

Study No. 4: TOTAL DISSOLVED GAS (PAD Section 3.2.3.2 Project Effects)

4.1 Project Nexus and Study Description

FWS Proposal:

Flow releases from Bowman Dam can result in high levels of TDG in the Crooked River downstream of the dam. The PAD states that the Project will be designed to reduce TDG levels associated with Bowman Dam flow releases. The amount of TDG reduction will be determined during upcoming project design. We request that the applicant conduct a desktop evaluation of the proposed Project's effects to TDG from the proposed modified release facility and hydropower project. This study should use data from a range of flow releases from both the proposed modified release facility, possible hydropower flow releases, possible hydropower facility installed capacities, and affected fish species.

OID Response:

High levels of Total Dissolved Gases (TDG) and the resulting gas bubble disease is an existing condition below Bowman Dam. The Bowman Dam Hydroelectric Project provides an opportunity to mitigate this existing condition and enhance the downstream fishery. OID will conduct a table top study of energy dissipating valves to determine the best design to reduce TDG below Bowman Dam. The study will also include spillway design modifications that may reduce TDG.

4.2 Resource Issues/Goals and Objectives

FWS Proposal:

Previous Crooked River studies have established that Bowman Dam flow releases can cause elevated levels of TDG and cause injury or mortality to salmonids. The Service's goal is to reduce TDG levels downstream of the dam as much as possible, consistent with the OID's requirements for Project design and operation.

OID Response:

OID understands and supports the resource management goals.

4.3 Justification of Recommended Study Methodology

FWS Proposal:

Since the project has not been constructed and thus cannot be operationally tested, an engineering study will be needed.

OID Response:

OID agrees that this study needs to be an engineering desk top study to determine the best design for mitigating TDG impacts and enhancing the downstream Crooked River fishery.

4.4 Study Need for USFWS Resource Goals

FWS Proposal:

Our overall goal is to conserve, protect, and enhance the Crooked River's cold-water fish species. The Service's goal for reintroduced steelhead and spring chinook is to achieve self-sustaining and harvestable populations. Our goal for bull trout is to implement pertinent elements of the Service's Bull Trout Recovery Plan.

OID Response:

OID understands and supports the Service's goal for reintroduction of steelhead and chinook as well as its goal regarding bull trout.