ODFW Guidance for Determining Instream Flow Needs – Summary

GOAL: Use the best available datasets to estimate instream flow needs under **natural flow conditions** at a scale appropriate for understanding basin-wide needs.

- **Natural flow conditions**: flow conditions in the absence of out-of-stream withdrawals and reservoir operations

NOTE: The ODFW Guidance for Determining Instream Flow Needs is intended as a *starting point* for understanding instream needs and identifies a method to estimate natural flows using modeled flow estimates *when more refined measurements or estimates are not available*. This summary provides a high-level overview and groups should **read the full guidance document for important details** early in the place-based planning process.

The method outlined can easily be adjusted to incorporate other flow data, such as streamgage data, if available and representative of natural flow conditions. Groups are certainly encouraged to perform more in-depth analyses where high-quality, site-specific information is already available. Groups are also encouraged to perform additional instream studies as part of the implementation process to address data gaps in identified priority areas.

CAVEATS:

- To provide a desktop approach that can be applied consistently across the state, the method is necessarily a simplification of the natural flow regime and focuses on summarizing flow magnitude at a monthly or half-monthly time step. Modeled streamflow estimates may be less accurate for certain reaches such as 1) reaches with significant groundwater inputs (groundwater dominated systems); and 2) intermittent reaches. Use of natural flow estimates as the basis of instream flow targets (i.e., the presumptive standard) can be problematic in reaches where humans have heavily altered the channel morphology.
    - If modeled datasets are determined to be inaccurate for a location, the group should still calculate preliminary estimates and identify those reaches/areas as data gaps.
- A flow estimate is valid only for the reach where it is calculated (the length will be variable). A point upstream or downstream may have a different flow estimate because of tributary inputs, for example.
    - Groups may need to perform additional analyses for identified high-priority reaches that are not located at a subwatershed outlet.

GIS METHOD[1]: For Planning Steps 2 (Characterize Water Resources, Water Quality, & Ecological Issues) and 3 (Quantify Existing and Future Needs/Demands), groups can focus on determining monthly or half-monthly estimates of median flow. When moving to Step 4 (Develop Integrated Solutions for Meeting Long-Term Water Needs), the groups should use the natural flow estimates in conjunction with other data sources to determine priority restoration sites and to set voluntary flow targets. ODFW

[1]The method presented as written requires use of GIS software. The method can be modified to do fully on a spreadsheet, although it is not as easy. Please refer to the Guidance document for more detailed instructions and contact ODFW Water Program if assistance is needed to obtain datasets.

recommends that flow targets based on the modified presumptive standard range from 0.8×median to the median, depending on the level of ecological function needed.

1. Add HUC-10 or HUC-12 watersheds included in the study area
2. Add ODFW Fish Habitat Distribution (FHD) data for:
    a. ALL sensitive, threatened, and endangered (STE) species in study area (groups are required to analyze these HUCs)
    b. All native species (it is recommended that groups analyze these HUCs)
3. Add other relevant ecological datasets that the group is aware of (e.g., other aquatic species' habitat, important cold-water habitat, springs, etc.) that will assist in project prioritization. (**Optional** here, but strongly recommended before proceeding to Planning Steps 4 (Develop Integrated Solutions for Meeting Long-Term Monitoring Needs) and 5 (Plan Adoption & Implementation)).
4. For each HUC outlet in the study area, compile values for the four modeled datasets[2]:
    a. WRD's Water Availability and Reporting System (WARS)
    b. United States Geological Survey (USGS) StreamStats
    c. USGS/EPA National Hydrography natural flow database
    d. University of Washington Variable Infiltration Capacity (VIC) model
5. Remove any outliers and check against existing gage data (where appropriate)[3]; use the resulting monthly median value to determine a natural flow estimate for that point.
6. Calculate preliminary instream targets based on modified presumptive standard.
7. Repeat the process for any identified key reaches/tributaries that are not located at the HUC outlet.

[2] See full Guidance Document for more details regarding use and limitations. Contact ODFW Water Program if your group needs assistance with data compilation.

[3] Most gages are impacted by upstream withdrawals or flow regulation and therefore are not representative of natural flow conditions.