April 16, 2015

To: Mike Hermanson – Spokane County Utilities

cc: Rob Lindsay – Spokane County Utilities

From: Carl Einberger, LHG, Aspect Consulting, LLC
Dan Haller, PE, Aspect Consulting, LLC

Re: Summary of Policy Advisory Group Meeting #2 (1/15/15)
Little Spokane Water Banking Feasibility Study

Background
Spokane County (the County), in conjunction with Stevens and Pend Oreille Counties, is evaluating the use of a water bank to address existing and potential regulatory constraints on existing and new water use, in Water Resource Inventory Area (WRIA) 55, the Little Spokane Watershed. Considerable uncertainty exists regarding the future legal, regulatory, and policy environment that regulation of water resources in WRIA 55 will be subject to. In response to this uncertainty, the County is pursuing a water banking feasibility study to explore options for providing more certainty to existing and new water uses in the basin.

As part of this process, the County has convened a Policy Advisory Group (PAG) to allow interagency and stakeholder coordination and evaluation of alternatives for water banking in the watershed. Aspect Consulting LLC (Aspect) has been engaged by the County to provide consulting services for the Little Spokane Water Banking Feasibility Study. Aspect has been coordinating and moderating PAG meetings for the County.

Overview of Meeting Agenda
The second PAG meeting for this Feasibility Study occurred on January 15, 2015, at the Riverside Fire Station (Spokane Fire District 4). The following agenda was covered in the meeting, with supporting presentation materials.

- Overview of Work Conducted since PAG #1 Meeting
- Next Steps and Decision Points for PAG and Ecology
- Review of Incentives for Bank Participation
- Demand Evaluation
- Supply Evaluation/Other Bank Seeding
- Closing, Expectations for PAG Meeting #3

PAG Attendees
A list of PAG members present at PAG Meeting #2 follows:
Dan Haller and Carl Einberger of Aspect, and Cynthia Carlstad of Carlstad Consulting, attended in their roles as the County’s consultants on this project. Dan served as the moderator of the meeting, and Dan, Carl, and Cynthia led portions of the meeting discussion.

**Meeting Summary**

Prior to the meeting, Aspect distributed a Technical Memorandum to the PAG summarizing a water banking demand evaluation for WRIA 55, a water rights supply assessment, and water transfer framework considerations. Aspect also prepared a PowerPoint presentation to guide the meeting discussion (attached). Key topics addressed in the discussion are summarized below, and additional information can be found in the attached presentation:

- The project schedule was discussed, including planned future deliverables
- The goals of the PAG meetings and Little Spokane Water Banking Feasibility Study were discussed.
- Aspect reviewed the approach for the Feasibility Study, and the ongoing schedule status for additional PAG meetings and study deliverables. Topics to be addressed through technical memorandums and the final Feasibility Study include:
  - Legal, Regulatory, and Policy Framework
  - Streamflow and Water Transfer Framework
  - Future Water Demand Evaluation
  - Potential Availability of Water Rights
  - Water Market Evaluation
  - Proposed Bank Management Structure

(Since the time of January 15th PAG meeting, additional tasks associated with water right analysis, an appraisal level study of a potential Pend Oreille watershed water transfer into the Little Spokane, and additional meetings have been added to the study).

- Aspect reviewed key PAG decisions anticipated as the study moves forward:
  - Banking with consumptive or total use
  - One-bucket or multi-bucket management
MEMORANDUM
Project No.: 140129

April 16, 2015

Approach to temporal challenges matching supply and demand
Inclusion and risk management of out-of-kind mitigation
Priority of demand sectors
Geographic priority
Early action items to pursue for next phase

Water banking incentives were discussed, including the current hold on new water rights permits, potential changes or clarifications to Ecology interpretation of instream flow rules, potential regulation of exempt wells, and the ability to provide a permitted sources of new water.

Updates to the Spokane County Demand Model to extend it into the entire watershed, including Pend Oreille and Stevens Counties, were discussed. The key focus of this work was to provide a basis for anticipated demand should a water bank be pursued. The approach for the evaluation was explained to the PAG, including:

- Inputs from Pend Oreille and Stevens County on growth and land use changes
- Compilation and assessment of water rights issued after the WRIA 55 Instream Flow Rule was adopted
- Evaluation of pending water right applications
- Review of water system plans and projections, and input from purveyors
- Consideration of water bank influences on water use practices

Conclusions from the demand evaluation were also summarized, including total forecasted new demand for single family homes from 2015-2040, estimates of pre- and post-rule exempt wells, public water system forecasts, demand from interruptible water rights, and the total estimated potential water bank demand.

Potential basin management alternatives were discussed, including managing to a single gage or multiple locations, consumptive use bank accounting, and out-of-kind mitigation applicability and uncertainty. Temporal considerations, including addressing non-irrigation season seeding, were also discussed.

Water bank seeding, including both in-kind and out-of-kind approaches, was discussed. Seeding options considered include:

- Acquisition of water rights
- Interbasin transfers (Pend Oreille)
- Storage (reservoirs, SAR, ASR)
- Conservation
- Restoration of instream and riparian habitat

An overview of WRIA 55 hydrogeology and the distribution of basin fill versus bedrock was presented.

Existing pre-rule irrigation water rights and claims greater than 200 ac-ft/yr were discussed, including details on the vetting process underway and the distribution and ranking of water rights.
Surface water storage studies conducted in earlier investigations were reviewed. In general, these studies concluded that cost vs. benefit and physical constraint considerations did not indicate that this would be a preferred option for bank seeding.

The potential for obtaining a water right for diversion from the Pend Oreille watershed into the Little Spokane was discussed. Several points were emphasized:

- The much lower frequency of potential curtailment in the Pend Oreille relative to the Little Spokane watershed would make this a more reliable source option.
- Flows in the Pend Oreille River at Newport are typically several orders of magnitude greater than flows at the Elk gage in WRIA 55.
- The proximity of the headwaters of the Little Spokane to the Pend Oreille River at Newport, and relatively short conveyance distance and elevation changes are favorable for project feasibility.
- A rigorous cost benefit analysis is needed to further assess this option.

Open discussion among the PAG was conducted during and at the end of the meeting. Key discussion points included:

- The next PAG meeting was slated for May 27, 2015. The PAG expressed the need for an additional PAG meeting prior to release of the draft Feasibility Study.
- Additional water rights review of a broader spectrum of rights, including water rights below 200 ac-ft/yr was suggested.
- There was overall support for pursuing more investigation of the Pend Oreille as a source for water bank seeding. Ecology (Keith Stoffel) suggested that a water right application be submitted in the short term, to establish a priority date and avoid having to process other applications that may be filed.
- Consideration should be given to how interruptible rights and consumptive use are addressed in the demand analysis.
- Consider leasing of agricultural rights, rather than purchasing, as an alternative. In addition, some PAG members expressed a preference to avoid prime agricultural lands for water right purchases.
- The question of how much mitigation will be needed in WRIA 55 tributaries in addition to mainstem bank seeding and mitigation remains an unresolved issue.

The meeting was adjourned, with the next meeting planned for May 27, 2015 (an additional PAG meeting has now been scheduled for April 29, 2015.)

Attachments:
Attachment 1 – PAG Meeting #2 PowerPoint Presentation

C:\Users\ceinberger\Desktop\LSWB PAG Meeting 2 summary.docx
WRIA 55, PAG Meeting #2

Little Spokane River Basin Water Bank Feasibility Study

January 15, 2015

Presented by

Aspect Consulting

with
Carlstad Consulting
Cascadia Law Group
Washington State University
PAG Meeting #2 Agenda

- Overview of Work Conducted since 1\textsuperscript{st} Meeting
- Next Steps and Decision Points for PAG and Ecology
- Review of Incentives for Bank Participation
- Demand Evaluation
- Supply Evaluation/Other Bank Seeding
- Closing, Expectations for PAG Meeting #3
Meeting 1 (October 15, 2014):
- Accept operating guidelines
- Understand regulations/risk
- Define banking preferences
- Agree on demand approach

Meeting 2 (January 15, 2014):
- Demand Evaluation
- Supply Evaluation
- Bank Seeding Options

Meeting 3 (May 27, 2015):
- Market conditions
- Review bank pros/cons
- Recommended next steps
- Advisory vote to move forward on further implementation
Technical Memorandums

- Prior to PAG Meeting 1:
  - Legal, Regulatory, and Policy Framework

- Prior to PAG Meeting 2:
  - Streamflow and Water Transfer Framework
  - Future Water Demand Evaluation
  - Potential Availability of Water Rights

- Prior to PAG Meeting 3:
  - Draft Feasibility Report and Implementation Plan (including Water Market Evaluation)
Key PAG Decisions

- Banking with consumptive or total use
- One-bucket or multi-bucket management
- Approach to temporal challenges matching supply and demand
- Inclusion and risk management of out-of-kind mitigation
- Priority of demand sectors
- Geographic priority
- Early action items to pursue for next phase
Water Banking Incentives

- Current hold on new water rights permits
- Potential changes/clarification to Ecology interpretation of instream flow rules
- Potential regulation of exempt wells
- Source of permitted water for new rural subdivisions/cluster developments
- Campbell and Gwinn consistency
Demand Evaluation

- Identify potential water bank customers
- Determine potential magnitude of demand
- Examine geographic distribution
- Consider how existence of a water bank may influence water use practices
How We Considered Types of Demand

Highlighted sectors considered for water bank demand

Water Use Sectors

- Public Supply
  - Commercial Industrial
  - Urban Irrigation
  - Public Supply Agriculture
  - Single Family
  - Multifamily
  - System Loss
- Self-Supply Residential
  - Residence and Yard
  - Small Agriculture
- Self-Supply Industry
  - Golf Courses
  - Thermoelectric Power
  - Other Large Industry
- Agricultural
  - Livestock
  - Irrigated Acres
Approach to Demand Evaluation

- Use Spokane County Water Demand Forecast Model to predict future demand for self-supplied residential and number of permit exempt wells
- Input from Pend Oreille and Stevens County on growth and land use changes
- Compile and assess water rights issued after Instream Flow Rule adopted
- Compile and assess water right applications
- Review public water system plans and projections, input from purveyors
- Consideration of water bank influences on water use practices
Incentives for Self Supplied Residential to Buy From Water Bank

- Most self supplied homes use permit exempt wells
  - May not be considered secure water supply by home lenders
  - Could be regulated if determined to impact instream flow

- Post-Instream Flow Rule homes with water rights
  - Surface water rights – restricted to indoor use for periods during most years
  - Groundwater rights – could be restricted to indoor use if determined to impact instream flow
Geographic Distribution of Potential Future Water Demand for Self Supplied Homes with Permit Exempt Wells and Interruptible Surface Water Rights

Note that water quantities are gross usage, and would likely be reduced to consumptive use if purchased through a water bank.

Possible Demand From Interruptible Surface Water Rights
Forecasted New Demand from Self Supplied Homes (2015-2040)
## Estimated Distribution of New Single Family, Self-Supplied Residence Water Demand, 2015-2040

<table>
<thead>
<tr>
<th>Watershed Administrative Unit</th>
<th>Forecasted New Demand (ac-ft/yr)</th>
<th>New Single Family Residences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaver Creek</td>
<td>305</td>
<td>392</td>
</tr>
<tr>
<td>Dartford Creek</td>
<td>332</td>
<td>403</td>
</tr>
<tr>
<td>Deadman Creek/ Peone Creek</td>
<td>457</td>
<td>582</td>
</tr>
<tr>
<td>Dragoon Creek</td>
<td>557</td>
<td>573</td>
</tr>
<tr>
<td>Little Deep Creek</td>
<td>200</td>
<td>205</td>
</tr>
<tr>
<td>Little Spokane/ Deer Creek</td>
<td>323</td>
<td>385</td>
</tr>
<tr>
<td>Otter Creek</td>
<td>367</td>
<td>351</td>
</tr>
<tr>
<td>West Branch</td>
<td>320</td>
<td>235</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2862</strong></td>
<td><strong>3126</strong></td>
</tr>
</tbody>
</table>
### Estimated Monthly Increase in Water Use for New Single-Family, Self-Supplied Residences in WRIA 55, 2010 - 2040 (Acre-Feet)

<table>
<thead>
<tr>
<th>Year</th>
<th>Jan</th>
<th>Feb</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
<th>Aug</th>
<th>Sept</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>217</td>
<td>196</td>
<td>217</td>
<td>210</td>
<td>1,025</td>
<td>1,271</td>
<td>1,743</td>
<td>1,744</td>
<td>1,220</td>
<td>815</td>
<td>210</td>
<td>217</td>
<td>9,081</td>
</tr>
<tr>
<td>2015</td>
<td>254</td>
<td>229</td>
<td>254</td>
<td>246</td>
<td>1,207</td>
<td>1,497</td>
<td>2,053</td>
<td>2,055</td>
<td>1,437</td>
<td>959</td>
<td>246</td>
<td>254</td>
<td>10,692</td>
</tr>
<tr>
<td>2020</td>
<td>269</td>
<td>243</td>
<td>269</td>
<td>260</td>
<td>1,278</td>
<td>1,585</td>
<td>2,175</td>
<td>2,177</td>
<td>1,522</td>
<td>1,015</td>
<td>260</td>
<td>269</td>
<td>11,321</td>
</tr>
<tr>
<td>2025</td>
<td>284</td>
<td>256</td>
<td>284</td>
<td>274</td>
<td>1,351</td>
<td>1,676</td>
<td>2,300</td>
<td>2,302</td>
<td>1,609</td>
<td>1,073</td>
<td>274</td>
<td>284</td>
<td>11,966</td>
</tr>
<tr>
<td>2030</td>
<td>298</td>
<td>269</td>
<td>298</td>
<td>288</td>
<td>1,422</td>
<td>1,765</td>
<td>2,422</td>
<td>2,424</td>
<td>1,694</td>
<td>1,129</td>
<td>288</td>
<td>298</td>
<td>12,596</td>
</tr>
<tr>
<td>2035</td>
<td>309</td>
<td>279</td>
<td>309</td>
<td>299</td>
<td>1,477</td>
<td>1,833</td>
<td>2,516</td>
<td>2,517</td>
<td>1,759</td>
<td>1,172</td>
<td>299</td>
<td>309</td>
<td>13,077</td>
</tr>
<tr>
<td>2040</td>
<td>320</td>
<td>289</td>
<td>320</td>
<td>310</td>
<td>1,531</td>
<td>1,900</td>
<td>2,608</td>
<td>2,610</td>
<td>1,823</td>
<td>1,215</td>
<td>310</td>
<td>320</td>
<td>13,553</td>
</tr>
</tbody>
</table>

**Total New Demand Forecasted Between 2015 and 2040**

|       | 66 | 59 | 66 | 64 | 323 | 403 | 555 | 555 | 386 | 256 | 64 | 66 | 2,862 |

Little Spokane Water Bank
Estimate of Pre- and Post-Basin Plan Permit Exempt Wells in WRIA 55

Number of Permit Exempt Wells

- Spokane County:
  - Pre 1976: 2754
  - Post 1976: 5700

- Pend Oreille County:
  - Pre 1976: 738
  - Post 1976: 1526

- Stevens County:
  - Pre 1976: 333
  - Post 1976: 690
## Public Water System Review

<table>
<thead>
<tr>
<th>Public Water System</th>
<th>Water Right Annual Excess/Deficiency Based on Existing Consumption (af)</th>
<th>Projected Water Right Annual Excess/Deficiency by 2030 (af)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spokane County Water District No. 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pine River Park</td>
<td>182</td>
<td>Same as existing</td>
</tr>
<tr>
<td>Riverview Hills</td>
<td>-11</td>
<td>Same as existing</td>
</tr>
<tr>
<td>Chattaroy Hills(^1)</td>
<td>233</td>
<td>Same as existing</td>
</tr>
<tr>
<td><strong>Stevens PUD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clayton</td>
<td>239</td>
<td>224</td>
</tr>
<tr>
<td>Chattaroy Springs West</td>
<td>28.9</td>
<td>26.9</td>
</tr>
<tr>
<td>Riverside</td>
<td>296.2</td>
<td>282.2</td>
</tr>
<tr>
<td>Halfmoon Ranchos</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>River Park Estates(^2)</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>Denison</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td><strong>Deer Park</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1654</td>
<td>961 (^3)</td>
</tr>
<tr>
<td><strong>Riverside Village Mobile Home Park</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29.07</td>
<td>0.23</td>
</tr>
<tr>
<td><strong>Whitworth Water District #2(^4)</strong></td>
<td>13,132</td>
<td>12,336 (^5)</td>
</tr>
<tr>
<td><strong>Diamond Lake Water and Sewer District</strong></td>
<td>Request pending</td>
<td>Request pending</td>
</tr>
<tr>
<td><strong>Granite Shores Water and Sewer District</strong></td>
<td>Request pending</td>
<td>Request pending</td>
</tr>
</tbody>
</table>

**Notes:**

1. This system transferred to Whitworth Water District in 2014.
2. The source for this system is Spokane Valley Rathdrum Prairie aquifer groundwater.
3. Projection is for 2026.
4. Total for 27 different water rights as reported in the Water System Plan.
5. Projection is for 2028.
### Pending New Water Right Applications in WRIA 55

<table>
<thead>
<tr>
<th>Record Number</th>
<th>Document Holder</th>
<th>Purpose of Use</th>
<th>Priority Date</th>
<th>Quantity Requested</th>
<th>Source</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3-28396</td>
<td>Spokane Cnty Water District No 3</td>
<td>Domestic, Multiple</td>
<td>10/01/1987</td>
<td>5500 gpm, 730 ac-ft/yr</td>
<td>Wells (5)</td>
<td>Intended to supersede other rights for Mead service area</td>
</tr>
<tr>
<td>G3-30073</td>
<td>Whitworth Water District 2</td>
<td>Municipal</td>
<td>10/11/1994</td>
<td>5000 gpm</td>
<td>Well</td>
<td>Well to be located in Home Acre Tract 1st Addition</td>
</tr>
<tr>
<td>G3-30313</td>
<td>Spokane Cnty Water District No 3</td>
<td>Municipal</td>
<td>06/01/1995</td>
<td>2000 gpm</td>
<td>Wells (2)</td>
<td>Intended to serve 1585 homes</td>
</tr>
<tr>
<td>G3-30161</td>
<td>Whitworth Water District 2</td>
<td>Municipal</td>
<td>04/13/1998</td>
<td>5000 gpm</td>
<td>Well</td>
<td>To serve Systems 8 &amp; 9; 3400 homes</td>
</tr>
<tr>
<td>G3-30261</td>
<td>Leonard</td>
<td>Domestic, Multiple, Irrigation</td>
<td>03/25/1999</td>
<td>1800 gpm</td>
<td>Existing well</td>
<td>Irrigation is for golf course; 8 homes or other commercial structures associated with golf course</td>
</tr>
<tr>
<td>G3-30714</td>
<td>Stevens Cnty PUD 1</td>
<td>Municipal</td>
<td>07/28/2014</td>
<td>150 gpm</td>
<td>2 wells</td>
<td>Need additional instantaneous quantity for existing Chattaroy Springs Public Water System</td>
</tr>
<tr>
<td>Category / Watershed Subbasin</td>
<td>Dartford Creek</td>
<td>Deadman Creek / Peone Creek</td>
<td>Little Deep Creek</td>
<td>Little Spokane / Deer Creek</td>
<td>Dragoon Creek</td>
<td>Beaver Creek</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Forecasted New Demand (ac-ft /yr) from Self Supplied Homes (2015-2040)</td>
<td>332</td>
<td>457</td>
<td>200</td>
<td>323</td>
<td>557</td>
<td>305</td>
</tr>
<tr>
<td>Possible Demand from Interruptible Surface Water Rights</td>
<td>178</td>
<td>14</td>
<td>170</td>
<td>73</td>
<td>44</td>
<td>122</td>
</tr>
<tr>
<td>Possible Demand from Pending Water Right Applications</td>
<td>All pending new applications are located in these two WAUs. Annual quantities not determined, but may likely 4000-5000 ac-ft / year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals without new applications</td>
<td>510</td>
<td>471</td>
<td>370</td>
<td>396</td>
<td>601</td>
<td>427</td>
</tr>
<tr>
<td>Totals with new applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Conclusions

- Water bank demand could be significant if current trend toward regulation of permit exempt wells use continues.
- Self supplied demand is distributed throughout the watershed, with a few concentrations such as Sacheen Lake.
- Public supplied demand is concentrated in the lower watershed, and also potentially higher quantity due to population density.
Conclusions – Influence on Water Use Practices

Establishment of a water bank is likely to influence water use practices in WRISA 55. Increased new development may occur because of clarity and security of water supply. Having to pay for water in increments is likely to motivate increased water conservation.

<table>
<thead>
<tr>
<th>Package Description</th>
<th>Indoor Use¹</th>
<th>Outdoor Use</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor Only Package</td>
<td>150 gpd (average)</td>
<td>-</td>
<td>$1,000</td>
</tr>
<tr>
<td>Indoor with Basic Outdoor Package</td>
<td>150 gpd (average)</td>
<td>2,500 square feet of lawn (approx. 50 x 50 feet)</td>
<td>$2,000</td>
</tr>
<tr>
<td>Indoor with Extended Outdoor Package</td>
<td>150 gpd (average)</td>
<td>5,625 square feet of lawn (approx. 75 x 75 feet)</td>
<td>$3,000</td>
</tr>
<tr>
<td>Stock Water – 5 Animal Limit</td>
<td>-</td>
<td>60 gpd (average)</td>
<td>$1,300</td>
</tr>
<tr>
<td>Stock Water – 10 Animal Limit</td>
<td>-</td>
<td>120 gpd (average)</td>
<td>$1,800</td>
</tr>
<tr>
<td>Stock Water – 15 Animal Limit</td>
<td>-</td>
<td>180 gpd (average)</td>
<td>$2,200</td>
</tr>
</tbody>
</table>

¹Indoor water use increments are based on consumptive use for homes served by a sanitary sewer system.
Basin Management Approaches

- “One Bucket”
  - Yakima Basin – Managed to Parker Dam and Total Water Supply Available

- Wenatchee Basin reservation
  - Consumptive use; Accounting based on critical low flow month (Sept)
  - Habitat projects and instream flow augmentation sufficient for basin-wide management.

- “One Molecule”
  - Drop for drop mitigation (Dungeness)

- Applicability/uncertainty for use of Out-of-Kind Mitigation
## Consumptive Water Use Calculator

### Percentage of Water Consumed by Rule

<table>
<thead>
<tr>
<th>Water Use</th>
<th>% Consumed</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-house Use with a On-site Septic System</td>
<td>30%</td>
</tr>
<tr>
<td>In-house Use Hooked up to a Sanitary Septic System</td>
<td>20%</td>
</tr>
<tr>
<td>Outdoor Use (Irrigation)</td>
<td>90%</td>
</tr>
</tbody>
</table>

### How Much Water Do I need?

<table>
<thead>
<tr>
<th>In-House Use</th>
<th>Number of Connections</th>
<th>Amount of water per Connection (gallons per day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-house Use with a On-site Septic System</td>
<td>1</td>
<td>350</td>
</tr>
<tr>
<td>In-house Use Hooked up to a Sanitary Septic System</td>
<td>0</td>
<td>350</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outdoor Use</th>
<th>Number of Square Feet</th>
<th>Number of Acres</th>
<th>Amount of water per acre (ac-ft)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation</td>
<td>500</td>
<td>0.011</td>
<td>1.89</td>
</tr>
</tbody>
</table>

**This value is a default value based on Dept of Health minimum service requirements.**

**This value is based on an irrigation requirement of 60% consistent with WAC 173-93-398A.**

### Total Consumed

<table>
<thead>
<tr>
<th>Consumptive Water Use (ac-ft)</th>
<th>Water Use (ac-ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.118</td>
<td>0.392</td>
</tr>
<tr>
<td>0.019</td>
<td>0.022</td>
</tr>
</tbody>
</table>

### Total Use

<table>
<thead>
<tr>
<th>Total Consumptive Water Use (ac-ft)</th>
<th>Total Water Use (ac-ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.137</td>
<td>0.414</td>
</tr>
</tbody>
</table>

The total consumptive water use is based on the assumptions in WAC 173-93-398A. Total water use is the quantity of water required for the project.
Temporal Considerations

- Amount and nature of non-irrigation season bank seeding
  - Water storage projects (surface and subsurface)
  - Interbasin transfers (Pend Oreille River)
- Lag effects associated with groundwater/surface water interaction
  - Groundwater withdrawals and return flows
  - Affected by depth of wells; distance from surface water, local geology
Frequency Below Base/Curtailment Flows

Note: Percentage of Days in which a 7 Day Moving Average of Mean Daily Flow did not Meet Base Flow/Curtailment Flow, 1993 - 2013
Water Bank Seeding

- In-Kind (water for water)
  - Acquisition of water rights
  - Interbasin transfers (Pend Oreille)
  - Storage (reservoirs, SAR, ASR)
  - Conservation

- Out-of-Kind (habitat focused)
  - Restoration of instream and riparian habitat
Basin Fill and Surficial Bedrock Distribution in WRIA 55

Extent and Thickness of Basin Fill (ft)
- 0 to 100
- 100.1 to 300
- 300.1 to 500
- 500.1 to 828
- Surficial Bedrock

Spokane Valley – Rathdrum Prairie Aquifer
Irrigation Water Rights and Claims > 200 AFY

**Water Rights and Claims Rank**
- Strong evidence of water use
- Some evidence of water use
- Limited evidence of water use
- Purposes in addition to irrigation and stock water, requires further review

![Map of Irrigation Water Rights and Claims in Little Spokane Water Bank](image-url)
## Summary of Pre-Rule Irrigation Water Rights

<table>
<thead>
<tr>
<th>Rank</th>
<th>Document Type</th>
<th>Acre-Feet/Year</th>
<th>Acres Irrigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adjudicated Certificate</td>
<td>210</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Certificate</td>
<td>2,389</td>
<td>745</td>
</tr>
<tr>
<td></td>
<td>Claim</td>
<td>1,590</td>
<td>170</td>
</tr>
<tr>
<td>Subtotal (Rank 1)</td>
<td>4,189</td>
<td>985</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Certificate</td>
<td>1,206</td>
<td>496</td>
</tr>
<tr>
<td></td>
<td>Claim</td>
<td>660</td>
<td>165</td>
</tr>
<tr>
<td>Subtotal (Rank 2)</td>
<td>1,866</td>
<td>661</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Certificate</td>
<td>2,400</td>
<td>690</td>
</tr>
<tr>
<td></td>
<td>Claim</td>
<td>2,325</td>
<td>585</td>
</tr>
<tr>
<td>Subtotal (Rank 3)</td>
<td>4,725</td>
<td>1,275</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Certificate</td>
<td>6,808</td>
<td>1,964</td>
</tr>
<tr>
<td></td>
<td>Claim</td>
<td>7,477</td>
<td>1,206</td>
</tr>
<tr>
<td>Subtotal (Rank 4)</td>
<td>14,285</td>
<td>3,170</td>
<td></td>
</tr>
<tr>
<td>Total of Ranks 1 and 2</td>
<td>6,055</td>
<td>1,646</td>
<td></td>
</tr>
<tr>
<td>Total of Ranks 1, 2, and 3</td>
<td>10,780</td>
<td>2,921</td>
<td></td>
</tr>
<tr>
<td>Total of Ranks, 1, 2, 3 and 4</td>
<td>25,065</td>
<td>6,091</td>
<td></td>
</tr>
</tbody>
</table>
## Pre-Rule Irrigation Water Rights vs. Demand

<table>
<thead>
<tr>
<th>Subbasin</th>
<th>Rank 1</th>
<th>Rank 2</th>
<th>Rank 3</th>
<th>Rank 4</th>
<th>Total of Rank 1 and 2</th>
<th>Total of Ranks 1 through 4</th>
<th>Total New Demand (from Table 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaver Creek</td>
<td>270</td>
<td>344</td>
<td>2,365</td>
<td>4,897</td>
<td>614</td>
<td>7,876</td>
<td>510</td>
</tr>
<tr>
<td>Dartford Creek</td>
<td>210</td>
<td>280</td>
<td>0</td>
<td>488</td>
<td>490</td>
<td>978</td>
<td>471</td>
</tr>
<tr>
<td>Deadman Creek/Peone Creek</td>
<td>360</td>
<td>340</td>
<td>0</td>
<td>1,161</td>
<td>700</td>
<td>1,861</td>
<td>370</td>
</tr>
<tr>
<td>Dragoon Creek</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1,588</td>
<td>0</td>
<td>1,588</td>
<td>396</td>
</tr>
<tr>
<td>Little Deep Creek</td>
<td>840</td>
<td>902</td>
<td>240</td>
<td>553</td>
<td>1,742</td>
<td>2,535</td>
<td>601</td>
</tr>
<tr>
<td>Little Spokane/Deer Creek</td>
<td>949</td>
<td>0</td>
<td>0</td>
<td>994</td>
<td>949</td>
<td>1,943</td>
<td>427</td>
</tr>
<tr>
<td>Otter Creek</td>
<td>960</td>
<td>0</td>
<td>560</td>
<td>1,856</td>
<td>960</td>
<td>3,376</td>
<td>412</td>
</tr>
<tr>
<td>West Branch</td>
<td>600</td>
<td>0</td>
<td>4,970</td>
<td>2,748</td>
<td>600</td>
<td>8,318</td>
<td>462</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4,189</td>
<td>1,866</td>
<td>8,135</td>
<td>14,285</td>
<td>6,055</td>
<td>28,474</td>
<td>3649</td>
</tr>
</tbody>
</table>

Note: Total New Demand is taken from Table 8, and excludes possible total demand from pending water right applications.
Surface Water Storage

- Buck and Beaver Creek dam studies
  - $5,400/af and $8,600/af
  - 4,750 af and 1,930 af of storage
- Natural lake storage limited by development – Eloika Lake considered best
- Wetland restoration studies
- Revising existing dams not considered feasible (lack of sufficient storage)
Frequency Below Base/Curtailment Flow

Note: Percentage of Days in which a 7 Day Moving Average of Mean Daily Flow did not Meet Base Flow/Curtailment Flow, 1993 - 2013
Preliminary Pend Oreille Evaluation

- Curtailment flows are 7,700 cfs
  - WDFW recommendation, Ecology provision
- 200 feet of elevation gain, 3 miles of conveyance
- Assumptions:
  - 1,500 homes, 175 gpd consumptive, 0.4 cfs year round
  - $5M, $100K O&M, $3,350/home, $70 annually
- Rigorous cost/benefit analysis necessary
Next Steps - Key PAG Decisions

- Banking with consumptive or total use
- One-bucket or multi-bucket management
- Approach to temporal challenges matching supply and demand
- Inclusion and risk management of out-of-kind mitigation
- Priority of demand sectors
- Geographic priority
- Early action items to pursue for next phase
WRRIA 55 PAG Workplan

Meeting 1 (October 15, 2014):
- Accept operating guidelines
- Understand regulations/risk
- Define banking preferences
- Agree on demand approach

Meeting 2 (January 15, 2014):
- Demand Evaluation
- Supply Evaluation
- Bank Seeding Options

Meeting 3 (May 27, 2015):
- Market conditions
- Review bank pros/cons
- Recommended next steps
- Advisory vote to move forward on further implementation
Open Discussion