Work Element 1- Evaluation of Hatchery Production Programs

Tasks:

1. Summarize and report the Chinook salmon adult return data by age class for all LSRCP hatchery facilities operated by IDFG. This information will be submitted to the LSRCP office by December 31 (90 days after the end of the current contract), via the LSRCP generated Excel spreadsheet templates. Data will include:

   a. Yearly summary of Chinook salmon trapping and disposition data for each hatchery facility.

   This task was completed for return year 2015 and the data is reported in the Excel template that was submitted to the LSRCP office in December, 2016. Total returns and disposition for 2016 have been summarized but the PBT results are not currently available to assign the 2016 returns to their respective brood year. This information will be summarized in the 2016 annual report that is submitted to LSRCP in 2017.

   b. Harvest estimates from recreational fisheries conducted by IDFG in the Clearwater River, Salmon River and South Fork Salmon River for the current contract year.

   This task was completed and a summary of the number of fish harvested in each fishery (See Work Element 5 below) will be included in the 2016 Calendar Year Report that is submitted to LSRCP in 2017. Age and stock composition of the harvest for 2015 utilizing results from the PBT analysis is included in the Excel spreadsheet that was submitted to LSRCP in December, 2016.

   c. Harvest estimates from non-tribal commercial and recreational, and tribal fisheries conducted downstream of Idaho for the fisheries that occurred two years
prior to the current contract year. Data will include escapement estimates from fish recovered at hatchery traps and spawning ground surveys in areas downstream of Idaho.

This task was completed and the data through return year 2014 is reported in the Excel template that was submitted to the LSRCP office in December, 2016.

d. Yearly summary of estimated escapement by release group and age at Lower Granite Dam based on PIT tag detections.

This task was completed and the escapement estimates are provided in the in-season PIT tag estimation spreadsheets that are posted on the following website (https://collaboration.idfg.idaho.gov/InSeason%20Run%20Documents/Forms/AllItems.aspx). Results will also be reported in the 2016 Calendar Year Report.

2. Work with hatchery staffs to facilitate the summarization and reporting of Chinook salmon spawning and rearing data for all LSRCP hatchery facilities operated by IDFG for the current contract year. This information will be submitted to LSRCP office by December 31 (90 days after the end of the current contract), via the LSRCP generated Excel spreadsheet templates. Data will include:

a. Release location, lifestage and number of juveniles released in the current contract year including the number of marks and tags, and size of the fish.

This task was completed and the data is reported in the Excel template that was submitted to the LSRCP office in December, 2016 and will be included in the 2016 Calendar Year Report.

b. The estimated survival rate of juvenile Chinook salmon from each release site to Lower Granite Dam.

This task was completed and the data is reported in the Excel template that was submitted to the LSRCP office in December, 2016 and will be included in the 2016 Calendar Year Report.

c. Spawning and early rearing data including: prespawn mortality, number of males and females spawned by origin, fecundity, number culled, estimated green egg take, and green-egg to eyed-egg survival rates.

This task was completed and the data is reported in the Excel template that was submitted to the LSRCP office in December, 2016.

3. Submit Brood Year 2009 Completion Report to LSRCP office by October 1. This report will include lifestage specific survival components of the specified brood year from adult
spawning through the return of all recruits. Specific information provided in this report will include:

a) Spawning and broodstock management protocols of parent group including prespawn mortality and fecundity.
b) On station survival (green-egg to juvenile release).
c) Summary of marking and tagging.
d) Number of juveniles released by life stage and location including size of fish released
e) Estimated survival from release sites to Lower Granite Dam.
f) Cohort reconstruction (returning progeny across three return years).
   1. Harvest in Ocean, Columbia River, Snake River, and terminal fisheries
   2. Returns to hatcheries (including dispositions)
   3. Estimated number of strays
   4. Estimated number of dropouts and unintended escapement.
g) Estimated smolt-to-adult survival rates and progeny: parent ratios

The 2009 report is in draft format and will be available in the first quarter of 2017. All of the data used to generate the report is available in the Excel template spreadsheet submitted to LSRCP in December, 2016.

Work Element 2- Pre-season and In-season Chinook salmon fisheries management

Tasks:
1. Hatchery Evaluation staff will assist in the development of preseason run forecasts of hatchery-origin Snake River Chinook salmon back to the Columbia River mouth.

Preliminary run reconstruction data for all hatchery-origin returns through 2016 was summarized and submitted to the IDFG Fisheries Bureau to help facilitate development of run forecasts for 2017. PBT analysis for the 2016 LGD return and PIT tag conversion rates were used to complete the 2016 run reconstruction to the Columbia River mouth.

2. Hatchery Evaluation staff will maintain and update daily in-season estimates of adult Chinook salmon at Bonneville, McNary, Ice Harbor and Lower Granite dam. This will help to facilitate weekly inter-agency and tribal teleconferences that are used to manage harvest share, and broodstock management for all hatchery programs in Idaho. In-season escapement estimates will be updated daily (Monday-Friday) during the Chinook migration and posted to a website that is accessible to all interested parties.

In-season spreadsheets were updated daily (Mon-Fri) during the spring/summer Chinook adult migration in 2016. Daily updates were posted to the website and summarized by evaluation staff at each of the weekly teleconference calls.
Work Element 3- Juvenile Mark, tag and release planning and associated data management

Tasks:
1. Organize and convene an annual inter-agency and tribal mark/tag committee meeting in October to facilitate coordination of marking and tagging activities that will occur the following year (May-August).

   A coordination meeting was held at the IDFG Nampa Research office on December 1, 2016 to discuss marking/tagging coordination for 2016 as well as the upcoming activities for 2017. Due to scheduling issues associated with the fall PIT tagging, it was decided to shift the meeting date from October to December for future years.

2. Coordinate and submit mark and tag plans for LSRCP Chinook salmon hatcheries operated by IDFG. Mark plans will be distributed to hatchery staffs and the PSMFC marking crew by the end of May of the current contract year for marking that will occur in the following contract year.

   Mark and tag plans were developed and distributed to hatchery and marking staffs. A summary of all marking and tagging that was completed in 2016 will be summarized in the 2016 Idaho Anadromous Fish Marking Program Report produced by PSMFC and is available from IDFG. Due to the shifting of PIT tagging to the fall period, completion of the annual marking report will be delayed until January 2017.

3. Work with LSRCP hatchery staff to develop loading plans that ensure representation of tags (PIT and CW) across family groups and rearing containers and to track family units as part of Parental Based Tagging.

   M&E staff worked cooperatively with hatchery staffs to develop representative CWT and PIT loading and tagging plans. All plans were distributed to the marking crew and hatchery staffs.

4. Enter, validate, and maintain all marking, tagging and release data in the IDFG database.

   All 2016 marking and tagging data were entered into the IDFG database and are available on request.

5. Manage, validate, and upload, all PIT tag files to the PTAGIS regional database for Chinook salmon released in the current contract year.

   All PIT tag files for migration year 2016 were validated and uploaded to the PTAGIS database. Tagging files for MY17 from the fall 2016 tagging have been uploaded to
PTAGIS. After releases are completed in the spring of 2017, all tag files will be re-uploaded with the associated release information.

6. Submit juvenile release information to the Fish Passage Center in-season as fish are released from all LSRCP hatchery facilities operated by IDFG.

*Hatchery release data was updated and sent to the FPC throughout the spring of 2016 as anadromous fish were released.*

**Work Element 4- Operation of Coded Wire Tag Laboratory**

**Tasks:**

1. Assemble and distribute snout sample bags to all LSRCP hatcheries, to harvest monitoring staff, and to IDFG research staff that will be conducting spawning ground surveys.

   *This task was completed.*

2. Coordinate the delivery of all snouts collected in the current contract year to the CWT laboratory in Nampa.

   *This task was completed.*

3. Excise CW tags, read, enter and validate all CWT information into the IDFG database.

   *This task was completed.*

4. Upload all CWT recovery information, including sample rate, into the RMIS database. This data upload will occur on or before December 31 and will include CWTs recovered in Idaho fisheries, spawning ground surveys and hatchery traps during the spring, summer, fall of the current year.

   *All recoveries collected in 2016 will be submitted to the Regional Mark Processing Center (RMPC) prior to January 31, 2017.*
Work Element 5- Harvest monitoring for Chinook salmon recreational fisheries conducted in Idaho

IDFG staff is responsible for all recreational harvest monitoring and for the development spring/summer Chinook salmon catch estimates in the Clearwater River drainage, and sections of mainstem Salmon River and South Fork Salmon River.

Tasks

1. Work with Idaho state fish managers to implement spring/summer Chinook salmon harvest monitoring programs in Idaho where applicable.
2. Conduct harvest surveys for all recreational Chinook salmon fisheries in Idaho.
3. Maintain electronic records of all harvest data.

Recreational fisheries were conducted in sections of the Snake, Clearwater, Salmon, and South Fork Salmon rivers in 2016. Harvest monitoring staffs conducted angler creel surveys for all Chinook fisheries and provided harvest estimates. A summary of the estimated number of fish harvested is summarized below. Results of the PBT analysis will be used to partition out the fish to stock and cohort for the mixed stock fisheries and will be included in the 2016 Chinook Calendar Year report that is submitted in 2017.

<table>
<thead>
<tr>
<th>Drainage</th>
<th>River</th>
<th>Estimated Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearwater</td>
<td>Clearwater River</td>
<td>1,626</td>
</tr>
<tr>
<td></td>
<td>Lochsa River</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>MF Clearwater River</td>
<td>444</td>
</tr>
<tr>
<td></td>
<td>NF Clearwater River</td>
<td>882</td>
</tr>
<tr>
<td></td>
<td>SF Clearwater River</td>
<td>621</td>
</tr>
<tr>
<td>Salmon</td>
<td>Salmon River</td>
<td>2,637</td>
</tr>
<tr>
<td></td>
<td>Little Salmon River</td>
<td>2,025</td>
</tr>
<tr>
<td></td>
<td>SF Salmon River</td>
<td>1,237</td>
</tr>
<tr>
<td></td>
<td>Upper Salmon River</td>
<td>1,728</td>
</tr>
<tr>
<td></td>
<td>Snake River</td>
<td>452</td>
</tr>
</tbody>
</table>

Work Element 6 – Electronic Database Systems
M&E staff will continue to collaborate with the PSMFC database development team, IDFG Information Systems Bureau staff, Fisheries Bureau staff, and Hatchery O&M staff in a guidance role for the development of a comprehensive relational database to house IDFG LSRCP hatchery information. Data elements will include the accounting of LSRCP hatchery production facilities over the complete life cycle of program fish.

Major tasks of M&E staff relative to development of the database will be to assemble, organize, validate and enter the historic data from all LSRCP hatchery facilities operated by IDFG

Tasks:
1. Participate in hatchery database committee meetings and help steer the database development process.

   A representative from the M&E staff is on the Hatchery Database Technical Advisory Committee and attended all committee meetings. During 2016, the regular scheduled technical committee meetings were suspended but M&E staff continue to stay involved in the database development process through impromptu meetings with the development team and a smaller core set of users.

2. Complete validation process for all historical spawning and final disposition data.

   The validation process for the historic spawning and disposition data has been completed and is ready to be uploaded to the current database. As per the Steering committee prioritization, PSMFC staff time will not be devoted to develop an uploading tool in the near term. Once the upload tool is available we will be ready to import the data.

3. Begin the data entry and validation for all historic hatchery incubation and rearing data.

   Until the development team at PSMFC is ready to work on this module we are going to postpone this task.
Part 2- Summer Steelhead

Work Element 1- Evaluation of Hatchery Production Programs

Tasks:
1. Summarize and report the steelhead adult return data by age class for all LSRCP hatchery facilities operated by IDFG. This information will be submitted to the LSRCP office by December 31 (90 days after the end of the current contract), via the LSRCP generated Excel spreadsheet templates. Data will include:

   a. Yearly summary of steelhead trapping and disposition data for each hatchery facility.

      This task was completed for return year 2015 and the data is reported in the Excel template that was submitted to the LSRCP office in December 2016. Total returns for 2016 have been summarized but the PBT results are not currently available to assign the 2016 returns to their respective brood year. This information will be summarized in the 2016 annual report that is submitted to LSRCP in 2017.

   b. Harvest estimates from recreational fisheries conducted by IDFG in the Snake River, Clearwater River, Little Salmon River, and Salmon River for the current contract year.

      This task was completed and the estimated number of fish harvested (hatchery, stock and cohort) during the Fall of 2014 and Spring 2015 is included in the Excel template spreadsheet submitted to LSRCP in December 2016. Age and stock composition of the harvest from the 2015-2016 fishery has not been completed because the PBT results are not available but are scheduled to be processed during the winter of 2016/2017. Results of the age composition analysis will be included in the 2016 Calendar Year Report that is submitted in 2017. A summary of the recreational harvest by major tributary for the 2015-2016 fishery is provided under Work Task 5 below.

   c. Harvest estimates from non-tribal commercial and recreational, and tribal fisheries conducted downstream of Idaho for the fisheries that occurred two years prior to the current contract year. Data will include escapement estimates from fish recovered at hatchery traps and spawning ground surveys in areas downstream of Idaho.

      This task was completed and the harvest data through spawn year 2014 is reported in the Excel template spreadsheet.
d. Yearly summary of estimated escapement by release group and age at Lower Granite Dam based on PIT tag detections.

*This task was completed and the escapement estimates are provided in the in-season PIT tag estimation spreadsheets that are posted on the following website ([https://collaboration.idfg.idaho.gov/InSeason%20Run%20Documents/Forms/AllItems.aspx](https://collaboration.idfg.idaho.gov/InSeason%20Run%20Documents/Forms/AllItems.aspx)). These results will also be reported in the 2016 Calendar Year Report.*

2. Work with hatchery staffs to facilitate the summarization and reporting of steelhead spawning and rearing data for all LSRCP hatchery facilities operated by IDFG for the current contract year. This information will be submitted to LSRCP office by December 31 (30 days after the end of the current contract), via the LSRCP generated Excel spreadsheet templates. Data will include:

   a. Release location, lifestage and number of juveniles released in the current contract year including the number of marks and tags, and size of the fish.
   b. The estimated survival rate of juvenile steelhead from each release site to Lower Granite Dam.
   c. Spawning and early rearing data including: prespawn mortality, number of males and females spawned by origin, fecundity, number culled, estimated green egg take, and green-egg to eyed-egg survival rates.

*This task was completed and the data is reported in the Excel template that was submitted to the LSRCP office in December, 2016.*

3. Submit Brood Year 2009 Completion Report to LSRCP office by October 1. This report will include lifestage specific survival components of the specified brood year from adult spawning through the return of all recruits. Specific information provided in this report will include:

   a) Spawning and broodstock management protocols of parent group including prespawn mortality and fecundity.
   b) On station survival (green-egg to juvenile release).
   c) Summary of marking and tagging.
   d) Number of juveniles released by life stage and location including size of fish released
   e) Estimated survival from release sites to Lower Granite Dam.
   f) Cohort reconstruction (returning progeny across three return years).
      5. Harvest in Ocean, Columbia River, Snake River, and terminal fisheries
      6. Returns to hatcheries (including dispositions)
      7. Estimated number of strays
      8. Estimated number of dropouts and unharvested escapement.
   g) Estimated smolt-to-adult survival rates and progeny: parent ratios
A DRAFT of the BY2009 report is not currently available but all of the data that will be presented in the brood report is in the Excel template spreadsheet.

Work Element 2- Pre-season and In-season fisheries management

Task:
1. Hatchery Evaluation staff will maintain and update in-season estimates of adult steelhead at Bonneville, McNary, Ice Harbor and Lower Granite dam that are based on the detections of PIT tagged fish. This will help to facilitate inter-agency and tribal teleconferences that are used to manage harvest share, and broodstock management for all hatchery programs in Idaho.

In-season PIT tag spreadsheets were updated weekly during the steelhead adult migration in 2015/2016. Updates were posted to the website and summarized by evaluation staff at each of the weekly teleconference calls. A summary of the PIT tag estimates at LGD will be provided in the 2016 Calendar Year Report submitted in 2017.

Work Element 3- Juvenile Mark, tag and release planning and associated data management

Tasks:
1. Organize and convene an annual inter-agency and tribal mark/tag committee meeting in October to facilitate coordination of marking and tagging activities that will occur the following year (May-August).

A coordination meeting was held at the IDFG Nampa Research office on December 1, 2016 to discuss marking/tagging coordination for 2016 as well as the upcoming activities for 2017. Due to scheduling issues associated with the fall PIT tagging, it was decided to shift the meeting date from October to December for future years.

2. Coordinate and submit mark and tag plans for LSRCP steelhead hatcheries operated by IDFG and Hagerman National Fish Hatchery. Mark plans will be distributed to hatchery staffs and the PSMFC marking crew around the end of May of the current contract year for marking that will occur in the following contract year.

Mark and tag plans were developed and distributed to hatchery and marking staffs. A summary of all marking and tagging that was completed in 2016 will be summarized in the 2016 Idaho Anadromous Fish Marking Program Report written by PSMFC. Due to the shifting of PIT tagging to the fall period, completion of the annual marking report will be delayed until January 2017.
3. Work with LSRCP hatchery staff to develop loading plans that ensure representation of tags (PIT and CW) across family groups and rearing containers and to track family units as part of Parental Based Tagging.

   *M&E staff worked cooperatively with hatchery staffs to develop representative loading and tagging plans. All plans were distributed to the marking crew and hatchery staffs.*

4. Enter, validate, and maintain all marking, tagging and release data in the IDFG database.

   *All 2016 marking and tagging data were entered into the IDFG database and are available on request.*

5. Manage, validate, and upload, all PIT tag files to the PTAGIS regional database for steelhead released in the current contract year.

   *All PIT tag files for migration year 2016 were validated and uploaded to the PTAGIS database. Tagging files created in the fall of 2016 for migration year 2017 have been uploaded to PTAGIS. After releases are completed in the spring of 2017, all tag files will be re-uploaded with the associated release information.*

6. Submit juvenile release information to the Fish Passage Center in-season as fish are released from all LSRCP hatchery facilities operated by IDFG.

   *Hatchery release data was updated and sent to the FPC throughout the spring of 2016 as anadromous fish were released.*

**Work Element 4- Operation of Coded Wire Tag Laboratory**

**Tasks:**

1. Assemble and distribute snout sample bags to all LSRCP hatcheries, to harvest monitoring staff, and to IDFG research staff that will be conducting spawning ground surveys.

   *This task was completed.*

2. Coordinate the delivery of all snouts collected in the current contract year to the CWT laboratory in Nampa.

   *This task was completed.*

3. Excise CW tags, read, enter and validate all CWT information into the IDFG database.

   *This task was completed.*
4. Upload all CWT recovery information into the RMIS database. This data upload will occur on or before December 31 and will include CWTs recovered in Idaho fisheries, spawning ground surveys and hatchery traps during the spring, summer and fall of the current contract year.

*All recoveries collected in 2016 will be submitted to the Regional Mark Processing Center (RMPC) prior to January 31, 2017.*

**Work Element 5- Harvest monitoring for steelhead recreational fisheries conducted in Idaho**

IDFG staff funded by LSRCP is responsible for all recreational harvest monitoring in the Clearwater River drainage, Snake River, and Salmon River,

**Tasks**

1. Conduct harvest surveys for all recreational steelhead fisheries in Idaho.
2. Maintain electronic records of all harvest data.

*The Idaho Statewide steelhead harvest survey for the fall of 2015 and the spring of 2016 has been completed. A summary of harvest by major river section in the Salmon, Clearwater, and Snake rivers for each of the fall and spring fisheries is provided below. Once the PBT analysis from the fishery sample is complete, the Excel spreadsheet template will be updated to reflect the estimated catch from each rearing facility, stock and cohort. Results will also be provided in the 2016 Calendar Year Report that is submitted in 2017.*

<table>
<thead>
<tr>
<th>Drainage</th>
<th>Fall</th>
<th>Spring</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearwater River</td>
<td>7,203</td>
<td>4,618</td>
<td>11,821</td>
</tr>
<tr>
<td>Salmon River</td>
<td>8,426</td>
<td>12,487</td>
<td>20,913</td>
</tr>
<tr>
<td>Snake River</td>
<td>4,113</td>
<td>1,180</td>
<td>5,293</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19,742</strong></td>
<td><strong>18,285</strong></td>
<td><strong>38,027</strong></td>
</tr>
</tbody>
</table>
Work Element 6 – Electronic Database Systems

M&E staff will continue to collaborate with the PSMFC database development team, IDFG Information Systems Bureau staff, Fisheries Bureau staff, and Hatchery O&M staff in a guidance role for the development of a comprehensive relational database to house IDFG LSRCP hatchery information. Data elements will include the accounting of LSRCP hatchery production facilities over the complete life cycle of program fish.

Major tasks of M&E staff relative to development of the database will be to assemble, organize, validate and enter the historic data from all LSRCP hatchery facilities operated by IDFG.

Tasks:

1. Participate in hatchery database committee meetings and help steer the database development process.

   A representative from the M&E staff is on the Hatchery Database Technical Advisory Committee and attended all committee meetings. During 2016, the regular scheduled technical committee meetings were suspended but M&E staff continue to stay involved in the database development process through impromptu meetings with the development team and a smaller core set of users.

2. Complete validation process for all historical spawning and final disposition data.

   The validation process for the historic spawning and disposition data has been completed and is ready to be uploaded to the current database. As per the Steering committee prioritization, PSMFC staff time will not be devoted to develop an uploading tool in the near term. Once the upload tool is available we will be ready to import the data.

3. Begin the data entry and validation for all historic hatchery incubation and rearing data.

   Until the development team at PSMFC is ready to work on this module we are going to postpone this task.
Part 3- PBT Sampling and Analysis for Estimating the Harvest Contribution of Snake River Origin Spring/Summer Chinook Salmon and Summer Steelhead in the Columbia River and Snake River basins

A comparison of catch contribution from each of the CWT and PBT tagging methods for the spring/summer Chinook sport fisheries in Idaho occurring during the spring and summer of 2016 and the summer steelhead fisheries occurring during the fall of 2015 and spring of 2016 will be included in the 2016 Calendar Year Report submitted to LSRCP by IDFG in 2017.

Results of the PBT based catch composition from steelhead fisheries in the Columbia River and in the Snake River downstream of the ID/WA border during the fall of 2015 and spring of 2016 will be reported in a joint report produced by IDFG, CRITFC, PSMFC, and the Yakama Nation.

Part 4- Anadromous Hatchery Data Management

1. Data Summarization and Reporting.

Provided data summaries and technical assistance to IDFG fishery managers.

2. Data Management and Compilation

During 2016, considerable time was devoted to conducting QA/QC checks of trapping, holding, and spawning data that had been entered into FINS. These checks were followed with correspondence to individual facilities it remedy any data discrepancies.

Provided assistance to the development of the chinook run forecast by developing R-code that incorporated the LGD PBT stock composition and PIT tag conversion rates to back the run down to the river mouth.

3. Administration and Coordination

Significant effort was devoted to developing a new format for the Clearwater AOP documents to include a stand-alone SOP document that will accompany the annual AOP document similar to what was done for the Salmon River.