

Peace River Water Use Plan

Monitoring Program Draft Terms of Reference

- **Tributary Habitat Review**

GMSMON-17

Terms of Reference for the Peace River Water Use Plan Monitoring Program: Tributary Habitat Review

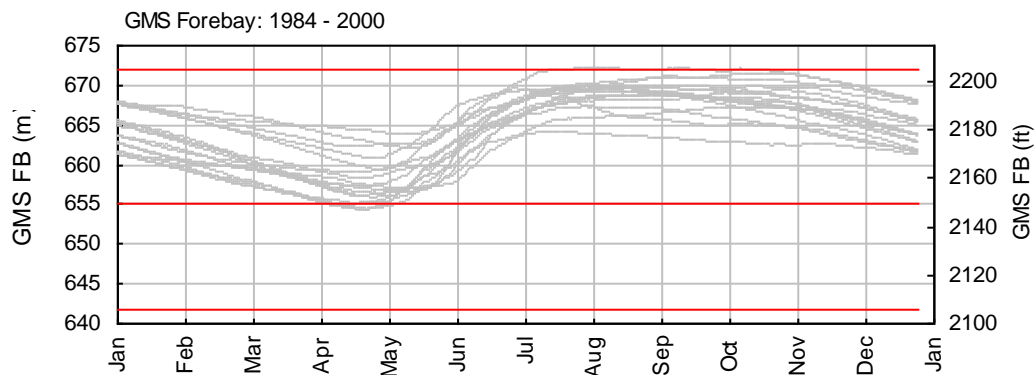
This Terms of Reference (TOR) is a revision of the original dated July 30, 2008. For a summary of the changes, refer to Table 17-3.

1.0 Monitoring Rationale

1.1 Background

Annual reservoir cycling generally results in water levels reaching a minimum in late April or early May and peaking in late summer or fall (Figure 17-1; BC Hydro 2003). Tributaries of Williston Reservoir may become inaccessible to fish in the spring due to (i) drawdown and (ii) interference from wood debris fields. Alluvial barriers become exposed to varying degrees when the reservoir is drawn down from its high pool elevation. Woody debris becomes stranded in tributary mouths from a combination of prevailing winds and drawdown history. While debris can provide habitat for fish, in some cases the amount and extent of the debris field can present barriers to fish passage. At low reservoir elevations, migration of spawners up tributaries in the spring is potentially restricted by alluvial barriers and debris. Furthermore, debris fields are often mobile, subject to winds and reservoir levels. Scouring of the banks associated with the debris fields can quickly reduce any natural littoral and/or riparian vegetation that may be growing in the area.

Figure 17-1. GMS Monthly Forebay Levels: 1984–2000 (BC Hydro 2003)



The Tributary Habitat Review monitoring program is a component of the Williston Tributary Access Management Plan. The Williston Tributary Access Management Plan was proposed by the Peace Water Use Plan Committee (hereafter known as the Committee) to improve access to tributaries excluded by drawdown zone morphology and/or debris fields for fish and wildlife. The plan consists of a tributary inventory for Williston Reservoir, selection of tributary sites for enhancement based on the inventory, followed by enhancement of the sites. Enhancement will include removal of obstructions blocking fish access and/or prevention of habitat destruction by mobile debris.

1.1.1 Background Update

As part of the Tributary Habitat Review an inventory of candidate trial sites was completed in 2010 and two trial sites were selected for enhancement. The Tributary Habitat Review monitoring program began in spring 2011 using a before-after study to approach. The purpose of this program was to assess the effectiveness of the Ole and Six Mile Creek enhancement designs for improving fish spawning habitat access.

In the spring of 2014, enhancement work was completed at Ole and Six Mile Creek to remove access restrictions caused by debris and a perched channel mouth, respectively.

This monitoring program collects data annually. After the first year of electrofishing (EF), a decision was made to switch to a mark-recapture sampling program to provide fish juvenile productivity estimates to address the first management question referenced below. The changes were implemented in the 2012-2014 field season, but low detection limited the effectiveness of the changes. Based on the field results, and a review of the power associated with the previous study design, the contractor confirmed that the current study methodology was unlikely to detect a change in fisheries productivity related to the enhancements (MacInnis et al. 2015). An internal review of the 2011-2013 dataset evaluated the effectiveness of the study approach in addressing the Management Questions listed in the approved Terms of Reference. The review recommended a change to the Management Question and an updated approach was identified to better meet the objectives of the study as originally described in the Water Use Planning process,

1.2 Management Questions

As described above, only the first management question has been revised to focus on the assessment of access for the two target species (Rainbow trout and Arctic grayling). The key management questions are:

- 1) Does access for spring spawners (i.e., rainbow trout and/or arctic grayling) improve as a result of enhancement?
- 2) Is the area and quality of fish habitat created by the tributary enhancement maintained over time?
- 3) Does riparian vegetation along tributaries increase in abundance and diversity as a result of enhancement?
- 4) Does abundance and diversity of song birds (passerines) around tributaries change as a result of enhancement?
- 5) Does amphibian abundance and diversity in tributaries change as a result of enhancement?
- 6) Does tributary enhancement change the area and quality of amphibian breeding habitat over time? If so, is the area and quality maintained over time?

The primary focus of the enhancement works is to modify conditions to improve fish access and habitat at Ole and Six Mile Creeks. Enhancement is expected to improve fish access to tributaries during low reservoir elevation when it is used for spring spawning.

The Peace WUP did not specify the wildlife benefits that are expected from the tributary enhancement. Riparian recruitment along the banks is hypothesized to be inhibited by debris accumulation and debris scouring the banks. To provide some indication of wildlife response to the tributary enhancement, this Terms of Reference identifies song birds and amphibians as the target species groups for the monitoring program.

Removal of large volumes of debris from tributary mouths and installation of barriers to prevent further debris accumulation will provide an opportunity for vegetation to establish in the scoured and debris-covered areas. A response by song birds may be measurable with vegetation re-growth. The monitoring program will also target amphibians as they generally have small home ranges, are highly philopatric, and have limited dispersal ability—characteristics that make them sensitive to environmental perturbations (Blaustein 1994; deMaynadier and Hunter 1995 *in* Keystone Wildlife Research Ltd. 2007). Amphibians may show a positive or negative response to the enhancement depending on the post-enhancement conditions relative to pre-enhancement conditions of the tributary. Monitoring of amphibians and birds will also provide an opportunity to improve our knowledge of these species groups as little data is presently available about them in Williston Reservoir. Reconnaissance surveys for amphibians were completed in 1998 and 1999 to document the presence and distribution of amphibian species suspected to reside in the watersheds (Hengeveld 1999, 2000). Detected during these surveys were western toads, wood frogs, Columbian spotted frogs, striped chorus frogs, and long-toed salamanders. Bird surveys, up to the present, have largely been limited to waterfowl (Hengeveld and Corbould 2000) and birds of prey (Booth and Corbould 2003) with the exception of the Donna Creek Forest/Biodiversity project (Hentze and Cooper 2006).

1.3 Detailed Hypotheses about the Ecological Impacts

The primary hypotheses¹ to be tested are:

- H₁: Access to spawning habitat in the spring period - as measured by the proportion of modified channel area with sufficient depth for target fish passage - increases following enhancements to tributaries;
- H₂: Total rearing area for fish increases following enhancement to tributaries;
- H₃: Riparian vegetation abundance and diversity along the tributaries increases following enhancement to tributaries;
- H₄: Amphibian abundance and diversity in and near tributaries changes following tributary enhancement;
- H₅: Total amphibian breeding area changes following enhancement;

¹ For clarity, the hypotheses are stated as the alternate hypotheses. Analyses will test the null hypotheses of no effect or difference.

H₆: Song bird abundance and diversity near tributaries increases following tributary enhancement.

Total habitat area, in addition to species utilization, at pre- and post-enhancement sites will be tested hypotheses. Indices of habitat are often more useful measure of project success due to constraints in sampling intensity associated with remote locations. If depth measurement is not considered an adequate measure of fish access to spawning grounds, it may be redefined based on the consultants understanding of best practices.

1.4 Key Water Use Decision Affected

Information from this monitoring program, in combination with other programs within the Williston Management Plans will be used to inform future decisions on reservoir operating elevations, and in particular limiting drawdown to optimize access to key tributaries by reducing woody debris accumulation. Any future decisions on limiting drawdown of the reservoir would have implications for reservoir fish, dust, wildlife, and power generation.

2.0 Monitoring Program Proposal

2.1 Objective and Scope

The objective of the monitoring program is to address the management questions identified in Section 1.2 by collecting the data necessary to draw inferences and to test the hypotheses outlined in Section 1.3. The scope of the monitoring program as outlined within the Committee Report originally included monitoring primary productivity. However, the information gained by monitoring primary productivity would be of little value in assessing the overall effectiveness of tributary enhancement to fish and wildlife. Intensive sampling would likely be required to gather adequate information on the community of primary producers which are highly sensitive to environmental variables. Their habitat would also be changing dramatically from shallow tributary water to deep reservoir water as the reservoir inundates the tributary from May to August.

The study area includes the area of confluence between Ole and Six Mile Creeks with the Williston Reservoir. The monitoring program occurs annually during the 10-year Williston Tributary Access Management Plan. One year of baseline data was collected (as a minimum) prior to the commencement of enhancement activities.

Data collection, data analyses, and reporting is to be completed annually over the study period and a final study report will be produced in Year 10 that summarizes the results of the entire monitoring program and provides conclusions that can be drawn with respect to the management questions and hypotheses.

2.2 Approach

The general approach to the monitoring program is a before-after-control-impact study that consists of annual fish surveys, fish habitat assessment, riparian vegetation assessment, songbird surveys, as well as amphibian and amphibian-habitat inventory assessments (Table 17-1). The study examines two distinct trial

enhancement approaches, each tested on a single stream, as well as two respective control streams.

2.3 Methods

2.3.1 Task 1: Project Coordination

Project coordination involves the general administrative and technical oversight of the monitoring program. This task includes but is not be limited to: 1) budget management, 2) study team management, 3) logistic coordination, 4) technical oversight of field and analysis components, and 5) facilitation of data transfer among other investigators associated with the Williston Tributary Access and the Riparian and Wetland Habitat Enhancement management plans.

In particular, coordination of this study will be necessary with (i) collected land survey data (ii) Targeted Debris Management for timing/methodology of debris removal (GMSWORKS-18), (iii) Williston Reservoir Aerial Photos and DEM implementation project (GMSWORKS-14) for aerial photos and digital elevation model, and (iv) Williston Debris Trends monitoring program (GMSMON-16) for aerial photos.

Cost efficiencies will be sought out among the various monitoring components of this program and other programs in the Williston Reservoir Management Plans to reduce project costs of working in this remote location.

2.3.2 Task 2: Site Selection

Enhancement sites and their corresponding control streams were selected as part of the Trial Tributaries implementation project. Other sites may be selected for enhancement in the future.

2.3.3 Task 3: Field Sampling Program: Fish and Fish Habitat

Fish Surveys

Following sampling methodologies outlined in Johnston and Slaney (1996) and RIC (2001), with fish surveys conducted in the spring. Exact survey timing has been determined based on site selection. Methodologies for surveying are outlined below. Survey design will vary according to tributary length and diversity of in-stream habitat. Thus, the sample size and location of sampling within the study sites is at the discretion of the researcher and subject to the available budget. A clear rationale of these decisions will be required in the project reports. The following information will be collected for all surveys to provide an indication of the reliability of the data:

- Date and time
- Crew and skill level
- Data collection method and equipment specifications
- Effort
- Weather conditions

The spring survey consists of a visual count survey (e.g., snorkel, stream walk) of spawners and/or redds. Arctic grayling and rainbow trout are considered the target

species. Arctic grayling will be entering tributaries when reservoir levels are at their lowest (end of April-May) while rainbow trout spawners are expected to access tributaries during June. The survey area is defined by the researcher but extends further upstream beyond the area of enhancement and zone of impoundment (if present) created by the debris. At a minimum for each survey, the observer records observations on number of redds (if applicable), fish abundance and distribution, sex, size, water temperature, and water clarity.

There will be no summer surveys.

Fish Habitat Assessment

An annual habitat assessment will be completed in each tributary to determine the quality of fish habitat, as well as accessibility of the tributary for reservoir fish. Habitat conditions will be evaluated to identify factors that are limiting fish access in the impacted/enhancement area as well as upstream beyond the area of enhancement and zone of impoundment (if present) created by the debris. Review of channel bed elevation profiles collected for a sub-sample of the enhancement area under GMSWORKS-19 will be used along with any other available elevation data to determine the water column distribution for depths suited to the target fish. Field methods and data requirements for the assessment are referenced to Fish Habitat Procedures (Johnston and Slaney 1996). A Level 1 Field Assessment will be conducted. Field data forms have been prepared in advance to capture all relevant information (please review the fish habitat assessment procedures [Johnston and Slaney 1996] for more information).

The assessment will be conducted concurrently with one of the spawner/redd count survey sessions when the reservoir is near or at low pool.

2.3.4 Task 4: Field Sampling Program: Vegetation

Through field surveys and aerial photo analyses, a vegetation assessment will be conducted annually to monitor composition, diversity, and spatial extent of vegetation in the impact/enhancement area.

In the first year of monitoring, the study area was extended upstream beyond the impact/enhancement area to ascertain the type and distribution of vegetation that may be expected to establish once the site is enhanced. This information may be a useful explanatory factor for the monitoring program over time. Sampling of vegetation upstream beyond the first year will be conducted as deemed necessary by the project coordinator and the BC Hydro Study Lead.

Field Survey

Field methods and data requirements for this task are referenced to Mackenzie and Moran (2004) and Watershed Restoration Program (Johnston and Slaney 1996) guidelines. Field data forms have been prepared in advance to capture all relevant information. A standard sampling window (e.g., June-July) has been established to ensure that representative results are obtained at each site and that valid comparisons can be made between years.

The sampling design (e.g., Braun-Blanquet method, transect sampling, quadrat sampling) is specific to the actual site conditions. Additionally, the sample size and location of sampling within the study sites is at the discretion of the researcher and subject to the available budget; however, a clear rationale of these decisions will be provided. Information to be collected includes but is not limited to:

- Bank characteristics including: slope, stability, undercut, vegetation cover
- Riparian cover
- Debris cover
- Overstorey vegetation characteristics (tree species, densities and heights, % cover)
 - understorey vegetation characteristics (shrub, herb and moss species, % cover and height)
 - categorize the extent of canopy closure over the stream
 - record the structural stage of the dominant vegetation in the adjacent

Unknown species should be collected and preserved for proper identification. In the event that rare plants (e.g., federally or provincially listed species) are found during the ground sampling, this data will be provided to the Conservation Data Center (CDC) by the contractor, using appropriate forms. Similarly, noxious weed species, if encountered, should be identified and weed sites should be entered into the Ministry of Forests and Range Invasive Alien Plant Program Application and forwarded to the BCH Hydro Vegetation Specialist. These sites should also be explicitly identified to determine if spread of these species is occurring over time.

The timing of the survey will be coordinated with the fisheries component to create cost efficiencies.

Aerial Photo Analysis

Using aerial photos taken in WUP Implementation Year 2, and 11 as part of the Williston Reservoir Aerial Photos and DEM project and the Williston Debris Trends project, photographs will be interpreted to assess for changes in debris accumulation, as well as spatial distribution and composition of vegetation over time. Guidelines for photo interpretation are set out in RIC standards for VRI-Vegetation Resources Inventory (RIC 2002). In addition, aerial photos collected via alternate sources (e.g., an Unmanned Aerial Vehicle) will be interpreted to assess channel morphology changes at Ole and Six Mile Creeks after enhancement (2014, 2015, 2019).

2.3.5 Task 5: Field Sampling Program: Amphibian Inventory and Abundance

An inventory of amphibian species in the tributaries will be conducted using standard procedures (RIC 1998a). Breeding period for amphibians in the Williston watershed is thought to be from late April to the end of June (Hengeveld 2000). The exact period will vary depending on geographic location, elevation, and weather conditions. Timing of the inventory (late April to May) will correspond to the breeding period and low pool when tributaries may be clogged by debris. Snow and soft roads early in the season will be a necessary consideration when determining survey timing (Hengeveld 2000). The survey area has been defined at the discretion of the researcher but includes the impacted/enhancement area as identified by the Trial

Tributaries project as well as the upstream areas such as where backwatering or pooling may be occurring.

If appropriate, the monitor will also conform to the inventory methods identified in RIC (1998b) for pond-breeding amphibians. The inventory information to be collected at each habitat site will follow that described in RIC (1998a). The required habitat attributes include but are not limited to:

- Location: geographic coordinates, Broad Ecosystem Unit, ecosection, biogeoclimatic subzones
- Site information: elevation, slope, aspect, and mesoslope position
- Topography: surface topography code
- Structural stage: structural stage code
- Basic vegetation: dominant/indicator plant species and % cover for each layer
- Simple CWD: coarse woody debris volume and volume by decay class
- Surface substrate: surface substrate composition

The survey crew is to use standard habitat attribute definitions and codes and is encouraged to use RIC (1998a) standard forms for data recording.

The minimum data requirements for this monitor are to establish Presence/Not Detected status of amphibians in the study area. However, the survey crew are encouraged to adopt an animal sampling strategy that allows measures of relative abundance to be made. This would maximize the information content of the survey, allowing the results of the monitor to be used as a reference for future trend analyses. This would be particularly important should any of the animals observed in the area be a species of Species At Risk Act concern. In addition to the habitat attributes listed above, the minimum data requirements of all observations are species, sex, developmental stage, and approximate size. If applicable, survey sites will be marked and georeferenced. Permanent photo-monitoring points will also be established to provide a photographic record of site-specific conditions.

Handling of all observed animals should be kept to a minimum. Additionally, nets, boots and containers should be washed and any bits of vegetation removed before going to another site to prevent transfer of diseases.

2.3.6 Task 6: Field Sampling Program: Songbird Inventory and Abundance

A survey of passerine bird species around the tributaries will be conducted using standard procedures to estimate relative abundance (RIC 1998a; 1999). Breeding period for song birds in the Williston watershed is thought to be from May-July (Hentze and Cooper 2006; RIC 1999). The study area includes the impacted/enhancement area as well as sites upstream. The sample size and location of sampling has been at the discretion of the researcher and subject to the available budget; however, a clear rationale of these decisions will be provided in project reports. High observer variability in bird surveys will be taken into account when developing the sampling design/frequency.

Red- and Blue-listed passerines are present in the Peace River valley area (Keystone Wildlife Research Ltd. 2007) and if detected in the Williston tributary study areas, a ground inspection form (B.C. Ministry of Environment, Lands, and Parks and B.C. Ministry of Forests 1998) will be completed to record the habitat attributes. All bird observations and the ecosystem unit in which they were detected will be recorded on standard RIC datasheets. In the event that nests are observed, the location and description will be recorded on RIC standard nest site description forms.

2.3.7 Task 7: Data Entry and Analysis

As requested, the proponent has developed a Microsoft Access database to enter, check and store all data collected during the monitoring program. The format of the data is consistent with RIC (1998a) standards, which include the use of standard attribute terminology, definitions, and coding schemes. Species at risk data will be submitted to the Conservation Data Centre (CDC) and other wildlife data will be submitted to the BC Ministry of Environment Species Inventory (SPI) database in appropriate formats. A map of the area will also be prepared to summarize key information including the locations of enhancement and access issues, sampling locations, and photopoints.

For all components of the monitoring program, statistical analysis will be based on a before-after design. Testing of time trends will largely depend on the nature of the data, but may include simple non-parametric correlation tests as well as more complex time series analyses (e.g., regression). Strength of the inference may be limited to some degree as the monitoring program will have only one year of pre-enhancement data for the analysis.

For the fisheries component of the field program, data analysis will focus on the ability of the enhancement project to maintain its enhanced state. Appropriate metrics such as total fry rearing area (m^2) will be analyzed to determine if habitat changes in area and quality of habitat over time. Additional metrics for describing improvements to fish access based on channel morphology and redd count will be analyzed in a weight-of-evidence type approach to determine change in spring spawner access within the tributary over time. The study will use channel bed survey data collected by the concurrent field program managed under GMSWORKS-19, as well as aerial imagery, to draw inferences about access improvements and associated stability in modified areas..

For the vegetation component of the field program, metrics will describe species richness, community structure, and spatial distribution. Air photo analysis will include polygon delineation of vegetation communities, and will assist in determining changes in composition and spatial extent over time.

For the wildlife component, the suggested metric for songbirds is mean breeding bird use/ m^2 . Analysis of amphibian data will depend on whether it is possible to collect an index of abundance or if the data will be presence/not detected data.

2.3.8 Task 8: Reporting

Project reporting will consist of a series of annual data reports with a larger summary mid-project report and a final report at the conclusion of the monitoring program. The

annual data report will document the methodologies (including map of sites and photo documentation), findings of the year and will include a discussion on how the year's data compare with that collected in previous years. Included in this discussion will be the results of all pertinent hypothesis testing and recommendations for improving the monitoring program.

A comprehensive mid-project and final project report will be prepared that collates all of the data and includes:

- a) An executive summary of the project;
- b) Re-iterates the objective and scope of the monitor;
- c) Presents the methods of data collection (including map of sites and photo documentation);
- d) Describes the compiled data set and presents the results of all analyses, and
- e) Discussion of the consequences of these results as they pertain to future tributary enhancement projects;
- f) Recommendations for future monitoring (if any) needed.

A report will be provided in hard-copy and as Microsoft Word and Adobe Acrobat (*.pdf) format. The required maps and figures will be included as embedded objects in the report. All maps and figures will also be provided in their native format as separate files. Raw data will be submitted in a Microsoft Access database. All photos will be submitted electronically.

2.4 Interpretation of Monitoring Program Results

The results of the monitoring program will provide support in the decision-making process to enhance additional tributaries impacted by reservoir fluctuations and debris in the Williston Reservoir. If fish, vegetation, and wildlife benefits are incurred as a result of tributary enhancement, then enhancement of additional tributaries should be considered for Years 6-10 of the study period. The study will build upon the control stream observations to interpret the relevancy of the enhancements to any observed changes at the trial streams. If results indicate that the enhancement is beneficial for some species and unfavourable to others then the decision to enhance additional tributaries will have to consider the tradeoffs in the aquatic system and social values.

2.5 Schedule

Monitoring is scheduled to occur annually during the 10-year study period of the Williston Tributary Access management plan. Survey timing varies according to monitoring component Table 17-1.

Table 17-1. Timing of the monitoring components of the Williston Tributary Habitat Review monitoring program

Monitoring Component	Approximate Timing
Fish spawning survey and fish habitat assessment	May-June (dependent on selection of target species)
Vegetation survey	May-July
Amphibian survey and breeding habitat assessment	Late April -May
Song bird survey/Amphibian survey and breeding habitat assessment	Late May-July

2.6 Budget

Total revised program cost: \$1,391,260.

Table 17-3. GSMON-17 Key changes and rationale for their inclusion

GSMON-17 TOR Revisions		
Section	Change	Rationale
Overall	Intermittent minor editing	Improve clarity and consistency
Background	Added info on monitoring and implementation program status to date in Section 1.1.1 Background Update	Provide background to updated methodology
Management Questions	MQ 1) Replaced text on fish abundance and diversity with specific language on access improvements for spring spawners. Edits to text to name Ole and Six Mile Creeks.	To make the management question relevant to the objective of enhancements' engineering design. There are a number of factors affecting abundance and diversity that are not targeted in the enhancement trials, hence the program has been refocused to measure the aspects of habitat that were addressed (i.e., spring spawner access improvements).
Management Hypotheses	H1: Replaced text on fish abundance and diversity with specific language on access improvements for spring spawners.	See above.
Monitoring Objectives and Scope	Edits to text to name Ole and Six Mile Creeks	
Approach	Minor edits only	
Methods – Task 1: Project Coordination	Added numerical reference to related WLR works and monitoring studies	
Methods - Task 2: Site Selection	Minor edits only	

GMSMON-17 TOR Revisions		
Section	Change	Rationale
Methods - Task 3: Field Sampling Program: Fish and Fish Habitat – <i>Fish Surveys</i>	Clarify that arctic grayling and rainbow trout are the target species.	The study has monitored spawner use by both species to date and will continue to do so.
	Removed text describing the summer fish survey.	Juvenile fish for the target species are in such low abundance that the current monitoring scope has a very limited ability to detect changes beyond the background inter-annual variation.
Methods – Task 3: Field Sampling Program: Fish and Fish Habitat – <i>Fish Habitat Assessment</i>	Updated text from “...limiting fish production in the impacted...” to “..limiting fish access in...” Added specification to coordinate with Trial tributaries project (GMSWORKS-19).	The survey data from GMSWORKS-19 maintenance-phase monitoring inspections will provide a measure of channel bed profile. The impact of those changes on the habitat access values will help this study answer MQ#1.
Methods – Task 4	Minor edits only	
Methods – Task 4: Field Sampling Program: Aerial Photo Analysis	Updated reference to Year 1, 3, 5, 6 and 10 to Year 2 and 11. Added text: “In addition, aerial photos collected via alternate sources (e.g.,an Unmanned Aerial Vehicle) will be interpreted to assess channel morphology changes at Ole and Six Mile Creeks after enhancement (Year 2014, 2015, 2019).”	Clarification between WUP Year and Study Year because the delayed start for MON17 means they are different. This also reflects the Implementation schedule to date for Williston Reservoir Aerial Photos and DEM. UAV imagery was collected in 2014 and this could provide future basis of comparison to supplement the data from survey transects.
Methods – Task 5	Minor edits only	
Methods – Task 6	Minor edits only	

GMSMON-17 TOR Revisions		
Section	Change	Rationale
Methods – Task 7: Data Entry and Analysis	Added text to fisheries component of the field program to clarify the emphasis on access rather than productivity. Added reference to GMSWORKS 19	There are a number of factors affecting abundance and diversity that are not targeted in the enhancement trials, The program has been refocused to measure the aspects of habitat that were addressed (i.e. spring spawner access improvements).
Schedule	Table revised to show removal of juvenile fish survey	As per above.
Budget	Budget revised to reflect 2010 dollar instead of 2007 dollar, and removal of juvenile fish survey Table 17-2 updated	Commencement of GMSMON-17 program was delayed until 2011. Juvenile fish survey removed for reasons discussed above.
References	Added one additional references	

2.7 References

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