**Summary of changes made to the code since 060311 and further mods for final CalLite**

Exp\_Constraint.wresl – this used to be in the export\_ops directory but was moved to export\_ops\omr. The export constraints that are applied here are based on all the RPAs, and actually the OMR criteria acts to limit flow in the OMR, not exports. So would it be logical to put it back in the export\_ops directory?

Weight-table.wresl – I noticed during my work with the VAMP switch that PulseExpCtrl often did not actually get a meaningful value for a result – this is because it is never set directly – all of the constraints on it are soft. If we give it a small weight, then it will achieve its maximum possible value, which is what we really want to know.

Wheelcap.wresl – in addition to the BO actions that can reduce export capacity and thereby should inhibit wheeling, B2Action3 also limits exports in cycle 2. So an indicator of whether this is in control or not is added to the definition of wheeling\_ctrl. If B2Action3 is on AND the VAMP action is on, wheeling should not happen.

ExportEstimate1\_b2.wresl – The action 3 cases in the definition of EstCVPMaxExp\_B2 were being activated with the VAMP regulation switch. This was not needed and the switch has been removed from the condition statement.

Coa.wresl – the vamp switch was added to the final two goals encouraging Banks and Jones to split the AprMayExpCtrl. If VAMP is not on, then the 50/50 split is not part of the operation, even if the export is not restricted any more. So this switch implementation should stay. Note that the split of export capacity predicated on the EI ratio is encouraged in other goals in this file, although the constraints are soft and actual compliance may vary.

April\_may\_max\_export.wresl – the goal Limit\_Exports here limits the total export to the monthly control total. With VAMP turned off, the AprMayExpCtrl will not be limited, so limiting actual exports to the total capacity should be fine. We do not need the switch here any longer. The definition of PulseExpCtrl is modified to be determined depending on the setting of the VAMP switch. If the VAMP switch is off, the goal’s use of the 99999 value will mean that the ei ratio or physical capacity will control the PulseExpCtrl value. Also, the no\_vamp conditions that had been added to the Export\_limit\_D\_Jones and Export\_limit\_D\_Banks goals were removed since the controlling values are appropriately calculated with and without the vamp action being on. Note that the SJR\_ANN and VAMP\_reqdv\_VAMP variables do not have an timeseries to use if VAMP is off – this is because if the VAMP switch is off these values will never get used to set anything

Options\_Switches.wresl – Richard added the fix that turns off the roe trigger automatically if the x2 is set to user-defined. (what happens if X2 is turned off and the roe trigger is on?)

NMFS\_SALMON\_BO\_DCC.wresl – added a case to the definition of the export restriction – if the number of days of dxc open is to be user-defined, we’ll assume that the user does not want to model the DXC RPA, even if they checked for it to be on, so the export limit is set to a high value.

ExportEstimate1.wresl – edited a condition in the definition of June\_B2\_Corr

ExportEstimate2.wresl – another location where the vamp export restriction is used to calculate the export capacity under pulse period conditions. The variable pulse\_cap is defined in this file. New switch application for defining this.

B2Action3.wresl - Note that if the B2Action3 flag is on but the vamp action is off, the action3 limitations are set to non-limiting values, so turning VAMP off has the effect of turning off the b2 action as well. If VAMP is off, the provision for splitting export capacity between CVP and SWP is no longer implemented, so the VAMP Switch is used in all goals in this file.

Delcar\_cvp\_south\_b2bo.wresl – vamp export restrictions can be used to estimate exports under a non-bo condition. If VAMP is off, the full export capacity is used instead of the vamp-limited value.

SJR\_ANN is identical to AD\_SJR, but it is used in the ANN dll calls and we need to access past values of it as well as the current month’s value. It is not possible to accommodate this and be able to use one or the other of a timeseries like we need to do for the vamp switch. So a decision variable was set up to store the previous timestep values so they can be accessed with a (-#), and the current month values that are used in the ann call were all changed to ad\_sjr.

Vernwqfinal is also used in the ann dll calls. An identical approach to the sjr\_ann variable was used for it.

sjr\_ann\_est is also used in the ann calls, but we don’t need to go back in time with this one so it can be set like the ad terms are.

It is necessary to enter vernwqfinal data in the init files for the 5 timesteps preceding the run so that the model will be able to access this for the ANN calls.

In the CS2CL utility, the 5 variables that depend on whether the source is a vamp or no-vamp run have all been changed to use a “\_v” suffix when they are written to the CalLite SV file. The utility was not set up to take values from 2 different calsim runs, so the values for the no-vamp run have to be added to the sv file manually with a suffix of “\_vo” (for “vamp off”). These variables are AD\_SJR, AD\_SJR\_PULSE, AD\_SJR\_VAMP, SJR\_ANN\_EST, and VERNWQFINAL.

One nagging question - Why are we using AD\_SJR\_VAMP to inform BanksPumpAllow in months other than April-Sept? I’m not sure by what quirk it actually has a value in October-March, but technically it shouldn’t. CalSim does this too. It just looks wrong in the code.