Aspect CONSULTING

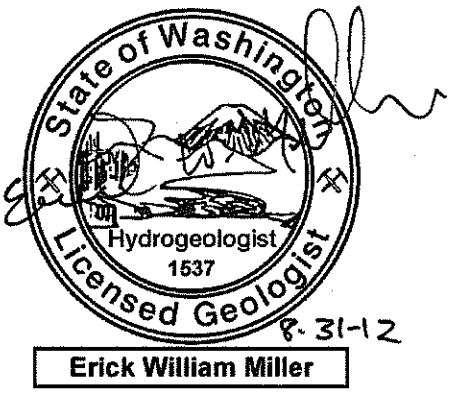
MEMORANDUM

Project No.: 090180-004-03

August 31, 2012

To: Mark Schuppe, Water Resources Section Manager
Washington State Department of Ecology
Central Regional Office

cc: Dick Ewing, Twin Lakes Aquifer Coalition
Derek Sandison – Director, Columbia River Program, Ecology



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Re: **Permitting/Operations Strategy and Project Next Steps**
Twin Lakes Aquifer Coalition (TLAC)
Water Right Application G4-34915

1 Introduction

1.1 Purpose and Scope

This memorandum presents water right permitting options for the Twin Lakes Aquifer Coalition (TLAC) Water Right Application and provides recommendations and an outline of the next steps for project permitting, design, and implementation. Updated project capital, operations, and maintenance costs are also provided. This memorandum addresses Tasks 4 and 5 of Aspect Consulting's Washington State Department of Ecology (Ecology) Contract C1000185, work assignment ASP004. The memorandum is divided into the following sections:

- Section 2 provides a summary of findings and recommendations.
- Section 3 provides a project overview, including storage/lake augmentation water balance, and associated instream flow and lake habitat benefits.
- Section 4 presents options for water right permitting for the project and recommendations;

- Section 5 provides updated capital cost and long-term project operation and maintenance costs; and
- Section 6 outlines the next steps for the project implementation, including permitting and design elements, and a proposed scope of work.

The draft of this memorandum was issued on December 13, 2010.

2 Summary of Findings

Recent statutory and regulatory changes related to water right appropriation in the State of Washington provide opportunities for processing the TLAC water right application for water storage/lake augmentation. Of the options evaluated, we recommend pursuing funding of the water storage project under Ecology's Columbia River Program (CRP) and water right permitting under CRP provisions authorized in the Hillis Rule revisions (WAC 173-152-050). The Hillis Rule revisions allow for expedited processing of new water right applications to support water storage projects supported under Ecology's CRP. To qualify for expedited processing under the Hillis Rule CRP provisions, the project must demonstrate that it does not conflict with instream flow targets or federal biologic opinions.

A second option is to pursue a long-term lease (or service contract) for use of seasonal irrigation water from the Wolf Creek Reclamation District (WCRD). WCRD's delivery system includes existing conveyance to agricultural lands in close proximity to Twin Lakes. Under such an agreement, use of irrigation water could either be the sole supply for the project or as a supplemental supply to augment withdrawal under a new seasonal water right and maintain target lake levels to September 30th. Funding of the project infrastructure could still be pursued under the CRP as the project benefits would remain the same. However, water right permitting under the Hillis Rule revisions would be necessary if only a portion of the water is available from WCRD.

A summary of the evaluated water right permitting options is presented in Table 1.

Table 1 – Summary of Water Right Permitting Options					
Expedited Permitting Option	**Potential Withdrawal Period**	**Estimated Mitigation Requirements (400 afy withdrawal scenario) (1,2,3)**		**Additional Constraints**	**Analysis**
		Startup	**Long-Term**		
Hillis Non-consumptive/Net Environmental Benefit	April 1 - July 15; flows between 800 and 6000 cfs	Variable. Average 270 afy.	150 afy	Project must provide substantial enhancement or protection of environment. Subject to WDFW proposed target flow constraints	Requires significant mitigation water to be water budget neutral (WBN). Would need to be used in conjunction with other option to continue lake augmentation through September and minimize lake level fluctuations.
Hillis Water Budget Neutral	April 1 - September 30 when minimum instream flow (MIF) is met at Winthrop, Twisp and Pateros	400 afy initially	180 afy for 400 afy withdrawal scenario.		Requires significant mitigation water to be WBN, but no requirement to provide significant environmental enhancement and therefore may not be subject to WDFW proposed target flows.
Hillis CRP Rule	April 1 - September 30 when MIF is met at Winthrop, Twisp and Pateros, subject to review by Advisory Board.	None	None	Cannot conflict with ISF rules or biologic opinions.	Preferred alternative. As a CRP supported water storage project, it is not required to be WBN. Allows for withdrawals under MIF, subject to Advisory Board approval.
Cost Reimbursement with WBN	April 1 - September 30 when MIF is met at Winthrop, Twisp and Pateros	400 afy initially	180 afy for 400 afy withdrawal scenario.		Requires significant mitigation water to be WBN. Same as Hillis WBN, but consultant would process application.
Cost Reimbursement without WBN (Coordinated Processing)	April 1 - September 30 when MIF is met at Winthrop, Twisp and Pateros	None	None	Would request participation of senior applications competing for same source of supply.	Potentially administratively complex. Senior applicants who participate pay in proportion to requested allocation. If they do not elect to participate, they maintain application priority date, but are skipped in processing.
Other Options					
Wolf Creek Reclamation District Water Right	May 1 - September 30 (except when constrained by outlet).	None	None	Would need agreement with WCRD. Requires current lease holder(s) to fallow land. Requires change in use for WCRD water right.	Preferred either as a stand-alone alternative or supplemental supply late season supply source. Depending on leased water available may require supplemental source. Potentially offers advantage of using existing WCRD infrastructure to convey water. Potential funding as a storage project under CRP.
Instream Flow Rule Changes	Rule change dependent	Rule change dependent	Rule change dependent	Rule change dependent	Long-term option. Likely several years for rule change.

Notes:

(1) Long-term mitigation analysis based on years 13 through 17 (last 5 years) of model run.

(2) Mitigation requirements based on project consumptive use (i.e. evaporation, by-pass reach, and storage)

(3) Estimated mitigation requirements assume 400 afy withdrawal scenario, except Hillis Non-consumptive which is based on WDFW flow constraints.

Planning level project capital costs are estimated at $1.8 million for the storage option, assuming groundwater source with conveyance to Big Twin and Barnsley Lakes as well as an infiltration gallery. For a 400 acre-feet per year (afy) withdrawal scenario, operation and maintenance (O and M) costs with contingency are estimated at $62,000 annually. A potential mechanism for funding ongoing O and M costs is the sale of mitigation credit (consumptive use offsets for new water right appropriation) to downstream users. Recommendations for the next steps are provided at the end of this report.

3 Project Overview

TLAC has applied for a groundwater right under application G4-34915 under Ecology's cost reimbursement program. The application requests a water right appropriation within the Methow River Basin, Water Resources Inventory Area (WRIA) 48, for a maximum withdrawal of 4,500 gallons per minute (gpm) and a quantity of 2,000 acre-feet from wells located near the Methow River. The proposed purpose of use listed on the application is as follows:

- Restore and maintain Twin Lakes Aquifer levels;
- Restore and maintain recreational trout fishing in Big and Little Twin Lakes;
- Restore and maintain riparian habitat and lowland habitat for aquatic species and mammals that use Barnsley and Twin Lakes;
- Water storage enhancement for increasing streamflows in mainstem Methow River and Thompson Creek during low flow periods;
- Restore natural aesthetic appeal of lake areas;
- Increase recreational opportunities; and,
- Maintain or enhance water quality for trout fishery and recreation.

A Hydrogeologic Evaluation Report of the project was previously developed to assist the Washington State Department of Ecology (Ecology) in determining whether the TLAC application meets the criteria for expedited processing under the Hillis Rule (Aspect, 2009a). The hydrogeologic characterization included extensive groundwater level measurements, streamflow and lake level gauging, and development of a groundwater flow model to assist in evaluating the TLAC proposal under different fill scenarios. The groundwater modeling in the early stage of the project focused on evaluating the affects of raising water levels in Big Twin Lake for recreational and habitat purposes by pumping groundwater sourced near the Methow River solely to Big Twin Lake.

Subsequent analysis, following the Hydrogeologic Evaluation Report, focused on using the groundwater flow model to evaluate the feasibility of water storage in Twin Lakes to address multiple resource needs, including enhancing flows in the Methow River (Aspect, 2012). Results of the multipurpose storage assessment are summarized below.

3.1 Summary of Multipurpose Storage Assessment

Under the multipurpose storage assessment, project water is sourced from wells located in close proximity to the Methow River at the location specified in the water right application and is conveyed to Big Twin Lake via approximately 12,500 feet of pipeline. Lateral diversion points on the pipeline divert water to Barnsley Lake and to an infiltration gallery located between Barnsley and Big Twin Lakes. Predictive groundwater model scenarios were run for April through September withdrawal quantities of 200 afy, 300 afy, and 400 afy. In addition, a withdrawal scenario was modeled based on the Washington Department of Fish and Wildlife (WDFW) recommended target withdrawal period of April 1 to July 15 and when flows at Methow River at Winthrop gauge station are between 800 and 6,000 cubic feet per second (cfs). This withdrawal constraint was recommended to Ecology by WDFW and is specific to meeting the criteria for expedited processing under the existing Hillis Rule. A full build-out scenario was also run to examine the effects of full build-out on the water balance without the project.

Withdrawals will be subject to either statutory MIF (WAC 173-548), or the WDFW withdrawal constraints. Figure 1 presents a comparison of the Methow River flows with the MIF and the WDFW target flow criteria. The WDFW criteria are generally more restrictive than the MIF, largely as a result of the high flow criteria (Figure 1). Withdrawals based on the MIF criteria will be predominantly controlled by flows measured at Pateros. River flow is rarely less than the MIF at Winthrop gauge, but frequency of MIF violations increase progressively downstream, at the Twisp and Pateros gauge stations. Figure 1 indicates that meeting the MIF at Pateros is the most restrictive; however, flows exceed the MIF throughout most of the year.

Under each of the withdrawal scenarios, well discharge is directed first to Big Twin Lake and upon reaching the target lake level is then directed to Barnsley Lake. After Barnsley Lake fills, discharge is directed to the infiltration gallery. An infiltration gallery only scenario (IG Only) was also run where 400 afy of water is directed only to the infiltration gallery, raising groundwater and lake levels.

Project water budget components include evaporative losses from the lake surface, groundwater recharge, aquifer storage, and groundwater discharge to the Methow River. The majority of the water that recharges to groundwater flows to the north, discharging to the Methow River near the point of diversion and the remainder flows to the southeast, bypassing an approximate 3-mile reach of the Methow River. Lake evaporation increases under the project as the higher lake fill levels increase the lake surface area (footprint).

3.1.1 Project Water Balance

Consumptive uses (evaporative losses, bypass quantity, and losses to aquifer storage), and return flow quantities are summarized in Table 2 for project startup and for steady state conditions. At the beginning of project operation, the majority of the lake augmentation water fills aquifer storage. The amount of water going to storage declines with continued operation of the project and, after approximately 12 years, reaches a near steady state condition. For example, in the 400 afy scenario, during the first year, 380 acre-feet fills the lake and aquifer storage with the balance largely going to lake evaporation and only a small fraction returning to the Methow River (Table 2). For project operation beyond year 12, the model predicts an average of 14 afy going into storage, 110 afy lost to

evaporation, and 59 afy returning to the Methow River via the bypass reach and 212 afy returning via northerly return flow (Table 2). Under long-term steady state conditions, changes in storage would be expected to be minimal. Water balance quantities listed in Table 2 are presented relative to the current build-out condition, but water balance quantities will change as build-out of the Twin Lakes area occurs.

Table 2 – Water Balance Summaries

Withdrawal Scenario	Change in Lake Evaporation	Bypass Reach Return Flow	Northerly Return Flow	Lake and Aquifer Storage	Totals	Mitigation Requirement to make Project Water Budget Neutral [3]
Project Start Up Water Balance (first year) [1, 2]						
Full BO	-1	-14	-75	-69	-160	NA
WDFW[4]	27	0	2	427	456	454
200 AFY	7	0	1	190	199	198
300 AFY	12	0	1	286	298	297
400 AFY	16	0	2	380	398	396
IG Only (400 afy)	-5	0	15	389	398	383
Long-Term Water Balance [5]						
Full BO	-11	-28	-119	-7	-165	NA
WDFW	85	46	118	19	268	150
200 AFY	61	35	92	12	200	108
300 AFY	95	52	141	11	300	159
400 AFY	110	59	212	14	395	182
IG Only [6] (400 afy)	88	41	236	10	375	139

Notes:
1. All values in afy. All values shown relative to 2009 condition.
2. Project Startup Water Balance based on first year of operation.
3. Total mitigation requirement based on mitigating for increased lake evaporation, bypass flow, aquifer storage relative to current condition.
4. First year of the model run had relatively high flows and about 450 afy was available under the WDFW scenario. Long-term average is about 270 afy. See Figure 3 of Aspect, 2012 for withdrawals under WDFW scenario for all modeled years.
5. Project Long-Term Water Balance based on average of years 13 through 17 of model (last 5 years of model run).
6. IG = infiltration gallery only option

3.1.1.1 Quantities for Water Budget Neutral Project

Ecology policy (ECY POL 1020) defines consumptive and non-consumptive water use for purposes of water right permitting. Policy 1020 designates groundwater use as consumptive when it causes diminishment of the source. Consumptive uses for the TLAC project include lake evaporation and return flow along the bypass reach. Ecology has also indicated that water that is retained as aquifer storage is considered consumptive. The water required to make the project water budget neutral (i.e.,

non-consumptive), therefore, is the sum of project evaporative losses, bypass flow, and aquifer storage. These quantities are summarized in Table 2 for each withdrawal scenario. At project startup most water goes into aquifer storage and must be mitigated to have a water budget neutral project. Under the steady state condition, the mitigation requirement is significantly reduced. For example, under the 400 afy withdrawal scenario, the mitigation requirement declines from nearly 400 acre-feet in year 1 to about 180 afy beyond year 12 (Table 2).

3.1.1.2 Instream Flow Benefits

The project will provide benefits to instream flows on the Methow River, particularly in the winter low flow months. Once the project reaches a steady state condition, 60 to 70% of the water returns to the Methow River as baseflow. For the 400 afy scenario, the return flow averages about 160 gpm (about 270 afy) for the non-pumping period from October through March. During the pumping period, well withdrawals exceed return flow resulting in a net decrease in Methow River flow during the withdrawal period. The 400 afy scenario and the IG Only scenarios have the greatest return flow to the Methow River and the highest percent of the withdrawal returning as instream flow.

3.1.1.3 Lake Habitat Benefits

A habitat assessment for the lake fill scenarios was completed by Herrera Environmental Consultants (Herrera, 2010) to assist in evaluation of the various storage scenarios. The assessment considered effects within the Twin Lakes study area and indicated that any of the scenarios would result in benefits to fish and wildlife habitat in the project area lakes in the long-term. Rapid achievement of target lake levels was beneficial for providing fish and wildlife habitat and reduction of reed canary grass. Minimization of lake level fluctuation (i.e., reservoir effect) was beneficial for reducing invasive species and maintaining habitat. The analysis concluded that the 400 afy fill scenario best satisfied these criteria.

3.1.2 Target Lake Level and Withdrawal Scenario

To optimize lake habitat and instream flow benefits, the 400 afy is considered the most favorable scenario. Maximizing the annual water storage quantity would further increase project benefits (e.g., increased winter baseflows in the Methow River) and assist in obtaining funding as a storage project under the CRP (see further discussion in Section 6).

4 Water Right Permitting Assessment

This section reviews the options for permitting water withdrawals for the Twin Lakes project. An initial evaluation of the TLAC water right indicated that approximately 58 competing applications have an earlier filing date and, therefore, are more senior than the TLAC water right (Aspect, 2005). Priority processing of the TLAC application is available provided that the application meets certain criteria, as discussed in this section.

Prior analysis of the regulatory feasibility of the project had focused on meeting the criteria for expedited processing under the earlier Hillis Rule (i.e., water budget neutral and enhancement of natural environment). Recent statutory changes to the cost reimbursement program for processing new water rights (Engrossed Second Substitute Bill 6267, Law of 2010 ch. 285) and changes to Hillis Rule (Chapter 173-152 WAC) provide additional options for processing of a new water right to support the TLAC lake augmentation/water storage project. Other options for water right

permitting include Wolf Creek Reclamation District leasing and revisions to the instream flow rule (WAC 173-548) being pursued by the Methow Watershed Council. Each of these options are discussed below.

4.1 Hillis Rule Options

Revisions to the Hillis Rule, effective in January 2011, include provisions for expedited processing of new water right appropriations under specified conditions for water storage projects supported by the CRP. Chapter 90.90 directs the CRP to "aggressively pursue development of water supplies" with an emphasis on water storage capacity.

4.1.1 Water Budget Neutral/Net Environmental Benefit

Under Hillis Rule WAC 173-152-050(2c), if the application is for a proposed water use that is nonconsumptive (or with mitigation would be WBN) and, if approved would substantially enhance or protect the quality of the natural environment, then it qualifies for expedited processing.

This option was evaluated in detail by Aspect (2009b). For the TLAC application to meet the criteria for expedited processing under WAC 173-152-050 (Hillis Rule), it must provide a net environmental benefit and be water budget neutral. WDFW has indicated that the proposed project with certain specified permit conditions will provide for substantial benefit to the natural environment through enhancement of the trophy trout fishery in Big Twin Lake. One of the conditions is that withdrawals for the project would be constrained to periods of the target flow period and window specified by WDFW. To meet the water budget neutral criterion, the project will require mitigation to offset consumptive uses (see Table 2).

4.1.2 Water budget Neutral with mitigation

Under the Hillis Rule (WAC-152-050(2g)), an application that proposes a water budget neutral project would qualify for expedited processing. A water budget neutral project is defined under the Hillis Rule as a project where withdrawals are done in exchange for at least an equivalent amount of water from other water rights, donation of water rights into trust, relinquishment of other water rights or other mitigation projects that result in no diminishment of the source. Mitigation water would need to be identified for expedited processing under these criteria to be feasible. Processing under the revised Hillis Rule does not require demonstration of substantial environmental benefit and would not obligate TLAC to meet the WDFW specified withdrawal period.

This appropriation would pursue withdrawals during periods when the MIF (under Chapter 173-548) is met. Periods of MIF violations (particularly during winter months, for example 2005 on Figure 1) and resolution of the 2 cfs reservation are potential constraints to obtaining a new appropriation without mitigation; however, a seasonal water right may be possible

To achieve a water budget neutral project, TLAC would acquire a new water right and place it into the State's Water Right Trust Program for the intended purpose of water banking. The consumptive use portion of the existing right would be used to offset (as a mitigation credit) the consumptive use portion of the new appropriation. The water bank could also potentially be established through securing a long-term water supply contract with an irrigation district to provide mitigation credit.

For the 400 afy withdrawal scenario, the mitigation quantity to make a water budget neutral project would be 400 afy during the first year of the project and ramp down to about 180 afy under the steady state condition.

4.1.3 Storage Under Columbia River Basin Water Management Program (90.90 RCW)

Under the amendments to the Hillis Rule (WAC 173-152-050(3)), an application for diversionary rights into reservoirs would qualify for expedited processing, if it does not conflict with adopted state instream flow rules, federal flow targets, or federal biological opinions, and is funded or supported pursuant to Chapter 90.90 RCW. This option for expedited processing allows for a new diversionary right into storage reservoirs (Twin Lakes and Barnsley Lake) that do not conflict with the fisheries objectives and are funded or supported by the CRP.

For this option to apply, the TLAC application would have to meet the following criteria:

Does not conflict with instream flow rule

The TLAC project would withdraw available water during periods when the MIF under WAC 173-548 is met. As discussed in Section 3.1, the MIF is met nearly all the time at Winthrop, but occasionally flows are less than the MIF at Pateros (Figure 1). Thus, withdrawals would likely be subject to interruption for short periods during the April through September withdrawal window.

Does not conflict with federal flow targets and federal biological opinions

The project would need to be reviewed by the CRP Advisory Group biology experts to obtain an opinion on the compliance with biologic issues. We understand the advisory group is comprised of WDFW, NOAA, and Colville and Yakima Tribes. The instream flow benefits of the TLAC water storage project should be consistent with the goals of the CRP.

Project is funded or supported pursuant to Columbia River Basin Water Management Program (CRP) (Chapter 90.90 RCW)

The CRP was created by Ecology to use legislatively authorized funds to develop new water supplies through storage, conservation, and voluntary regional water management agreements. For water storage projects funded by the CRP under the Columbia River Water Supply Account, two-thirds of active storage is designated for out-of-stream uses and one-third for instream flows to maximize benefits to salmon and steelhead populations. For the 400 afy scenario, about two-thirds of the project water (270 afy) returns to instream flows, while the balance is consumed – largely by lake evaporation. Assuming the project is fully funded by the CRP, then about 180 afy (two-thirds of the annual return flow) may be seasonally available to mitigate for out-of stream uses.

Based on the revisions to the Hillis Rule and the criteria for expedited processing in RCW 90.03.370(1)(b), TLAC would need to obtain either CRP funding/support and could then request priority processing of a seasonal diversionary groundwater right as a CRP project. Steps to obtain funding/endorsement from the CRP were described by Ecology in an October 2010 meeting with TLAC and Aspect and are presented in Section 5 of this memo.

4.2 Cost Reimbursement Options

A second regulatory option for processing the water rights needed for TLAC project is through continuing participation in Ecology's Cost Reimbursement program, established under RCW 43.21A.690. Amendments to the Cost Reimbursement process were passed by the Washington State legislature under Engrossed Second Substitute Senate Bill 6267 and became effective June 10, 2010. The requirement to pay for processing of senior applications under the revised Cost Reimbursement rules is modified under the two scenarios as follows:

4.2.1 Cost Reimbursement with Mitigation

Section 1(b) of the amendments to RCW 90.03.265 would waive the requirement to pay for the cost of all senior applications from the same source of supply, if the application for a new appropriation or amendment of a water right would not diminish the water available to earlier pending applications from the same source of supply. In the past, an applicant would have had to pay to process all senior applications competing for the same source of supply. This option is similar to Hillis Water Budget Neutral with mitigation (Section 4.1.2), but the application would be processed by an outside consultant under contract to Ecology.

4.2.2 Cost Reimbursement without Mitigation

Section 3 of the amendments to RCW 90.03.265 allows Ecology, upon request of an applicant, to initiate a coordinated Cost Reimbursement process, in which each applicant would pay for processing of their application at a cost primarily proportionate to the quantity of water requested. Participation by other applicants is voluntary and the cost obligation to each applicant is determined by the proportionate quantity of water requested and the complexity of the project. Senior applicants have 60 days to respond and if they chose not to participate, they maintain their priority date, but are skipped in the processing.

Ecology's cost of initiating the process would be TLAC's obligation. Pursuit of the coordinated Cost Reimbursement process would significantly reduce processing costs under this option compared to the cost of processing all senior applications. However, it may be more administratively complex, than pursuing expedited processing under the CRP.

4.3 Wolf Creek Reclamation District (WCRD) Leasing

Under this option, TLAC would need to secure a long-term lease agreement or service contract with WCRD to provide seasonal supply. This would require WCRD to identify specific agricultural lands currently receiving this supply that would be taken out of production (fallowed) to make water supply available. Depending on quantities available, this option could be pursued to provide 100 percent of the annual supply or could be used in combination with other options as late season augmentation.

The water could be delivered using the existing WCRD infrastructure. The feasibility of this would depend on the locations of the fallowed diversions and the capacity of the system. If water was available from WCRD, there could be considerable capital cost savings. Capital costs for the project have been estimated at about $1.8 million (see Section 4); a large portion of which could be saved if delivery could occur via the Wolf Creek pipeline.

Alternatively, leased WCRD water could be left instream and the project water delivered from the wells as proposed in the TLAC application. This would increase flows in the Methow River reach between Wolf Creek diversion and the wells; however, this option would likely impact lake levels at Patterson Lake and other surface water features in the Patterson Lake area and, therefore, may be not a viable option.

Project funding for infrastructure could still be pursued through the CRP RCW 90.90, if the water were sourced from WCRD.

4.4 Potential Instream Flow Rule Changes

4.4.1 Mainstem Methow River

The Methow Watershed Council (MWC) is pursuing a revision in the instream flow rule, which is focused principally on changes to allocation of the 2 cfs reservation. In addition, the MWC indentified other changes that it may consider as part of the rule revision process, including expedited processing of new appropriations for water storage projects. The schedule for the rule revision process is uncertain and therefore, lacks certainty as an option.

4.4.2 Thompson Creek

Under Methow River Basin instream flow rule (WAC 173-548), Thompson Creek and groundwater in hydraulic continuity are closed to further appropriation. TLAC has indicated that water use on Thompson Creek has changed significantly over the past several years and that several former users of water on Thompson Creek have transferred to the WCRD. This option would pursue a rule change to the administrative closure of the creek. According to TLAC, the MWC is considering a rule revision to Thompson Creek

5 Planning Level Project Costs

5.1 Capital Costs

An opinion of probably planning level capital project costs previously estimated capital costs at $1.7 million for the 12-inch pipeline option with direct delivery to Big Twin Lake (Aspect, 2009b). Infrastructure changes for the storage option include the addition of short pipeline segments to allow for direct delivery to Barnsley Lake and the infiltration gallery (about 700 feet total), and construction of an infiltration gallery. The addition of these project elements increase the capital costs approximately $80,000, bringing the opinion of probable planning level capital costs to $1.8 million for the 12-inch pipeline option, including tax and contingency.

5.2 Operations and Maintenance (O and M)

Preliminary O and M costs were developed for planning purposes. These costs will vary significantly, depending on final project design, operation, and administration. Annual operation costs are summarized in Table 3 below for various pumping quantities. For a 400 afy project, pumping at 1,000 gpm, total annual pumping costs would be about $9,000/year.

Labor for system operation and maintenance costs are estimated at $43,000. This includes labor costs for seasonal system startup and shutdown, turning system off and restarting during periods when

MIF is not met, groundwater and lake level monitoring, meter readings, system inspections and administrative duties related to system operation.

Maintenance costs include annual efficiency testing of pumps and routine pump maintenance and funding long-term maintenance items such as pump replacement, cleanout of the infiltration pond, or well redevelopment. Long-term project O and M costs are estimated at $62,000 annually for a 400 afy withdrawal scenario, including a 20 percent contingency.

Table 3 – Planning Level Long Term Operation and Maintenance Costs

Annual Volume Pumped	Annual Pumping Cost		Annual Maintenance/ Operating Labor	Total Annual O and M Cost (w/contingency) (1,000 gpm)
afy	at 1,000 gpm	at 2,000 gpm		
200	$5,000	$ 7,000	$43,000	$58,000
270	$7,000	$ 9,000		$60,000
300	$7,000	$ 9,000		$60,000
400	$9,000	$12,000		$62,000

Assumptions:
1. Energy cost is 0.052 $/kwh plus $100/month basic and demand charges.
2. Static lift is 205 feet (120 feet plus 85 feet water surface to ground surface).
3. Pipeline is 12,500 feet of 12" HDPE.
4. Pumping system efficiency is 70%.
5. Annual operational period is 6 months.
6. Burdened labor rate is estimated at $70 per hour for one-quarter position.
7. 20% contingency is added to Total Annual O and M Cost.

5.3 Operations Funding Options

Project O & M costs could potentially be funded through the sale or lease of seasonal water made available by implementation of the TLAC water storage project. As discussed above, for a 400 afy withdrawal scenario under the CRP, about 180 afy per year is estimated to be available for out-of-stream uses. Selling mitigation credits to this water to a downstream user may provide a mechanism for funding project operations and maintenance.

6 Recommendations for Next Steps

This section presents an itemized list of the next steps for the project.

1. **State Environmental Policy Act (SEPA) Compliance** – Prepare a SEPA checklist and initiate scoping to evaluate environmental impacts of the proposed project.
2. **Identify Project Owner/Managing Entity** – A managing entity for the project that will be legally obligated to own, operate, and maintain the system should be identified.

3. **Investigate Potential for Lease Agreement with Wolf Creek Reclamation District** – This step would investigate a long-term lease agreement for the project and the potential to obtain a short-term lease for purposes of pilot testing. The proximity of the WCRD infrastructure to Twin Lakes provides a cost effective means to run a pilot test for the project.
4. **Pursue funding/expedited processing CRP –** Funding could be pursued through the CRP program for either a WCRD source or for a new MIF-based source. For a new water right, this provides an option for expedited processing. The following steps should be taken to pursue funding and/or permitting under the CRP.
    a. **Assess viability of increasing storage** – Larger storage projects would increase in-stream and out-of-stream uses and may be viewed more favorably by the CRP.
    b. **Engage Resource Agencies** – The CRP advisory group will review the project to determine if it meets with flow targets and biologic opinions. This review will be facilitated by developing a project overview document describing the project withdrawal requirements, benefits, and costs.
    c. **Meet with Agencies –** A meeting with CRP and potentially the CRP's Policy Advisory Group should be held to present the project and seek input on project phasing under the Columbia River Water Supply Development Account.
    d. **Draft Proposal for Columbia River Basin Water Management Program** – This step makes formal application to the CRP for funding and endorsement and includes: submitting a proposal/letter of interest and making a project presentation to CRP/PAG.
5. **Expedited Processing under revised Hillis Rule** – Request expedited processing of TLAC water right application under the revised Hillis Rule option.
6. **Confirm source of long-term O and M funding** – This step would be on a parallel track with development of the project under the CRP. Sale of a portion of the return flow to the Methow River to a downstream user would be investigated to offset project O & M costs.
7. **Pilot Testing** – Investigate water sources under Step 2 for a pilot test. Pilot test should run for a 1 to 2 year period.
8. **Project Design**
    a. Install wells
    b. Develop plans, specifications, and bid documents
    c. Bid/Select Contractor
9. **Construction**
10. **Project Startup**
11. **Monitoring and Adaptive Management**

7 References

Aspect Consulting, LLC (Aspect), 2005, Report of Phase 1 Analysis, Twin Lakes Aquifer Coalition Water Right Application G4-34915 Cost Reimbursement Project. Bainbridge Island, Washington. Unpublished Work. March 28, 2005.

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Limitations

Work for this project was performed and this memorandum prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This memorandum does not represent a legal opinion. No other warranty, expressed or implied, is made.

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Attachment

Table 1 – Summary of Water Right Permitting Options (In Text)
Table 2 – Water Balance Summaries (In Text)
Table 3 – Planning Level Long Term Operation and Maintenance Costs (In Text)
Figure 1 – Compliance with WAC 173-548 MIF

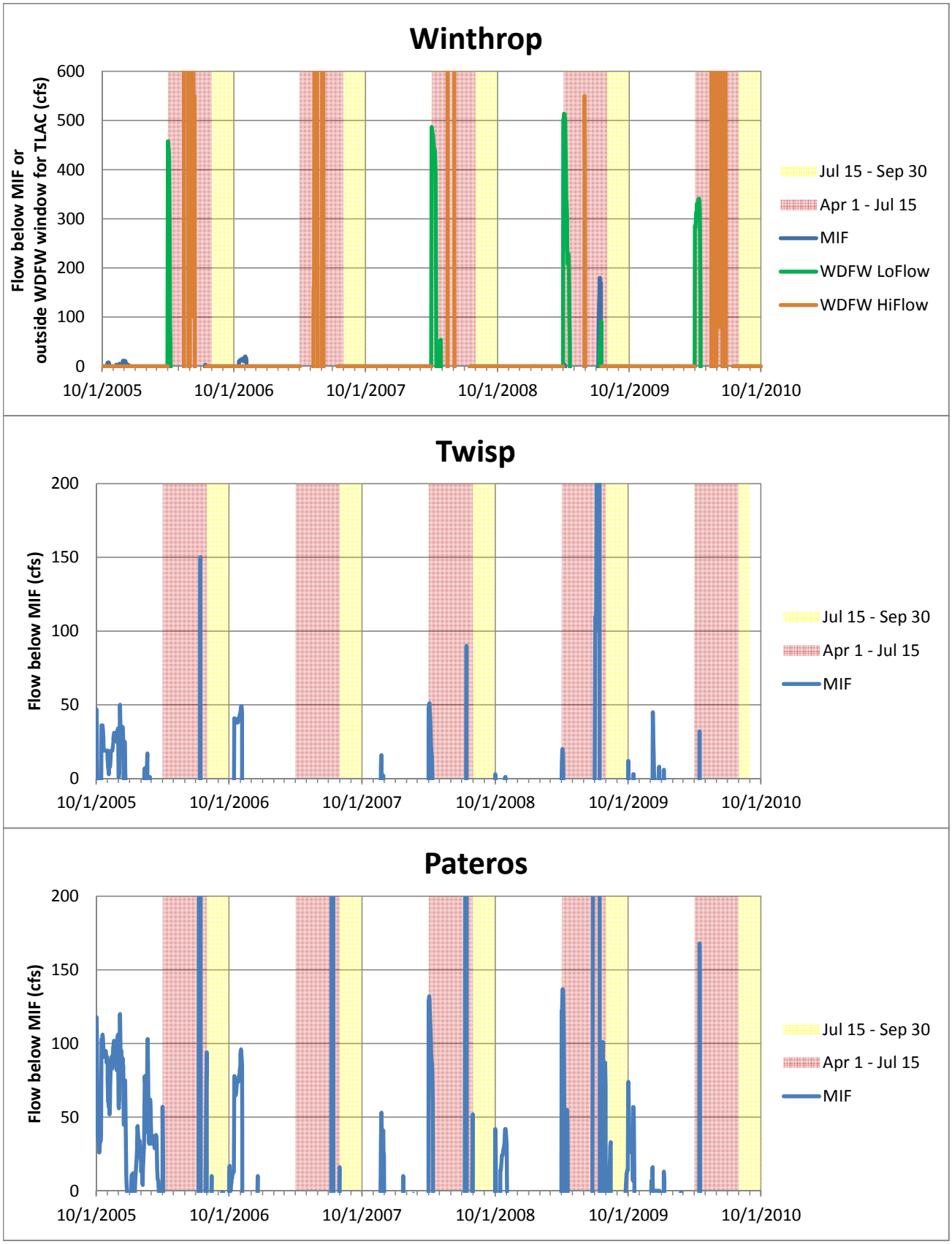

Figure 1 - Compliance with WAC 173-548 MIF

TLAC Water Right Application
Winthrop, Washington

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