	1. Planned or Ongoing Actions/Issues	2. Decision Needed	3. Current Information (Draft, RM&E will revise)	4. Information Gap (Draft, RM&E will revise)	FY19 Concept Paper Notes
North Santiam					
1	Interim operation of Detroit Dam for temperature targets	Determine temperature targets for operation of Detroit Dam BEFORE wild fish are reintroduced above the dam	River temperatures, Chinook PSM, adult Chinook and summer steelhead pHOS and collection rates at Minto available for several years prior to 2017. New temperature targets were implemented in 2017 with a goal of providing cooler temperatures to reduce PSM. Previous data documents that 1) PSM can be high in hot summers; 2) cool temperatures slow or stop adult Chinook upstream migration. Migration delays could increase PSM if adults hold in high densities in the lower river below Minto AFF. pHOS could increase if upstream migration results in fewer adult collected at Minto AFF.	Changes in river temperatures, Chinook PSM, Chinook and steelhead pHOS, and collection rates at Minto with the 2017 targets implemented compared to pre-2017	USACE Revise APH-18-03 if needed
2	Operation of temperature control tower	Determine temperature targets for operation of Detroit Dam AFTER wild fish are reintroduced above the dam	NOT needed in FY19	NOT needed in FY19	NA

3	Interim actions to manage TDG before fish passage improved at Detroit Dam	What alternatives can be used to effectively manage TDG below Big Cliff Dam? What standard(s) should be applied to compare the alternatives? Should structural improvements be made considering plans to bypass fish around the Minto to Big Cliff reach once downstream passage is improved?	Multiple years of TDG data below Big Cliff one mile below at Niagara and downstream of Minto Dam, as summarized in Corps annual water quality reports and by USGS online. High TDG events (>120% saturation) occurring frequently and can last several days. Foster TDG study would indicate that the surface levels of TDG we see at Niagara would result in depth-compensated TDG in the gravels that could harm redds. Spawning and rearing habitat capacity estimates are available for this reach, as well as above Detroit and below Minto dams. Spawning surveys of Chinook have been completed in at least 2 years, but survey quality/comparability was limited by hydraulic conditions.	Summary of available information on TDG, Chinook habitat availability below Big Cliff and Minto dams. Evaluation of operational alternatives to reduce TDG. Present summary to managers to determine if sufficient to support management decisions. If not clarify information gaps and update this table and concept FMWQ-18-04-SYS	USACE Revise FMWQ-18-04-SYS if needed
4	Manage TDG AFTER fish passage improved at Detroit Dam	Determine if action should be taken to reduce TDG after fish passage is improved at DET Dam. Consider if fish will be placed into the reach between Minto and BC dams, and consider if TDG should be reduced during the conservation season, flood season, or both.	NOT needed in FY19	NOT needed in FY19	NA

5	Release of adult wild fish in the North Santiam BEFORE fish passage is improved at Detroit Dam	Where and how many wild fish collected at Minto AFF should be released in each reach to maximize productivity potential?	Chinook adults collected at Minto, and outplanted, since 2002. Chinook spawner abundance and PSM below Minto Dam since 2002, and above Minto Dam since 2012. Spawning surveys above Minto Dam were limited by hydraulic conditions (high velicity and depths), impacting the quality/comparability of the surveys. Spawner effectiveness and CRR for brood years 2009 and 2010 for the full cohort. Current habitat capacity above and below dams. Historic and recent hydrology and dam operations; including surface spill patterns and downstream water temperatures. Downstream fish passage efficiency through existing routes.	Comprehensive evaluation of production (actual and potential) below Minto, above Minto, and above Detroit using existing data, considering habitat conditions, fish passage and temperature conditions, production and other information. Use this evaluation to 1) support decisions on outplanting before DET passage is improved, and 2) to determine critical uncertainties to refine interim passage management.	NMFS ODFW prepare new concept
6	Reintroduce wild spring Chinook salmon above Detroit Dam AFTER fish passage is improved	When, where, and how (and how many) wild and hatchery fish are to be released above Detroit dam as fish passage conditions are improved? What metrics and criteria will be used to determine status and inform reintroduction actions?	Chinook adults collected at Minto, and outplanted, since 2002. Chinook spawner abundance and PSM below Minto Dam since 2002, and above Minto Dam since 2012. Spawning surveys above Minto Dam were limited by hydraulic conditions (high velocity and depths), impacting the quality/comparability of the surveys. Spawner effectiveness and CRR for brood years 2009 and 2010 for the full cohort. Current habitat capacity above and below dams.	This will be refined with input RM&E team and the Reintroduction Plan as developed. Potential data types: adult return abundance, spawning surveys, genetic pedigree, PSM.	
7	Evaluate post-Evaluate post-construction effectiveness of Minto AFF for adult Chinook and steelhead	Since completion in 2012, is the Minto AFF performing adequately? What standard(s) will be applied to determine adequacy of AFF performance?	Estimated number of adult Chinook and steelhead passing Bennett Dam and subsequently collected at Minto Dam, 2012 to 2017. Chinook spawner abundance and pHOS below Minto Dam, 2012 to 2015. Steelhead spawner abundance, 2016 and some previous years.	Evaluation of Minto AFF collection efficiency of adult Chinook salmon, summer steelhead, and winter steelhead since new trap operations began in 2012. Evaluation of adult Chinook PSM after collection at Minto AFF and outplanted since 2012.	RM&E Team doesn't recommend a concept paper be developed at this time

		performance? (collection efficiency? PSM?)	Existing data does not indicate issues with collection efficiency or adult survival (PSM is consistently low since 2012 for adult spring Chinook released above Detroit).	RM&E doesn't recommend additional work at this time.	
8	Downstream fish passage design - conveyance method to below dam	What downstream fish passage conveyance methods should be designed to meet performance criteria - trap and haul, piped-bypass, other?	Regional information on survival and injury rates of different fish species and size classes is available for a range of juvenile passage conveyance methods, however very little information is available for high head dams. Recent information is available on survival of juvenile salmonids in a bypass pipe at a high head dam (Green Peter). This information may support drafting design criteria. New information suggesting copepod infections in Willamette reservoirs may result in poor survival of fish collected and hauled downstream.	Design criteria for design of a high head bypass system (High-head bypass PDT drafting?). Stress and mortality rates of juvenile Chinook infected with copepods experiencing different downstream fish passage conveyance methods. Methods to reduce disease or other forms of stress experienced prior to collection and downstream passage conveyance (including copepod infections). [DOES COPEPOD CONCEPT COVER THIS?]	Review revised copepod concept paper and determine if this info need is addressed

	1. Planned or Ongoing Actions/Issues	**2. Decision Needed**	**3. Current Information (Draft, RM&E will revise)**	**4. Information Gap (Draft, RM&E will revise)**	**FY19 Concept Paper Notes**
South Santiam					

1	Foster Dam Downstream fish passage - post-effectiveness performance	Determine if the new weir is performing adequately. If not identify alternatives to address deficiencies in performance. What standards will be used to evaluate adequacy? (improvement over baseline juvenile passage conditions? replacement? changes to water quality conditions below Foster? changes collection efficiency of adult Chinook and steelhead?	Data available for baseline conditions include: - Passage efficiency and passage survival of juvenile Chinook and steelhead. - TDG and water temperatures. - Numbers of adult Chinook and steelhead collected seasonally; and collection efficiency of adult Chinook.	Estimates of downstream fish passage performance at Foster Dam, and TDG levels below Foster Dam, with the new fish weir in operation. How well is the new weir performing? Is operation of the new weir changing water quality conditions below Foster or effecting collection of adults at Foster	Fenton will review the summary table from the 1st year study to determine if questions regarding TDG are answered. Fenton will revise existing concept paper on downstream passage as needed.
2	Upstream fish passage at Foster Dam	Determine if changes are needed to increase collection efficiency of adult Chinook, reduce pHOS below Foster Dam, and manage PSM at levels for transported adults.	Collection efficiency estimated in 2017 at about 50% for adult Chinook. Previous years of U of I studies indicate the facility is not working well; a lot of fish milling below dam, entering and exiting different portions of ladder but not making it into the trap. Weir opening treatments appear to have little effect. Temperature appears likely to be the cause, as spillway temperatures are much warmer than water in the ladder (from Foster AWS). May also relate to chemical ques for homing adults from South Santiam above Foster; water chemistry samples from previous years have been lost.	Assess adult Chinook collection efficiency with operation of ladder with warmer water (e.g. by changing releases from upstream Green Peter Dam). If changing temperatures in ladder are found not adequate, then evaluate use of South Santiam water in ladder to improve attraction into ladder and/or hatchery operations to reduce false attraction of hatchery origin adults to nearby hatchery discharge.	Fenton will revise the existing concept paper to include: an evaluation of whether spill at Green Peter would create the right temperature for fish to use the ladder and any other needs that the PDT might identify.

			Hatchery effluent into the opposite bank of the tailrace may attract HOR adult.		
3	Complete reintroduction of wild spring Chinook salmon above Foster Dam	Determine if reintroduction actions taken have adequately met goals and objectives. Need to define how adequacy will be determined.	[NOTE: once reintroduction goals and objectives established, update this section to summarize what information is available to evaluate adequacy of reintroduction actions taken] Most recent update of cohort data shows low CRR (0.06-0.07), however previous years showed CRR>1. Findings support a 2010 brood failure associated with a washout event. 2018 is the year we would expect most of the cohort (4-year olds) to return since the new Foster AFF came online (2014), and 2019 is when the first full cohort from adults passed through the new facility would be available. We know the AFF isn't attracting as many adults as we would like, but we don't know if the adults handled in the new facility have ultimately been more or less successful.	Complete reintroduction plan identifying goals, objectives and schedule. [NOTE: once reintroduction goals and objectives established, update this section to explain what information gaps need to be addressed to evaluate if reintroduction actions have achieved goals and objectives] Rate at which local adaptation is occuring? What is CRR after Foster AFF started operating? Was the 2010 brood failure a one-off event, or has CRR continued to decline? Note: need to preserve sample data; analyze genetic samples so data aren't lost	This is a future action and RM&E is not needed at this time.
4	Complete reintroduction of wild winter steelhead above Foster Dam	Determine if reintroduction actions taken have adequately met goals and objectives. Need to define how adequacy will be determined.	[NOTE: once reintroduction goals and objectives established, update this section to summarize what information is available to evaluate adequacy of reintroduction actions taken]	Complete reintroduction plan identifying goals, objectives and schedule. [NOTE: once reintroduction goals and objectives established, update this section to explain what information gaps need to be addressed to evaluate if reintroduction actions have achieved goals and objectives]	This is a future action and RM&E is not needed at this time.

5	Downstream fish passage in Green Peter Reservoir and at Green Peter Dam [Note: this policy issue is currently unresolved, however, in anticipation of it being resolved it is appropriate to keep a placeholder for the needed study]	Determine the feasibility of providing adequate DOWNSTREAM passage at Green Peter Dam. What metrics will be used to evaluate feasibility?	[Update this section once it is determined how feasibility will be evaluated]	[Update this section once it is determined how feasibility will be evaluated]	All of the Green Peter planned issue or actions are retained here as placeholders until the policy issue regarding Green Peter is resolved. No concept paper identified at this time.
6	Upstream adult fish passage at Green Peter Dam [Note: this policy issue is currently unresolved, however, in anticipation of it being resolved it is appropriate to keep a placeholder for the needed study]	Determine the feasibility of providing adequate UPSTREAM passage at Green Peter Dam. What metrics will be used to evaluate feasibility?	[Update this section once it is determined how feasibility will be evaluated]	[Update this section once it is determined how feasibility will be evaluated]	No concept paper identified at this time.
	Reintroduce spring Chinook salmon above Green Peter Dam	Determine if reintroduction actions taken have adequately met goals and objectives. Need to define how adequacy will be determined.	[NOTE: once reintroduction goals and objectives established, update this section to summarize what information is available to evaluate adequacy of reintroduction actions taken]	Complete reintroduction plan identifying goals, objectives and schedule. [NOTE: once reintroduction goals and objectives established, update this section to explain what information gaps need to be addressed to evaluate if reintroduction actions have achieved goals and objectives]	No concept paper identified at this time.

7	[Note: this policy issue is currently unresolved, however, in anticipation of it being resolved it is appropriate to keep a placeholder for the needed study]		Recent habitat capacity information available from NWFSC. Juvenile emigration timing information is available from other neighboring Chinook populations above Willamette Reservoirs, but no local recent data on juvenile migration size and timing into Green Peter reservoir. Previous adult ladder had poor adult attraction due to cool water temperature discharges from GP Dam.	PSM, spawning distribution, abundance for adult Chinook salmon and steelhead released above Green Peter Dam. Seasonal and diel distribution for juvenile Chinook salmon and steelhead entering Green Peter Reservoir in the following size classes: <50 mm FL, 50-90 mm FL, and >90 mm FL. Annual abundance of juvenile salmon (and steelhead, if feasible) at the head-of-reservoir sampling locations	
8	Complete reintroduction of wild winter steelhead above Green Peter Dam [Note: this policy issue is currently unresolved, however, in anticipation of it being resolved it is appropriate to keep a placeholder for the needed study]	Determine if reintroduction actions taken have adequately met goals and objectives. Need to define how adequacy will be determined.	[NOTE: once reintroduction goals and objectives established, update this section to summarize what information is available to evaluate adequacy of reintroduction actions taken]	Complete reintroduction plan identifying goals, objectives and schedule. [NOTE: once reintroduction goals and objectives established, update this section to explain what information gaps need to be addressed to evaluate if reintroduction actions have achieved goals and objectives]	No concept paper identified at this time.

9	Remove or modify revetments	See systemwide table			This will be moved to the system-wide table as it applies to all sub-basins.
10	Habitat improvements above Foster to support spawning				

	1. Planned or Ongoing Actions/Issues	2. Decision Needed	3. Current Information (Draft, RM&E will revise)	4. Information Gap (Draft, RM&E will revise)	FY19 Concept Paper Notes
	McKenzie				
1	Cougar Dam downstream fish passage design - conveyance method to below dam	What downstream fish passage conveyance methods should be designed to meet performance criteria - trap and haul, piped-bypass, other?	Performance criteria: 95% collection efficiency from cul de sac; 98% survival from point of entrance to collection (see CGR performance criteria document for full definitions). Index of infection intensity and prevalence in juvenile salmonids in Cougar Reservoir, upstream and downstream (multiple recent years). Infection rates higher in reservoirs than in streams, increase seasonally between spring and fall, and occurs most often in brachial cavity in reservoirs, vs. fins in streams. Lab study suggest swimming ability and survival rates reduced for infected fish. Information suggests copepod infections in Willamette reservoirs may result in poor survival of fish collected and hauled downstream.	Which passage conveyance method (volitional or trap and haul) best supports achieving performance criteria? What design or operational changes can be made to reduced associated stress and mortality in juvenile Chinook salmon passing downstream at Cougar Dam?	Discussion deferred until after the June 7, 2018 Managers Forum.

			Regional information on survival and injury rates of different fish species and size classes is available for a range of juvenile passage conveyance methods, however very little information is available for high head dams. Recent information is available on survival of juvenile salmonids in a bypass pipe at a high head dam (Green Peter). This information may support drafting design criteria. Multiple years of juvenile Chinook passage timing entering and existing reservoir. Currently FSS design can be operated year-round; maintenance period planned for mid-summer period.	To what extent does copepod infections increase risk or mortality for juvenile Chinook passing downstream at Cougar Dam? Can copepod infections be reduced in juvenile Chinook salmon in Cougar Reservoir (e.g. by reducing reservoir residence time)?	
2	Rearing habitat for juvenile Chinook salmon	Determine where rearing habitat is limited above or below Cougar Dam, and specific actions to address.	[insert summary of available information]	Is rearing habitat limitations below Cougar and in the mainstem McKenzie River causing decline in adult production? Does more/higher quality rearing habitat above Cougar decrease reservoir residence time or affect outmigration timing/size of juveniles? Do changes in juvenile outmigration timing/size and reservoir residence time result in reduced copepod loads or mortality of infected juveniles?	No concept paper identified at this time.

3	Complete reintroduction of wild spring Chinook salmon above Cougar Dam	Determine if reintroduction actions taken have adequately met goals and objectives. Need to define how adequacy will be determined.	[NOTE: once reintroduction goals and objectives established, update this section to summarize what information is available to evaluate adequacy of reintroduction actions taken] Pedigree information on adult Chinook returns to Cougar AFF across multiple years and recycling protocols completed. CRR for fish outplanted above the dam is <0.4 Cougar downstream passage is scheduled to begin in 2019 (plans and specs), break ground in 2020, and be completed by 2023. Jim Myer's reintroduction planning report indicates one method could be to transport fish above the dam in higher densities, and potentially of different sources, in years immediately prior to passage. Note: number of fish outplanted will need to be adjusted in drawdown years for construction.	Complete reintroduction plan identifying goals, objectives and schedule. [NOTE: once reintroduction goals and objectives established, update this section to summarize what information is available to evaluate adequacy of reintroduction actions taken] Rate at which local adaptation is occuring? Are natural origin adults from below Cougar Dam being mined for above-dam outplants with current recycling protocol? Is there a break or range in timing of adult returns from above versus below the dam? (update to prior information) How many fish should be outplanted above Cougar to seed habitat before passage in place, and how many immediately after passage in place? Note: need to preserve sample data; analyze genetic samples so data aren't lost	This will be kept as a a placeholder for FY19 pending the completion of the Reintroduction plan. No concept paper identified at this time.

4	Remove or modify revetments	See systemwide table			This will be moved to the system-wide table as it applies to all sub-basins.

	1. Planned or Ongoing Actions/Issues	2. Decision Needed	3. Current Information (Draft, RM&E will revise)	4. Information Gap (Draft, RM&E will revise)	FY19 Concept Paper Notes
Middle Fork					
	LOP/DEX downstream passage - Head of Reservoir juvenile fish passage	Determine if this approach is likely to meet downstream passage criteria. Need to determine criteria to be used to evaluate passage performance.	1) Head-of-reservoir and in-tributary conceptual alternatives considered in a 2011 evaluation by AECOM were found to have the potential to be biologically and technically feasible. The report recommended a floating surface collector (FSC) located in the upper reservoir, and an in-tributary off-channel collection facility located on the lower North Fork River at Westfir for further study.	Estimate survival of Chinook fry after entry into LOP Reservoir.	No concept paper identified at this time.

1		Determine if this approach is likely to result in a sustainable population when combined with other passage improvements	However given the significant risks and uncertainties associated with both alternatives (safe and efficient collection of fry-stage Chinook under the range of expected hydrologic conditions; debris management; survival and adult return rates of fry released below Dexter Dam), the RM&E Team recommends continued investigation of at-dam structural and/or operational alternatives before considering further study of either head-of-reservoir or in-tributary alternatives. If Chinook salmon fry survival in LOP Reservoir is found not to be adequate, or at-dam approaches are determined not preferred or feasible, then head-of-reservoir passage may be further considered.	If reservoir survival is low, or at-dam passage is determined not to be feasible or preferred, then information on the following would be needed to inform decisions on head-of-reservoir approaches:	
			Prototypes or full scale collectors would need to be designed and constructed to evaluate questions about collection efficiency and collection injury/mortality. Both the AECOM report and the RM&E Team concluded it is not appropriate to develop a prototype at this time- it would take a long time, be expensive, and likely still not function comparably to a full size collector.	1) Estimate Chinook fry collection efficiency and injury rates collected using an in-stream or in-tributary collection approach.	
				2) Evaluate rearing habitat availability downstream of Dexter to support bypassed Chinook salmon fry.	
			Since Chinook fry would be released in the lower MIddle Fork Willamette below Dexter Dam, their survival rates are expected to be low due to habitat conditions, competition, and predation below the dam.	3) Estimate survival of Chinook released below Dexter Dam to smolt and adult life stages.	

2	LOP/DEX At-dam structure downstream fish passage	Determine if this approach is likely to meet downstream passage criteria. Need to determine criteria to be used to evaluate passage performance. Determine if this approach is likely to result in a sustainable population when combined with other passage improvements.	Floating collectors have been identified as preferred alternatives for downstream fish passage solutions at Cougar and Detroit dams. Local data is available on passage timing and forebay behavior of juvenile Chinook under existing conditions. Reservoir survival estimates are being completed for 2017 and 2018. Juvenile Chinook collection and mortality/injury rates have been summarized by USGS for large floating fish collectors operated in the PNW. Together, available information can be used to estimate performance of a potential surface collector at LOP Dam.	Estimate survival of sub-yearling juvenile Chinook salmon in LOP Reservoir. If survival is found to be relatively poor, identify what factors most contribute to mortality, and if what options exist to address these factors. Estimate potential performance of a conceptual at-dam structural downstream fish passage.	No concept paper identified at this time. The RM&E team is waiting for results on the current RM&E study before determining funding for Year 3.
3	LOP/DEX Downstream Passage Operations - reservoir deep drawdown below conservation pool elevation	Determine if this approach is likely to meet downstream passage criteria. Need to determine criteria to be used to evaluate passage performance. Determine if this approach is likely to result in a sustainable population when combined with other passage improvements.	The RM&E Team identified that this operation may improve downstream passage survival compared to baseline operations. The Corps has determined that drafting the reservoir below the conservation pool elevation, other than for purposes of producing hydropower, is not authorized.		No concept paper identified at this time.

4	LOP/DEX Downstream Passage Operations - Spring and Fall surface spill	Determine if this approach is likely to meet downstream passage criteria. Need to determine criteria to be used to evaluate passage performance. Determine if this approach is likely to result in a sustainable population when combined with other passage improvements.	Juvenile Chinook will use a surface flow route when available, however the frequency that surface spill can be provided across different annual hydrologic conditions (water years) needs to be determined.	Evaluation of the frequency that spill could be provided across water year types. Evaluate dam passage efficiency x route specific survival. If passage performance of this operation at LOP provides significant benefits, estimate survival of juvenile Chinook passing through Dexter Reservoir. If studies indicate juvenile Chinook passage through Dexter Reservoir is low, identify what factors are affecting survival and if they can be addressed.	A concept paperwill be developed as a placeholder.
	LOP/DEX Downstream Passage Operations - Delay refill of LOP Reservoir with spring and fall surface spill	Determine if this approach is likely to meet downstream passage criteria. Need to determine criteria to be used to evaluate passage performance.	Juvenile Chinook will use a surface flow route when available, however frequency that surface spill can be provided across different annual hydrologic conditions (water years) needs to be determined.	Evaluation of the frequency that spill could be provided across water year types.	A concept paper will be developed as a placeholder.

5		Determine if this approach is likely to result in a sustainable population when combined with other passage improvements.		Evaluate dam passage efficiency x route specific survival. If passage performance of this operation at LOP provides significant benefits, estimate survival of juvenile Chinook passing through Dexter Reservoir. If studies indicate juvenile Chinook passage through Dexter Reservoir is low, identify what factors are affecting survival and if they can be addressed.	
6	Reintroduction of wild spring Chinook salmon above LOP Dam	Determine if reintroduction actions taken have adequately met goals and objectives. Need to define how adequacy will be determined. When, where, and how (and how many) wild and hatchery fish are to be released above LOP Dam as fish passage conditions are improved?	CRR for fish outplanted above the dam is extremely low, based on return rate of unmarked Chinook salmon to Dexter AFF. Both PSM and downstream juvenile passage survival needs to be improved before unmarked adult Chinook salmon will be reintroduced above LOP Dam.		This is a future action and RM&E is not needed at this time.

7	LOP/DEX Passage Approach Comparison	Determine the biological feasibility and preferred passage approaches to be carried forward for potential design and implementation. Determine the criteria to identify biological feasibility	An analysis approach is outlined in Middle Fork RME plan to evaluate and compare fish passage alternatives; with initial comparisons provided in FY19.	Estimate differences in juvenile passage metrics among juvenile passage approaches evaluated. Estimate differences in VSP parameters among combinations of up and downstream fish passage approaches. Field studies, literature, and modeling will be used to estimate juvenile downstream passage performance assuming different approaches. Metrics for comparison of juvenile passage approaches include collection efficiency, concrete survival, passage timing. Lifecycle modeling will be used to evaluate estimated differences in VSP parameters (abundance, productivity, spatial structure, and diversity) among combinations of up and downstream fish passage approaches.	Corps (Rich) will prepare a concept paper.
8	Upstream Passage above Dexter Dam	Determine if trap and haul of Chinook salmon above Dexter Dam is meeting performance objectives. What standard(s) will be applied to determine adequacy of the trap and haul program performance?	Dexter AFF does not meet NMFS fish passage criteria. Operations of the Dexter Trap do not meet best management practices per the WFOP. PSM of outplanted hatchery Chinook Salmon above Dexter Dam is extremely high and unless reduced establishing a sustainable population of Chinook salmon is not feasible.	Evaluate the performance of the trap and haul program of adult Chinook salmon at Dexter Trap. Begin with evaluation of Chinook PSM with implementation of best management practices. An implementation plan is needed in order to coordinate with ongoing Chinook hatchery practices, and determine how best management practices will be achieved to the fullest extent feasible under the existing AFF and dam configuration.	Corps will update the current concept paper as a placeholder that will incorporate the FY18 implementation plan.

9	Fall Creek Dam upstream fish passage	Determine if the Fall Creek AFF performing adequately. What standard(s) will be applied to determine adequacy of AFF performance? (collection efficiency? PSM?)			The Corps will prepare a concept paper.
10	Fall Creek downstream fish passage operations	Determine if refinements are needed in the Fall Creek operation due to the constrained passage timing and size for juvenile downstream passage. Determine if a similar operation could be considered at other WVP dams.	Return timing has changed since outplanting of only natural origin fish above Fall Creek began. Understanding this could help refine reintroduction and long-term management of adult fish passage programs at WVP dams. Is this due to genetic factors, or other factors? There is also concern that the large size in which juveniles leave the reservoir may result in younger, smaller sized adults returning to spawn, which could reduce population productivity.	Evaluate factors affecting adult return timing and size, including genetics, temperatures during adult migration, and size and outmigration.	The Corps will revise the concept paper related to this Planned Issue/Action.
11	Remove or modify revetments	See systemwide table			This will be moved to the system-wide table as it applies to all sub-basins.

	1. Planned or Ongoing Actions/Issues	**2. Decision Needed**	**3. Current Information (Draft, RM&E will revise)**	**4. Information Gap (Draft, RM&E will revise)**	**FY19 Concept Paper Notes**
Systemwide					

1	Operational changes for flow and water temperature management discharged from WVP dams	Determine if Biop flow targets need to be changed in each tributary or the mainstem Willamette River. Develop flow management plan that accounts for water-year type.	Evaluation of tributary targets have been completed since 2008. Evaluation of mainstem targets began in 2016, including relationships of fish habitat availability and water temperature with flow. To address the 2008 RPA regarding study of flow objectives, a comprehensive analysis of existing information is needed to determine if refinement of the 2008 Biop flow objectives is warranted, and to prepare an adaptive management plan which defines and prioritizes biological objectives relating to flow management.	Complete a comprehensive analysis of existing information to determine if refinement of the 2008 Biop flow targets are warranted. The analysis should consider adult, juvenile, and incubation migration and related habitat needs in tributaries and the mainstem, and other key species and ecosystem functions. Prepare an adaptive management plan which defines and prioritizes biological objectives relating to flow management.	No concept paper identified at this time.
2	Hatchery Management	Determine if criteria are being met for managing effects of hatchery Chinook, steelhead and trout on wild UWR Chinook and steelhead.	Currently pHOS and pNOB criteria are not being achieved for Chinook salmon population affected by the WVP. To assess the effectiveness of management actions taken, the following information is needed: estimates of pHOS and pNOB for each Chinook salmon population affected by the WVP; levels of introgression of summer steelhead into the wild winter steelhead population; assess competition and predation among hatchery fish and wild UWR Chinook and steelhead.	Estimate pHOS and pNOB for each Chinook salmon population affected by the WVP after management actions are taken to address criteria. Assess competition and predation among hatchery fish and wild UWR Chinook and steelhead after management actions are taken which influence these impacts.	No concept paper identified at this time.
	Mainstem and tributary habitat for wild Chinook and steelhead (non-flow related)	Provide adequate habitat for or wild Chinook and steelhead in river reaches downstream of dams as affected by the	Preferred habitat attributes of juvenile Chinook and steelhead are generally understood. Use patterns in summer is significantly driven by water temperatures, with utilization significantly declining when water temperatures increase above 18oC. Available information on existing conditions	Determine where rearing habitat is most limited and prioritize the types of actions to improve (e.g. revetment modifications, gravel and LWD placement, riparian restoration, etc.).	No concept paper identified at this time.

3		as affected by the WVP	180C. Available information on existing conditions describes basic habitat available for juvenile salmonids below WVP dams, but has not be summarized to identify where habitat is most limiting, and what actions would be most beneficial to address those limitations (e.g. revetment modifications or removals, gravel or large wood placement, riparian restoration, etc.).	Develop and apply an approach for prioritizing habitat actions considering the UWR Recovery Plan, fish passage and other plans to address the NMFS 2008 WVP Biop, and other major fish and river-related activities in each subbasin.	