FISH PASSAGE CENTER

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MEMORANDUM

TO: Bob Heinith

FROM: Michele DeHart

DATE: January 13, 2011

RE: Draft Environmental Impact Statement, Odessa Subarea Special Study

In response to your request we have reviewed the Draft Environmental Impact Statement (EIS) for the Odessa Subarea Special Study. We hope that these comments are helpful to you in the development of your response to the Draft EIS. Our primary conclusions are listed below, followed by a more detailed discussion.

- The Draft EIS does not adequately address the importance of migration flow level on juvenile salmonid survival and adult salmon return.
- The Draft EIS alternatives include water withdrawals during which juvenile fish are migrating.
- By using monthly flow data the action alternatives could result in long periods of low flows, by not accounting for flow shaping or load following.

The Draft EIS considers the feasibility, acceptability, and environmental consequence of alternatives to replace groundwater currently used for irrigation on approximately 102,600 acres of land in the Odessa Ground Water Management Subarea with Columbia Basin Project surface water. A No Action Alternative, four partial-replacement alternatives, and four full replacement alternatives are evaluated. The Draft EIS incorporates the Columbia River flow objectives from the 2008 FCRPS Biological Opinion (BIOP) as constraints to the development of the action alternatives and implementation of alternatives occur when flows exceed the Biological Opinion average flows.

We have concerns regarding the approach taken in the Draft EIS regarding the impact of reductions of flows when the flow exceeds the BIOP flow objective. This approach assumes that there is no impact to fish survival at flows above the Biological Opinion flow objective and that the BIOP flow objectives represent maximum levels of flow. This falls back on the old paradigm of a "broken stick" model, where flow increases survival up to a certain level and above that level there are no benefits. This old model is not consistent with flow, fish travel time, migration timing and survival to adulthood (smolt to adult return rates) analyses that have been conducted.

There is also some concern that while the Biological Opinion flow objective is a seasonal average, the shaping of that seasonal average could dramatically affect fish survival. Seasonal shaping is only partly addressed in the EIS, since monthly averages are used for flow for all months except for April and August, when bi-monthly flows are used. In reality this could result in low flows and impacts on survival for long periods of time.

In addition, there are no BIOP flow objectives for September and October, when most of the impact of the groundwater replacement withdrawals occur under the various alternatives. This suggests that reductions in Columbia River flow can occur when some fish can still be migrating through the system and were not specifically addressed by the EIS. Juvenile fall Chinook are present in the Columbia in September and October.

The EIS significantly downplays the relation between flow and fish survival, and suggests that flow is only important during low flow years (page 4-131). The document uses a statement made by the Independent Scientific Advisory Board in 2003 to suggest that above a certain level of flow there are no additional benefits to fish survival in increasing flow. While the ISAB conducted a review of flow augmentation (ISAB 2003-1) and noted that many questions remained in regard to the relationships between river flows and salmonid production, studies and analysis have since been conducted based upon the questions raised in the 2003 ISAB review. Some of these questions included "whether instantaneous mortality rates are increased in a given reach as a result of low flow (or other factors such as temperature, water particle travel time, turbidity, and calendar date)" and "whether decreased travel time through a reach results in decreased mortality rates measured downstream." The Comparative Survival Study of PIT tagged Spring /Summer Chinook and Steelhead In the Columbia Basin, Ten Year Retrospective Report (Schaller et al. 2007) analyzed the relationship between environmental variables such as water travel time (i.e. flow) and spill, on travel time, instantaneous mortality, and survival rates of juvenile yearling Chinook and steelhead through the Lower Snake and Columbia Rivers. This analysis concluded that simple models incorporating water travel time (i.e. flow), average percent spill, and date (measured in Julian Day) explained 79-95% of the variation in median fish travel time. Variations in instantaneous mortality rates of juvenile Chinook in the Lower Granite-to-McNary reach were explained by date and water travel time (i.e. flow). For steelhead, variation in instantaneous mortality rate was explained by date, flow, and average percent spilled.

Although the relationship of flow level on migration timing is well established, the importance of juvenile passage conditions as measured by adult return is emerging from recent

analysis. Additional analysis has indicated that migration timing affects smolt to adult return. Scheuerell et al. (2009) concluded that migration timing of juvenile Chinook and steelhead in the Columbia Basin affected survival to adult. Their conclusion supports a management objective of increasing the speed of migration and speeding arrival to the estuary by increasing springtime river flows.

The use of newer PIT tag technologies since this time has facilitated further studies on flow and survival of salmonids in upper Columbia River reaches. A recent analysis of ten years of PIT tag data for steelhead survival between Rock Island Dam and McNary Dam concluded that juvenile steelhead average survival for 2007-2008 was higher than previous years' averages and had the shortest combined average water travel time (i.e. higher average flow) than averages in the 1998-2006 period (FPC 2009). Recent analysis of subyearling fall Chinook survival and travel time has shown that increases in migration flow, increases in spill, and decreases in temperature result in higher juvenile survival and faster juvenile migration timing (FPC, 2005; Connor et al, 2003).