

FINAL - Meeting Summary Notes
Lewis River License Implementation
Merwin Trap Engineering Subgroup
May 4, 2005
Merwin Hydro Facility, WA

Subgroup Participants Present: (9)

Arnold Adams, PacifiCorp
 Brent Denham, PacifiCorp
 Eric Kinne, WDFW
 Curt Leigh, WDFW – via teleconference
 Erik Lesko, PacifiCorp
 Bryan Nordlund, NOAA Fisheries
 Dana Postlewait, R2 Resource Consultants
 Pat Powers, WDFW
 Will Shallenberger, PacifiCorp

Assignments from May 4th Meeting:	Status:
PacifiCorp: Send Curt Leigh copy of Table 1 and Attachment A from Criteria document handout.	Done via email – 5/6/05
PacifiCorp: Continue investigation and report background if available on why two of the trap entrances were abandoned in 1980.	*Complete - see below
R2 (Postlewait): Call Jim Stow at USFWS and determine engineering subgroup input protocol for their agency.	Complete 5/6/05
R2 (Postlewait): Confirm ¾” bar spacing for pickets within trap and sorting features to accommodate bull trout with Jim Stow as USFWS.	Complete – Jim deferred to Gene Stagner
WDFW (Kinne): Provide daily fish run numbers to PacifiCorp (Shrier) and R2 (Postlewait), including 2002 coho run numbers, and 4-year average numbers.	Complete – 5/11/05
PacifiCorp (Shrier): Analyze and provide summary data for the incomplete portion of the 2003 trap counts to R2 (Postlewait).	Complete – 5/10/05
R2 (Postlewait): Provide summary of design fish numbers by species for existing trap data. Provide analysis and basis for adjustment factor to project Settlement Agreement run goals with available data. Complete daily fish load run numbers for Table 1, and distribute ASAP when fish run data available.	To be completed by June 30.
Fish numbers are also needed to assist with evaluating truck procurement options. PacifiCorp desires to order a new fish truck that will be available in time for the fall runs.	Will be provided with above task.
R2 (Postlewait): Contact Smith Root and summarize available electro-anesthesia options. To be performed in the future during facility design layout.	Pending
Subgroup: provide review comments to the “Facility Design Criteria” document, or a letter of concurrence with the published data. Goal is to finalize the draft for adoption by the ACC.	Complete – 8/30/05

Per Ed Weiss relating to his recollection of the reason for closing the other trap entrances. Ed is the former Environmental Manager for PacifiCorp

Yes I have a few dim memories of the modifications that we made to the fish trap. Remember, the first fish mortality we had at the dam resulted in some carcasses left in the second entrance and a few even in the first, however no one made a big deal about it at the time although they did try to estimate the numbers as I recall. Subsequent heavier use of the trap again focused on the observations of trapped live fish and carcasses in the first two entrances. The two entrances had long been neglected from a fish passage perspective and from a maintenance one. Heavy spilling during several winters caused further deterioration of the fish collection facility and it was collectively decided to not attempt to maintain it in its former grandeur and status. Loose or missing floor and wall boards made traps for fish and carcasses were almost impossible to retrieve. I also know that high flows caused heavy tailwater waves that acted like a plunger and caused heavy damage to the entrances and passage ways. I believe some of the fallout of the design of Merwin Hatchery also affected the decision. First, I think that over the years it was observed that few fish entered the first two entrances, due probably to it being times of heavy flows and perhaps even some spill. I am not so sure that at some high flows the openings might have been rendered inoperable by high tailwater elevation. The Merwin Hatchery was designed with a discharge near the third opening to further aid in attracting hatchery fish to that entrance. Most wild species were limited to fall Chinook and they were not to be passed upstream and so using the single entrance again made some sense for the hatchery species involved. This is true also for the Coho normally collected for the Lewis Hatchery. Flows are generally lower in the fall. All of this reasoning was toward capturing primarily hatchery fish and mainly at the lower flows. Ed

Assignments from March 22nd Meeting:	Status:
PacifiCorp: Provide group with existing project drawings.	Complete 5/4/05
PacifiCorp: Keep subgroup apprised of PacifiCorp fish migration study efforts.	Updated this meeting.
PacifiCorp: Investigate and report background if available on why two of the trap entrances were abandoned in 1980.	Complete 5/6/05
PacifiCorp: To email pdf diagram of sorting process diagrams to Erik Kinne	Done with Several iterations over last few weeks
Subgroup: to review Facility Design Criteria document and provide comment by March 28, 2005 if possible, regardless PacifiCorp will forward revised draft for full review the first week in April.	Comments to be provided following this meeting

Handouts

- Agenda
- Project and trap drawings for Merwin
- Draft Facility Design Criteria (SA 4.2 and 4.3) dated 4/11/05
- Updated Table 1 to above document, and Attachment A (Adult Fish Handling Process Diagram)
- Swift 1 Powerhouse aerial photo with bathymetry, and Upper Release Pipe layout figure

Administrative

Introductions of attendees and review agenda.

Review of last meeting’s action items – see status above.

Summary notes will be provided and sent to engineering subgroup for review.

Future meetings will be held at the Merwin Hydro Facility.

4.2 Merwin Trap & 4.3 Merwin Upstream Collection & Transport Facility - Criteria

Dana Postlewait (R2 Resource Consultants) presented and reviewed with the subgroup the April 11 draft of the "Facility Design Criteria", including the updated Table 1 and Attachment A.

Updated fish run numbers will be provided for 2003, and for a 4-year average (Kinne / Shrier), and will be distributed to the subgroup via email (Postlewait). Nordlund stated that the facilities need to be sized such that they accommodate the future run sizes as agreed to via settlement.

Bryan Nordlund (NOAA Fisheries) asked about the electro-anesthetic system. Eric Kinne (WDFW) briefed the group on the system at Bonneville hatchery. Other installations are in place at Cole Rivers Hatchery in Oregon, several facilities in Idaho, and at Cowlitz salmon hatchery in Washington. Postlewait will contact Smith Root and other hatchery managers during the design development phase to determine available technology. The possibility of a site tour to the Bonneville hatchery was discussed. This will be considered later in the design process. Overall, the group is comfortable with the use of an electro-anesthesia system, and it is preferred over other options (CO₂, clove oil, other chemicals, etc.). Nordlund stated that he needs to become familiar with the device, but it looks to be a preferable alternative based on limited information provided at the meeting. A tour would be of assistance, but any research reports on the effectiveness (i.e. survivability/impacts on fecundity etc.) would be needed as well.

Kinne also stated that the CWT detector, NW Marine Technology R9500 may need to be confirmed or updated. Available technologies, with specifications and available project performance data will be researched during the facility layout phase.

Agency representatives would prefer to review the document off-line, and provide comments or concurrence prior to the subgroup's recommendation for adoption of this document by the ACC.

Postlewait will contact Jim Stow (USFWS) to address how they will provide comments.

Merwin Fish Tracking Study

Frank Shrier (PacifiCorp) presented on overview of the tracking study that is currently beginning at Merwin. The study has two parts:

- 1) Fish Enumeration component, based on hydroacoustic technology to help determine the existing fish trap efficiency, and
- 2) A Fish Behavior Study, based on DIDSON and video camera technology.

Comments are being solicited on the study plan that was distributed to the ACC. The study is underway, and PacifiCorp will be updating the group on more specifics as the startup and

equipment testing is completed. There was quite a bit of discussion regarding the study, more details will follow as logistics are worked out during startup.

The entrance will be configured so a constant level between the fyke and tailwater are maintained and documented.

Upper Release Project

Will Shallenberger (PacifiCorp) reviewed the handouts with attendees, and gave an updated overview of the upper release project. The urgency of this design effort has diminished since the last meeting, as there are too many details to work out to accommodate construction of the release pipe system during the scheduled outing this fall. The design effort will still move forward to meet the SA deadlines; however, construction will likely be performed in 2 to 3 years.

Site Visits

The subgroup toured the Merwin tailrace, Swift Dam and intake area, the Swift No. 1 release point, and the canal check structure.

Meeting adjourned at 4:00 pm

Miscellaneous

Kim McCune (PacifiCorp) has presented July 20, 2005 to the Subgroup as the next meeting date.

9:00am – 3:00pm

Merwin Hydro Facility

Attachment A – Additional comments received after the meeting

Nordlund: I had a further thought on this after we left the site - this is not a comment on the meeting notes. How about developing the concept of a pumped connection from the Swift 1 tailrace to the old river channel? If screened, this would provide a barrier precluding fish from entering the tailrace from the river channel. The design could even include a turbine pump to reduce power costs, utilizing high head and small flow from forebay (from behind the to be constructed collector screens??) to generate the required flow with the relatively small amount of head required to get from the tailrace to the old river channel.

Nordlund stated that fish leaving the tailrace should not be necessarily be subtracted from the denominator of the trap efficiency calculation, because without including these fish, there is no indicator of delay or lack of ability for fish to locate the existing entrance. The camera work might get at behavior at the entrance to some extent, but can not really be quantified to assist in trap re-design. The cameras will not capture fish that enter the tailrace and leave because they can not find an entrance. For example, under some hydraulic conditions, fish orient in the wrong direction because of powerhouse operations. This behavior, although well-observed by Nordlund and others, would not be a factor in determining effectiveness of the existing trap entrance per the proposed study, because whether these fish eventually pass into the trap entrance or leave without ever finding an entrance will not be captured by the study. Sonic tags or radio telemetry are the currently available tools to assess this type of behavior. Sonic tags could also be used in tandem with computational fluid dynamics to gain a better picture of comprehensive fish behavior for a variety of hydraulic conditions. He further stated his objective is to produce a design that will optimize the efficiency of the new trap/entrance design, because this facility is absolutely the key to re-introduction in the upper Lewis Basin, which is the overarching objective of the Settlement Agreement. Nordlund stated that he understood the objectives and limitations of the currently proposed study, but pointed out that this information could not really be used to assess locations and flow amounts for fishway entrances. This type of information is very important for upstream passage success.

Attachment A

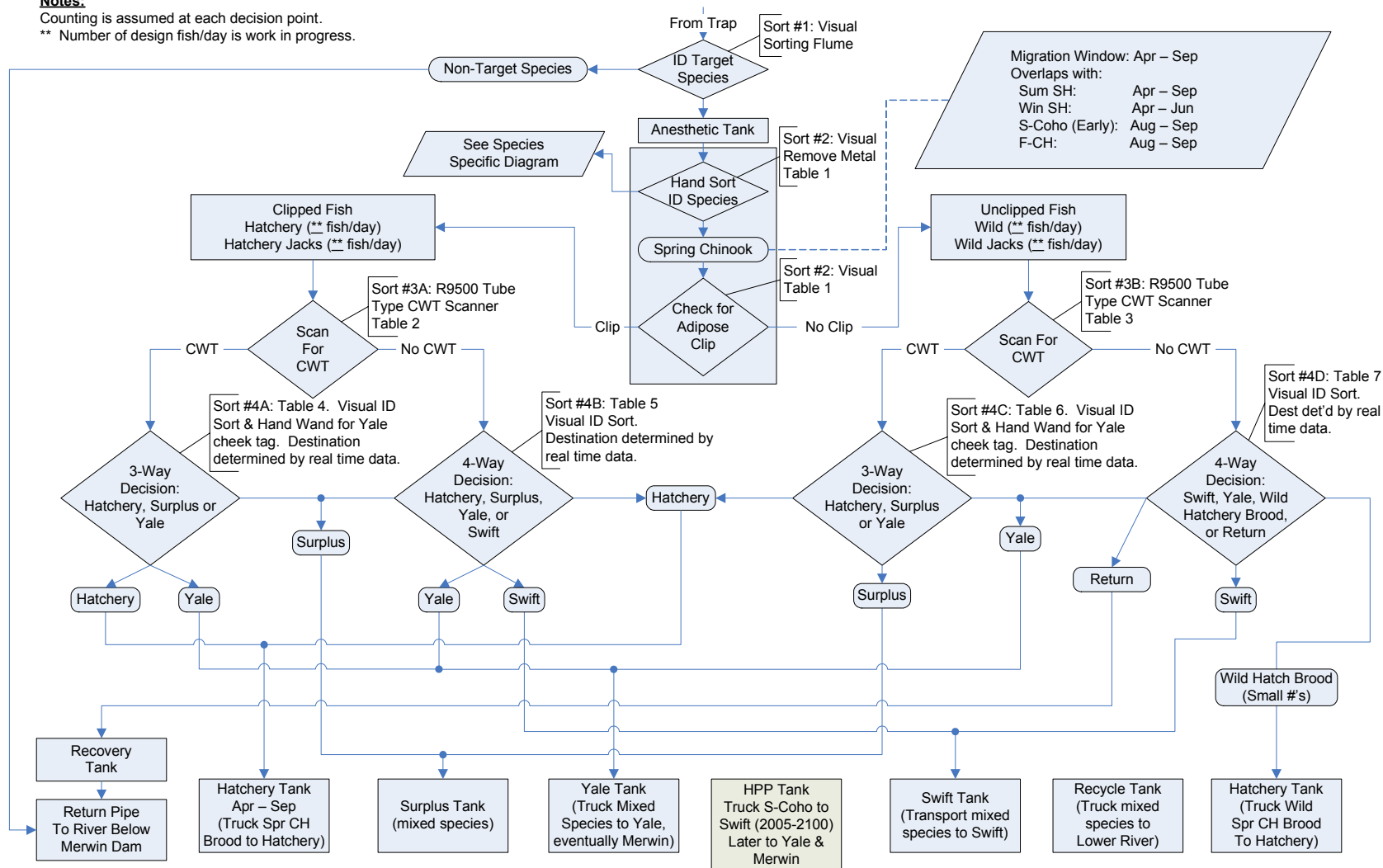
Adult Fish Handling Process Diagrams by Species

Spring Chinook Adult Fish Handling Process Diagram

Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap

May 3, 2005

Notes:
 Counting is assumed at each decision point.
 ** Number of design fish/day is work in progress.

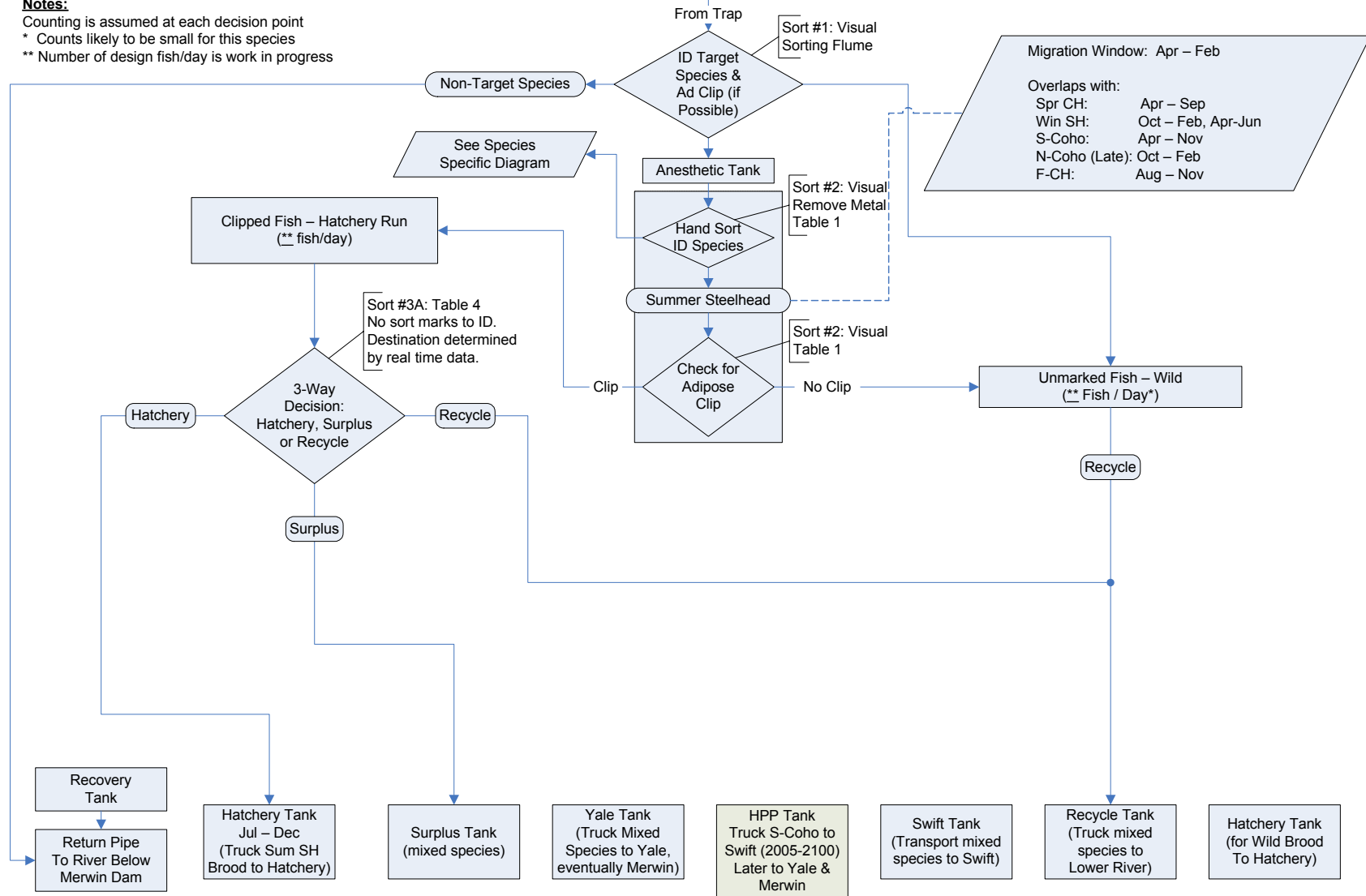


Summer Steelhead Adult Fish Handling Process Diagram Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap

May 3, 2005

Notes:

- Counting is assumed at each decision point
- * Counts likely to be small for this species
- ** Number of design fish/day is work in progress

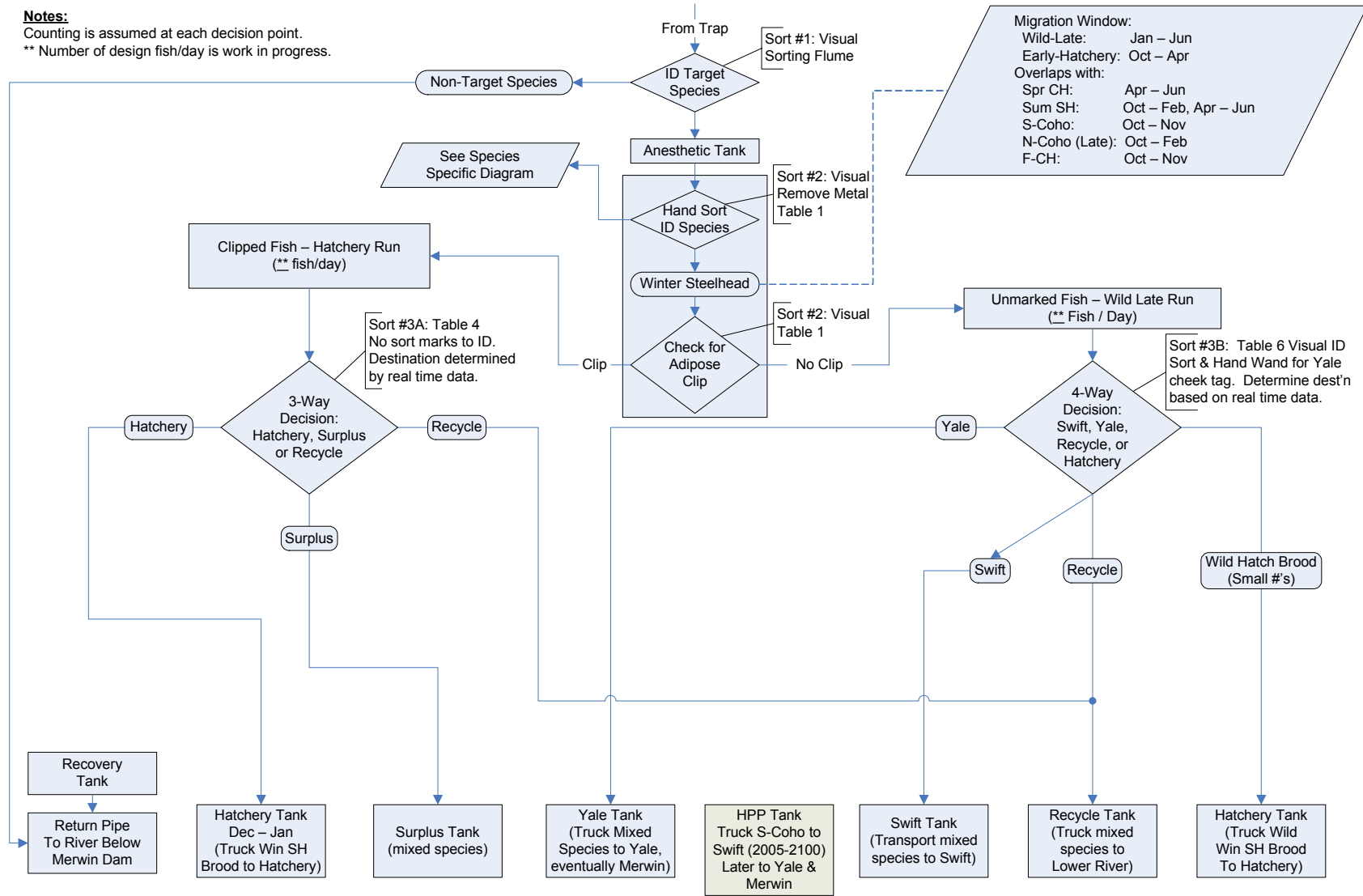


Winter Steelhead Adult Fish Handling Process Diagram

Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap

May 3, 2005

Notes:
 Counting is assumed at each decision point.
 ** Number of design fish/day is work in progress.

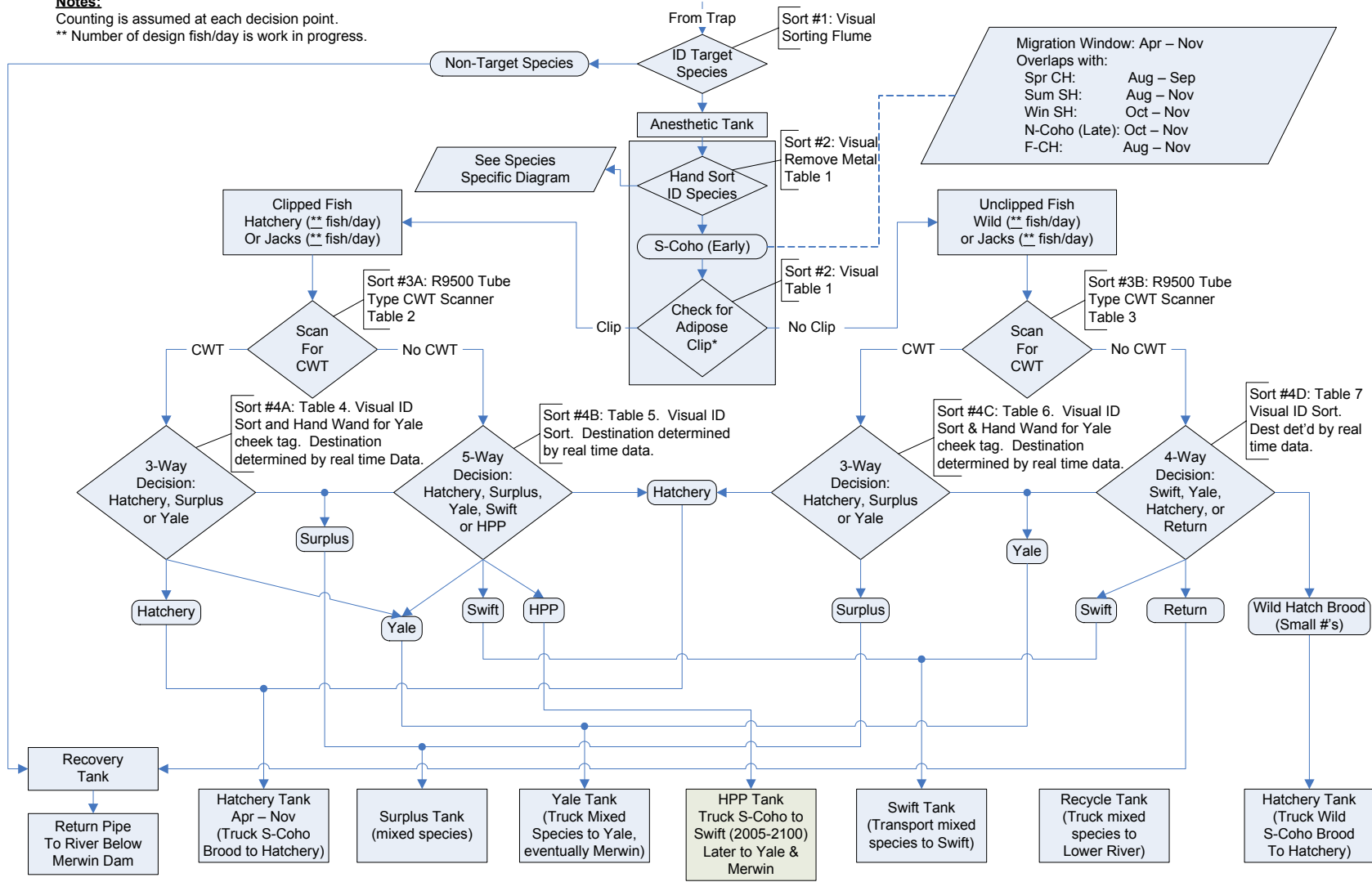


Migration Window:	
Wild-Late:	Jan – Jun
Early-Hatchery:	Oct – Apr
Overlaps with:	
Spr CH:	Apr – Jun
Sum SH:	Oct – Feb, Apr – Jun
S-Coho:	Oct – Nov
N-Coho (Late):	Oct – Feb
F-CH:	Oct – Nov

S-Coho (Early) Adult Fish Handling Process Diagram Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap May 3, 2005

Notes:

Counting is assumed at each decision point.
** Number of design fish/day is work in progress.



N-Coho (Late) Adult Fish Handling Process Diagram Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap

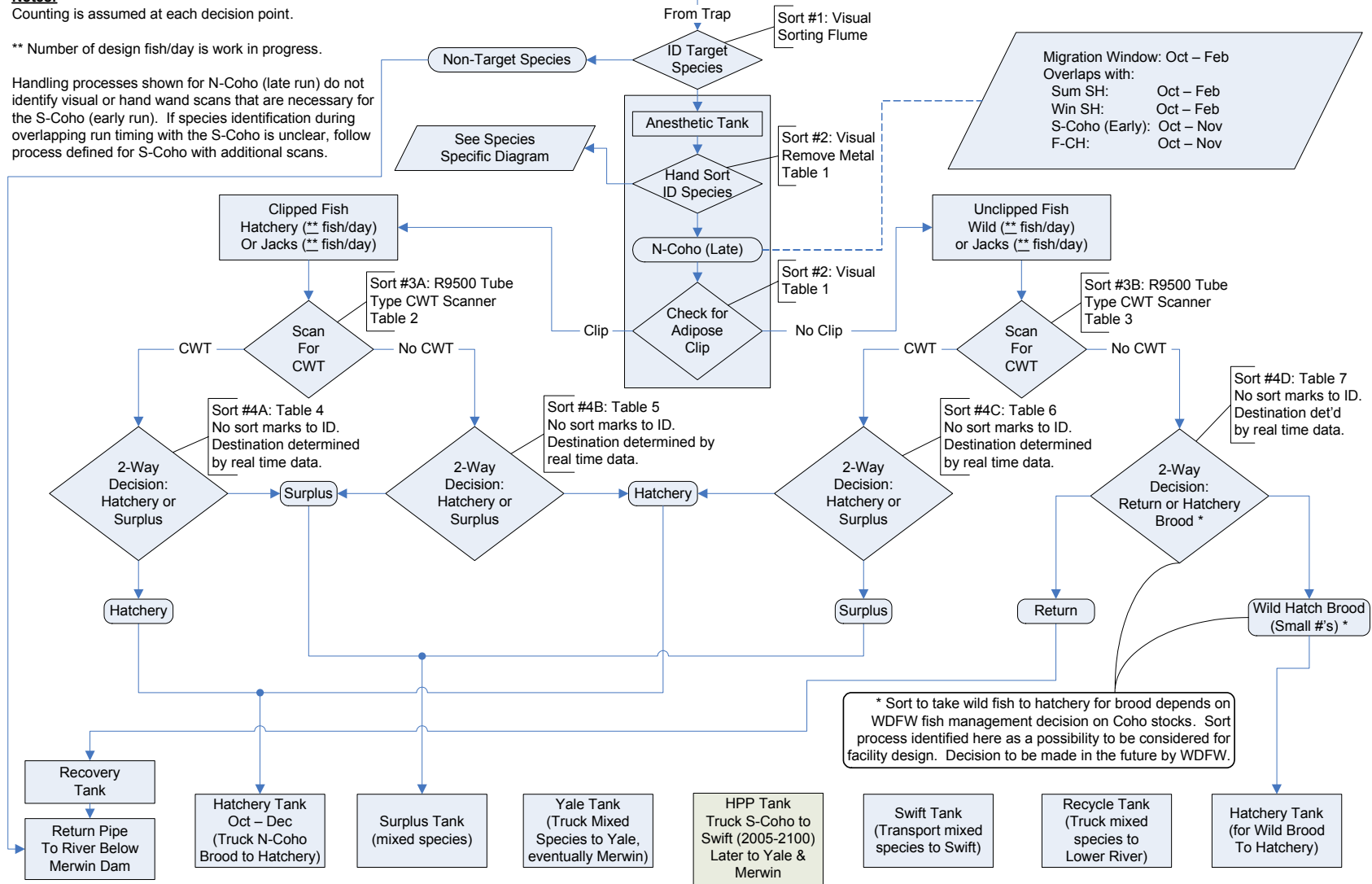
May 3, 2005

Notes:

Counting is assumed at each decision point.

** Number of design fish/day is work in progress.

Handling processes shown for N-Coho (late run) do not identify visual or hand wand scans that are necessary for the S-Coho (early run). If species identification during overlapping run timing with the S-Coho is unclear, follow process defined for S-Coho with additional scans.



Fall Chinook Adult Fish Handling Process Diagram

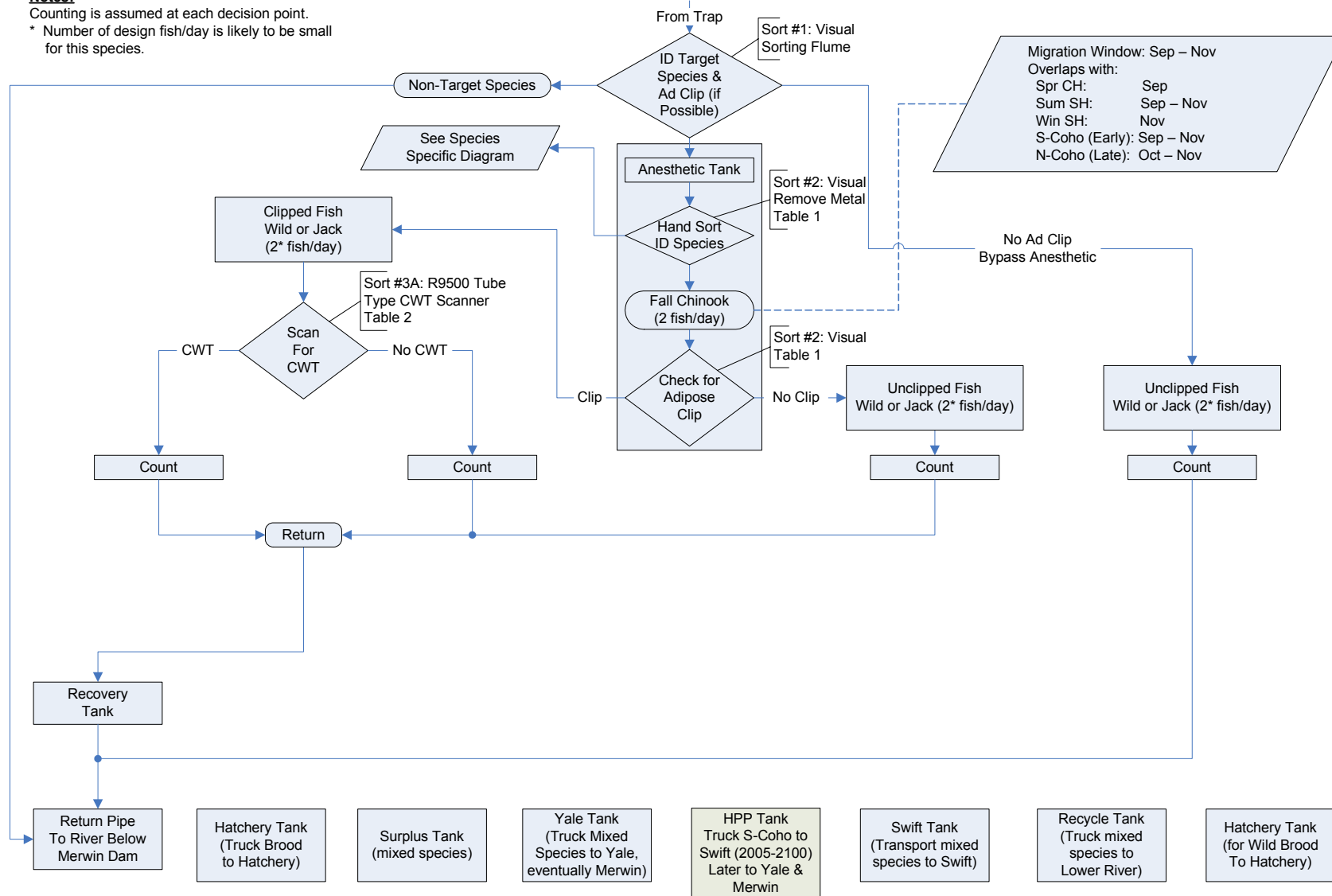
Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap

May 3, 2005

Notes:

Counting is assumed at each decision point.

* Number of design fish/day is likely to be small for this species.



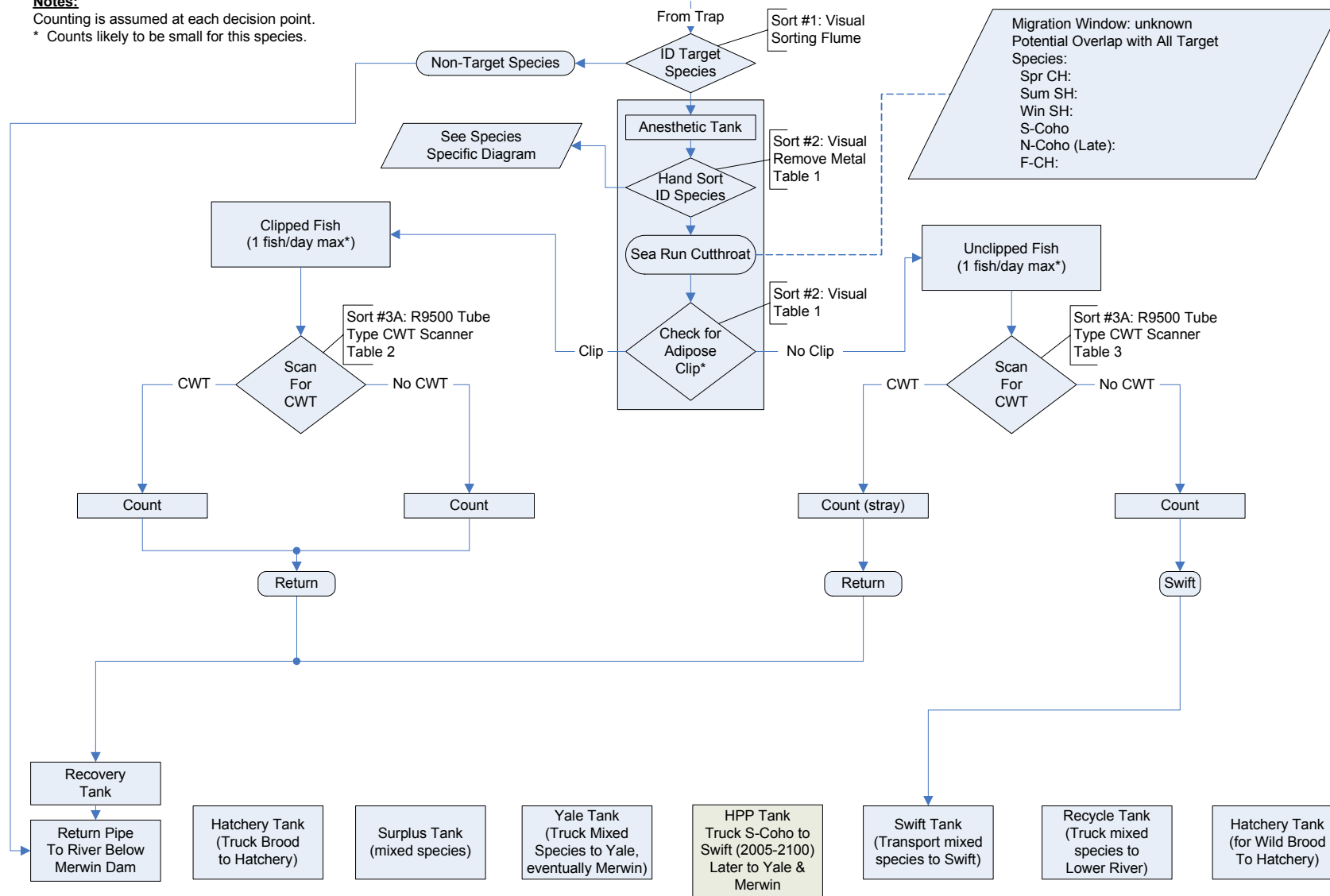
Sea Run Cutthroat Adult Fish Handling Process Diagram Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap

May 3, 2005

Notes:

Counting is assumed at each decision point.

* Counts likely to be small for this species.



Non-Target Species Adult Fish Handling Process Diagram

Lewis River – Upstream Fish Passage Sorting Process at Merwin Fish Trap

May 3, 2005

Notes:
Counting is assumed at each decision point

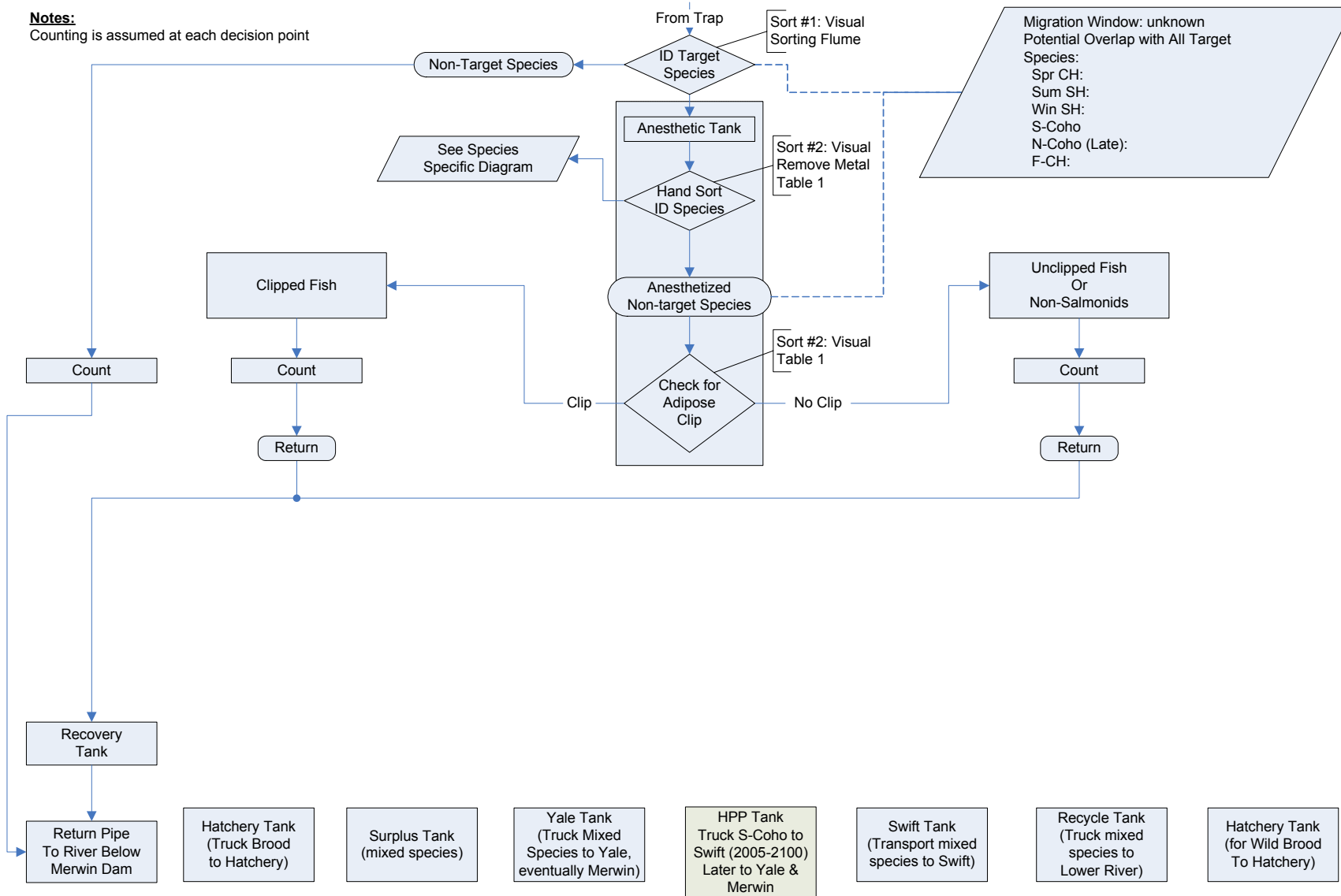


Table 1. Sorting Requirements and Design Data by Fish Species.

Identification		Destination - Tank											Design Data		Run Timing															
Species	Other ID	Anticipated Mark					Hatchery		Upper Swift	Merwin Return Pipe to River	Lower River - Recycle Tank	Yale Destination (Yr 11)	HPP (Note 1) (2005)	Surplus Tank	Merwin Lift (Future, Yr 23)	Fish Design Weight (lbs)	Design Peak Daily (4) (no.)	J	F	M	A	M	J	J	A	S	O	N	D	
		None	Ad Clip	CWT	Yale Mark	Other	Brood for Hatchery	Brood for Wild																						
Spring Chinook	Hatchery	-	X	X	X	-	Y	Y	Y	N	N	Y (if mkd)	N	Y	N	15	WIP					B	B	B	B	B	B			
	Wild	X	-	-	X	-	N	Y	Y	N	N	Y (if mkd)	N	N	Y	15	WIP				X	X	X	X	X	X				
	Jacks - Hatchery	-	X	X	X	-	Y	Y	N	N	N	Y (if mkd)	N	Y	N	2	WIP					B	B	B	B	B	B			
	Jacks - Wild	X	-	-	X	-	N	Y	Y	N	N	Y (if mkd)	N	N	Y	2	WIP				X	X	X	X	X	X				
Summer Steelhead	Hatchery	X	X	-	-	-	Y	N	N	N	Y	N	N	Y	N	8	WIP	X	X		X	X	X	B	B	B	B	B	B	
	Wild	X	-	-	-	-	N	N	N	N	Y	N	N	N	N	8	na	X	X		X	X	X	X	X	X	X	X	X	
Winter Steelhead	Wild-late	X	-	-	X	-	N	Y	Y	N	Y	Y (if mkd)	N	N	Y	8	WIP	X	X	X	X	X	X							
	Hatchery	-	X	-	-	-	Y	N	N	N	Y	N	N	Y	N	8	WIP	B	X	X	X						X	X	B	
S-Coho (early)	Hatchery	-	X	X	X	-	Y	N	Y	N	N	Y (if mkd)	Y	Y	Y	10	WIP							B	B	B	B			
	Wild	X	-	-	X	-	N	Y	Y	Y	N	Y (if mkd)	N	N	Y	10	na							X	X	X	X			
	Jacks - Hatchery	-	X	X	X	-	Y	N	Y	N	N	Y (if mkd)	N	Y	Y	1	WIP							B	B	B	B			
	Jacks - Wild	X	-	-	X	-	N	N	Y	Y	N	Y (if mkd)	N	N	Y	1	WIP							X	X	X	X			
N-Coho (late)	Hatchery	-	X	X	-	-	Y	N	N	N	N	N	N	Y	N	10	WIP	X	X							B	B	B		
	Wild	X	-	-	-	-	N	N	N	Y	N	N	N	N	N	10	WIP	X	X							X	X	X		
	Jacks - Hatchery	-	X	X	-	-	Y	N	N	N	N	N	N	Y	N	1	WIP	X	X							B	B	B		
	Jacks - Wild	X	-	-	-	-	N	N	N	Y	N	N	N	Y	N	1	WIP	X	X							X	X	X		
Fall Chinook	Wild	X	X	X	-	-	N	N	N	Y	N	N	N	N	N	2	na							X	X	X	X			
	Jacks - Wild	X	X	X	-	-	N	N	N	Y	N	N	N	N	N	-	na							X	X	X	X			
Bull trout	Wild	X	-	-	-	-	N	N	Y	N	N	Maybe	N	N	Y	8	na	-	-	-	-	-	-	-	-	-	-	-	-	
Sea-run cutthroat	Wild	X	2	2	-	-	N	N	Y	Y (if mkd)	N	N	N	N	Y	1	na	-	-	-	-	-	-	-	-	-	-	-	-	
Chum	Wild	X	-	-	-	-	N	N	N	Y	N	N	N	N	N	10	na	-	-	-	-	-	-	-	-	-	-	-	-	
Other	Wild	X	-	-	-	-	N	N	N	Y	N	N	N	N	N	varies	na	-	-	-	-	-	-	-	-	-	-	-	-	

Notes: 1 – HPP Designates Habitat Preparation Plan, to be started in 2005 at Swift and 5 years prior to FSC completion at Yale and Merwin respectively.
 2 – Possible marks from other basins.
 3 – Design Peak was established in conjunction with WDFW, based on existing trap returns and future projected returns (note this is still work in progress this draft).
B – Denotes period of fish migration when hatchery broodstock are collected.
 WIP – denotes Work in Progress, Values to be finalized by Engineering Subgroup prior to distribution to ACC.