

**FHMP Update - Hatchery Program Alternatives
Cowlitz Salmon & Trout Hatcheries
Provided to FTC in October 2009**

Lower River Salmon Programs

| Population | Current | Alternative 1 | Alternative 2 | Alternative 3 | Additional Information |
|---|----------------|----------------------|----------------------|----------------------|---|
| Spring Chinook | | | | | |
| (Primary in Upper Cowlitz Basin and Stabilizing in Tilton River) | | | | | |
| Number of Smolts Released | 970,000 | 970,000 | 1,300,000 | | - No natural population in lower Cowlitz River - Surplus hatchery returns passed to Upper Cowlitz River |
| Natural Origin Spawners | 0 | 0 | 0 | | |
| PNI | NA | NA | NA | | |
| pHOS | NA | NA | NA | | |
| Fitness Factor | 0.50 | 0.50 | 0.50 | | |
| Total Harvest | 3,408 | 3,408 | 4,574 | | |
| Fall Chinook | | | | | |
| (Contributing in Lower Cowlitz Basin) | | | | | |
| Number of Smolts Released | 5,000,000 | 5,300,000 | 3,200,000 | | - Surplus hatchery returns passed upstream to Upper Cowlitz and Tilton Rivers - Both options include naturally produced fish in hatchery brood stock |
| Natural Origin Spawners | 2,098 | 3,920 | 3,979 | | |
| PNI | 0.00 | 0.50 | 0.67 | | |
| pHOS | 33% | 30% | 15% | | |
| Fitness Factor | 0.50 | 0.67 | 0.83 | | |
| Total Harvest | 6,781 | 7,213 | 6,082 | | |
| Coho | | | | | |
| (Primary in Lower Cowlitz Basin) | | | | | |
| Number of Smolts Released | 1,838,000 | 1,100,000 | 1,100,000 | | - Alternative 1 includes naturally produced fish in hatchery broodstock - Alternative 2 does not include naturally produced fish in hatchery brood stock |
| Natural Origin Spawners | 2,328 | 3,054 | 3,074 | | |
| PNI | NA | 0.90 | NA | | |
| pHOS | 4% | 1% | 1% | | |
| Fitness Factor | 0.50 | 0.98 | 0.94 | | |
| Total Harvest | 22,191 | 13,674 | 13,660 | | |

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Lower River Steelhead and Cutthroat Programs

| Population | Current | Alternative 1 | Alternative 2 | Alternative 3 | Additional Information |
|---|---------|---------------|---------------|---------------|--|
| Late Winter Steelhead (Contributing) | | | | | |
| Number of Smolts Released | 363,000 | 288,000 | 400,000 | 400,000 | - All alternatives include naturally produced fish in hatchery brood stock - All alternatives eliminate net pen releases to reduce straying to natural spawning locations |
| Natural Origin Spawners | 551 | 591 | 566 | 566 | |
| PNI | 0.00 | 0.64 | 0.53 | 0.58 | |
| pHOS | 35% | 17% | 27% | 22% | |
| Fitness Factor | 0.50 | 0.81 | 0.71 | 0.76 | |
| Early Winter Steelhead (Hatchery Stock - Not Listed) | | | | | |
| Number of Smolts Released | 300,000 | 0 | 0 | 0 | - No natural population in lower Cowlitz River |
| Summer Steelhead (Hatchery Stock - Not Listed) | | | | | |
| Number of Smolts Released | 550,000 | 220,000 | 700,000 | 700,000 | - No natural population in lower Cowlitz River - Alternative 3 establishes weirs during summer in key winter steelhead spawning streams |
| Winter and Summer Steelhead Combined | | | | | |
| Total Harvest | 13,784 | 5,488 | 13,723 | 13,723 | Total harvest from all hatchery steelhead programs combined |
| Cutthroat (Not Listed) | | | | | |
| Number of Smolts Released | 157,000 | 157,000 | 75,000 | | - Alternative 1 eliminates net pen releases to reduce straying into tributary streams - Alternative 2 reduction intended to reduce predation on other species |
| Natural Origin Spawners | Unknown | Unknown | Unknown | | |
| PNI | Unknown | Unknown | Unknown | | |
| pHOS | Unknown | Unknown | Unknown | | |
| Fitness Factor | Unknown | Unknown | Unknown | | |
| Total Harvest | Unknown | Unknown | Unknown | | |

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Upper River Salmon and Steelhead Programs**

| Population | Current | Alternative 1 | Alternative 2 | Alternative 3 | Additional Information |
|--|-----------|---------------|---------------|---------------|--|
| Coho (Primary in Upper Cowlitz and Stabilizing in Tilton) | | | | | |
| Number of Smolts Released | 1,000,000 | 1,000,000 | 1,000,000 | 500,000 | - Alternative 1 meets HSRG standards when collection efficiency reaches 40% - Alternative 2 transitions to meet HSRG guidelines when collection efficiency between 40%-60% - Alternative 3 meets HSRG standards when collection efficiency reaches 40%, reduces upriver releases by 500,000 smolts and increases upriver releases by 500,000 smolts - All alternatives include releases of 3,000 surplus adults into the Tilton River |
| Natural Origin Spawners | 3,317 | 3,217 | 4,547 | 4,763 | |
| PNI | 0.57 | 0.68 | 0.65 | 0.78 | |
| pHOS | 77% | 26% | 55% | 28% | |
| Fitness Factor | 0.72 | 0.81 | 0.79 | 0.90 | |
| Total Harvest | 17,321 | 15,653 | 15,993 | 8,557 | |
| Winter Steelhead (Primary in Upper Cowlitz and Contributing in Tilton) | | | | | |
| Number of Smolts Released | 275,000 | 55,000 | | | - Current does not include any naturally produced fish in hatchery brood stock and only surplus hatchery fish are transported to upper Cowlitz River - Alternative 1 includes 100% naturally produced fish in hatchery brood stock and passes enough returns from this program to upper Cowlitz River to achieve 500 fish escapement goal |
| Natural Origin Spawners | 175 | 461 | | | |
| PNI | 0.36 | 0.77 | | | |
| pHOS | 52% | 29% | | | |
| Fitness Factor | 0.55 | 0.90 | | | |
| Total Harvest | 392 | 413 | | | |