to the Wells Aquatic Settlement Agreement – White Sturgeon Management Plan.

| Brood year | Species | Life stage | Program | Target disposition | Month | | | | | | | | | | | | Total released/culled /transferred | | | |
|------------|----------------|------------------|---------------------------------------|------------------------|---------|---------|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|------------------------------------|----|----|-------|
| | | | | | Dec '20 | Jan '21 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | | | | |
| 2020 | White Sturgeon | Juvenile rearing | Wells White Sturgeon Supple-mentation | <i>Up to 325</i> | 350 | 336 | 336 | 336 | 336 | -- | -- | -- | -- | -- | -- | -- | | | | |
| | | | | <i>Culled</i> | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | | | | <i>Transferred</i> | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1,083 |
| | | | | <i>Wells reservoir</i> | -- | -- | -- | -- | -- | 338 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 338 |
| 2021 | White Sturgeon | Juvenile rearing | Wells White Sturgeon Supple-mentation | <i>Up to 325</i> | -- | -- | -- | -- | -- | -- | -- | 3,054 | 2,618 | 2,117 | 2,107 | 2,092 | | | | |
| | | | | <i>Culled</i> | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | |
| | | | | <i>Transferred</i> | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | | | | <i>Wells reservoir</i> | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |