**Friends of the East Fork Comments to the Lower Columbia Estuary Partnership East Fork Technical Oversite Overview & Alternatives July 8, 2020 Memorandum**

**Oct. 04, 2020**

We appreciate the past and present opportunity to collaborate on these efforts. The Memorandum contains more data & information than reports done in the past and includes much more comprehensive substantive content to address the challenges of today and future. **Our comments are in two parts, an Overview and then a Discussion of the 6 Alternatives.**

**OVERVIEW:**

That said, the memorandum has not adequately focused on the core problem in the East Fork**. It is the interrelated issue of (1) LOW FLOWS & HIGH SUMMER STREAM TEMPERATURES COUPLED WITH (2) HIGH BEDLOAD SEDIMENTATION that result in the current disastrous stream channel conditions.** These conclusion are supported by earlier work done by river geomorphologists Dr. Barry Sutherland & Dr. Frank Reckendorf and others. **Almost every other issue is fundamentally a sub-set, or primarily a result of these two watershed and stream conditions and is basically a hydrologic and fluvial-geomorphic situation with strongly related biological water quality effects.** And, much of the problem is of anthropogenic (man-made) origin. The impacts show up in in early 1900s historical data and continue with greater intensity on into current data, and information. Stereoscopic review and analysis of aerial photos of all reaches of the East Fork dating back to the 1930s and on to present time document locations and types of activities that have caused these impacts.

The fluvial-geomorphic **COMPETENCE AND ENTRAINMENT** capability to maintain stream channel balance in the river, particularly the lower one-third is very poor. The physical result over time is that many pools have been filled in, and the Channel Width to Channel Depth W/D Ratio “**HYDROLOGIC BANKFUL FLOODED STREAM CHANNEL WIDTH TO THE STREAM CHANNEL FLOOD DEPTH RATIO”** of the stream channel cross-sections have become very high (60 to 120 and more) because the river flow cannot handle the bedload level and consequently makes adjustments that result in the eroding out the stream banks, degradation of spawning riffles, large sediment islands in the middle of the channel that also are involved in the increase of the W/D ratios as well as causing at least four major channel avulsions in the last 20 years.

The history of past gravel mining between Heission Bridge and La Center included mines that in some cases worked both stream banks and the river itself, with little or no restoration afterward. This alone added large amounts of bedload sediment to the river channels downstream. In addition, dikes were added to other areas related to mining and in one case a dike was built out at right angle into the river, which drove the river into the high bank on the opposite side. A more recent avulsion between Daybreak Bridge and Lewisville Park Bridge was associated with a large boulder dike installed several years earlier to protect development on the major floodplain (which the County management allowed to happen years earlier under very questionable circumstances) on the south side of the river. This effectively cut all flood flow relief in that reach of the river and resulted in excessive sediment buildup which forced a large avulsion. This was the second more recent avulsion in the East Fork above Daybreak Bridge.

The results of these conditions show up in an extreme way when flows began to diminish later in the year, the water depth is both very shallow and subject to faster and higher heating levels as well as less capability of the river to effectively handle various kinds of sources of water pollution (chemical, biological, and temperature).

In simpler terms, it is somewhat similar to putting a given amount of water in a tall glass which ends up being relatively deep, versus putting the same amount into a large dishpan with the result that the water level in the pan is very low. In addition, in various areas of the watershed, infiltration rates have been reduced which also lower groundwater and surface water yields as well as affecting storm and snowmelt runoff characteristics. **The lower one third of the East Fork, in most of the channel reaches, is now in that dishpan condition, making it subject to a wide range of undesirable conditions and cumulative effects ---both biological and physical/geomorphic.**

With these existing conditions, **PLANTING TREES ALONE WILL NOT ADEQUATELY ADDRESS THE TEMPERATURE PROBLEM** and could result in future restoration and improvement programs and project funding being out of balance with this aspect of the critical problems in the East Fork ---this has not been adequately addressed in the Draft Ecology 2020 East Fork Cleanup Plan or in the Ridgefield Pits Restoration Design Project Draft Alternatives.

Currently there are at least five (5) major sediment source located in reaches within the lower East Fork, starting above Lewisville Park just below the outlet of Rock Creek North. These large bank erosion/sediment sources should be given treatment priority. Their very high on-site and downstream bank and channel negative impacts on the river are biological as well as fluvial-geomorphic.

It is well known that low flow volumes in the East Fork have direct effects on water quality, particularly in summer time. Groundwater inflow is also affected by poor channel and watershed conditions as well as the floodplain and tributary stream disturbances from anthropogenic activities that are on the increase in some areas of Clark County. Illegal water diversions, building along streambanks and in designated wetlands-recharge areas, heavier and new well drawdown, as well as building of rural ponds (past & present) all during a period of decline of infiltration into the Troutdale Aquifer are adding to the water related problems. Weak and limited compliance by Clark County with the WA State Growth Management Act, and Shorelines Act is also having an impact on water runoff, groundwater and streams.

**TO DATE, HISTORY SHOWS THAT EXISTING AND NEW RULES AND REGULATIONS WILL DO LITTLE GOOD AS LONG AS COMPLIANCE IS VOLUNTARY AND NOT MANDATORY IN CLARK COUNTY. CURRENT MONITORING IS INADEQUATE AND ENFORCEMENT/COMPLIANCE IS “COMPLAINT BASED” WHICH ALSO IS INADEQUATE AND NEEDS A MAJOR IMPROVEMENT IN MONITIORING TO DISCOVER IMPENDING PROBLEMS AND ADDRESS THEM WITH SUBSTANTIVE SOLUTIONS.**

Side-channel improvement and expansion has been mentioned in the draft documents as a source of both cooler and more groundwater inflow to the river. It appears that although both have value, flood overflow channels are being mixed in with and attributed with the same characteristics and effects of true side-channels. They are not the same both physically and in attributes. Side-channels are not connected to the main river at their upper end, and often they have springs and upwelling areas that provide both rearing for salmonid fry as well as cooler water inflow to the river. Overflow channels are subject to high sedimentation from flood flows and do not function as well biologically or have the higher water quality and quantity attributes. However, both may suffer from the effects of beavers building large dams along their channels and creating temperature and fish use issues. Beaver effects in broad valleys and meadows with limited forest vegetation are often quite different from that in a forested stream channel that is confined or part of a narrow valley. Such is the case on the East Fork and a number of tributary salmonid streams in the East Fork have beaver problems that result in significant drying up of critical pools and loss of salmon and steelhead fry.

**GOALS & OBJECTIVES:**

The Goals & Objectives appear to cover the most critical and basic needs related to lower river restoration. A few need some additional work to provide more substantive information.

**DISCUSSION OF THE SIX (6) DRAFT ALTERNATIVE TREATMENTS FOR REACHES IN THE LOWER EAST FORK:**

**Alt.-1 This alternative is the standard “continue the path of the present programs into the future strategy” and is used to measure net changes with other proposed alternatives.**

**ALT-2 This alternative would recover a significant reach of upwelling cooler water, restore some highly valuable salmon (including Chum) spawning habitat. There is also a flood overflow channel connected to it along the Storedahl West Daybreak Pit access road. Sediment from that channel has not been a major problem in the past largely because of the old mining ponds in flows thru.** The original channel was relatively stable before the 1996 flood. Note that the ponds were not breached during the flood but were allowed to breach based on discussions with WA Dept. F&W and the new owner of the Ridgefield Pits. The results covered in the information in the LCEP-Technical Oversite discussions identifies the severe down cutting that occurred at the entrance to the pit and also upstream. Restoring the flow level to allow reactivation of the lost channel reach and adjusting or creating a controlled flow level into the Ridgefield Pits is not an unusual application of technology and has been done elsewhere. The pits would receive minimum treatment. The option of proposing creating multi-thread channels in the area is a challenging technique and poses major long-term problems in stream with high bedload such as the lower East Fork.

**Alt.-3 This alternative is very ambitious but with the high bedload sedimentation of the river, it is doubtful if it would be geomorphically balanced and would likely end up being an unstable “hot zone” rather than a cool water recharge reach.**

**Alt.-4 There is total of about 6 true Side-Channels and Flood Overflow Channels combined. As stated earlier in this comment document ---they are not the same and have different attributes, but can be used to improve the river in terms of temperature, water inflow, and fisheries (particularly fry & juveniles). In some cases, their performance is reduced due to the construction on beaver dams.**

**Alt.-5 Restoration and enhancement of the pool at the outlet of Mill Creek North into the East Fork has some challenging fluvial-geomorphic river reach conditions as well as some related ongoing fish pool salmon and steelhead fish rearing operations in two pools located nearby in the lower part of Manly Road Creek.** The outlet of Mill Creek is located in the transition zone of an inside bend and an outside bend as illustrated in the Alternate 5 illustration labeled Figure 4. Gaining adequate velocity to sweep out the filled in pool is unlikely. Installing some kind of drop structure system that would keep the pool clean once it was physically emptied, might be possible. Also, diverting the river into a new channel, using the current flood overflow channel on the north bank could be considered but would require a separate channel for Mill Creek.

The site is further complicated by the extreme bedload coming from the severely eroding high cliff just below the pool. There are proven new methods to effectively deal with this kind of cliff erosion situation and should be considered. Diverting water into the lower fish rearing pool would be met with opposition from Friends of the East Fork, Fish First, Clark-Skamania Flyfishers, and Healing Waters Veterans – Vancouver Group because of potential impact on the two rearing pools in lower Manly Road Creek and potential loss or degradation of substantial investments since 2006.

**Alt.-6 Moving the channel location northward from the confluence of Mill Creek North and Manly Road Creek would require a complete re-location and building of a whole new section of channel thru the existing flood overflow channel, as just changing the curvature of the outside bend would lead to a greater impact on the high cliff to the south. A wide variety of treatments would be needed, including log cribbing, to achieve and maintain the desired results.**

**SUMMARY:**

There is much more that needs to be discussed in our mutual/collaborative search for solutions on the lower East Fork, but we need to put more focus on the main problems that almost everything else derives from---**low water flows and high stream temperatures and their historical & current causes**.

Also, in the modeling that is being done, I would like to see the results of “sensitivity tests on key input parameters to see how critical each is to the results of a given solution and how much variance and validity is associated with them in a given model.

In addition there is a people problem that hinders effective support of river restoration. Many people of the younger generation or new to the Portland/Vancouver area are under the impression that the river has always been in the current condition or slightly better. We need to give them an accurate valid “yard-stick along with the benefits” if we expect to get their long-term support for these and related kinds of Conservation & Good Land & Water Stewardship programs and projects. And lastly, a variety of instream treatments need to be used because the nature of a particular problem(s) in a given river reach varies and a mix of treatments, not just wood ELJs is needed to be successful. There are plenty of proven new as well as old treatments being used effectively thru out the USA that must be considered if we are really serious about succeeding in this effort.

Respectfully,

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