

## Chapter 5: Prefeasibility Phase

# Conclusions and Recommendations

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The ultimate goal of the Lincoln County Rehydration Project is to deliver water from Lake Roosevelt to the Crab Creek drainage (watershed) within Lincoln County. This report summarizes the results of the Prefeasibility Assessment of this project idea. Using available scientific information, preliminary field reconnaissance, basic engineering assessments, interviews with landowners in and around the potentially affected area, review of water rights availability, and information provided by personnel with various federal and state agencies, this Prefeasibility Assessment for the Lincoln County Conservation District Rehydration Project was done to determine if work should move forward into a feasibility phase. The feasibility phase would further define the scope of a project and potentially start the permit and authorization process, eventually resulting in the planning and implementing of a pilot scale project.

### 5.1 Conclusions

Based on the Prefeasibility Assessment, it is the project team's conclusion that the rehydration project envisioned by LCCD meets the goals, objectives, and intent of RCW 90.90. Viable options for securing water rights to be used in supplying water for a proposed pilot scale project have been identified, and one or more delivery routes appear to be amenable to a potential project. Coupled with these conclusions this Prefeasibility Assessment does not identify fatal flaws in the passive rehydration concept with respect to geology, hydrogeology, routing, delivery pathways, regulatory and permitting issues, land ownership, water rights, and environmental concerns that could prohibit project implementation. While many challenges to this project were identified, none were found to be insurmountable.

With respect to one portion of RCW 90.90 (the one-third instream, two-thirds out of stream division of water), the pilot study may, or may not meet this goal. Specifically, it is not clear that every project identified under RCW 90.90 must precisely comply with the division of water, and it is not completely clear that any instream flow benefits only apply to the main stem of the Columbia River. It is likely that only the total of all the projects funded under the law (or of a given combination of projects) needs to comply. Nevertheless, a brief description of how a Lincoln County Re-hydration pilot study might meet this requirement is provided in this section.

Water pumped out of Lake Roosevelt and released into the Crab Creek watershed would flow downstream, contributing to instream flows and likely producing gains to riparian habitat and water-based recreation. A portion of the extra water flowing down the creek

could be diverted for use by irrigation water users along the creek, or it could be allowed to continue flowing downstream to rehydrate the channel and lakes at the bottom of the basin. A portion of the flow, would seep into the ground and, presumably, contribute to the overall groundwater supply in the area, which is currently over-allocated. If allowed to flow into Crab Creek, a portion of the water would presumably return, unconsumed, to the Columbia River. It should be noted that both the water that seeps into the ground and any part of the supplemental water that is diverted would contribute to the water supply in the Odessa Subarea as identified in RCW 90.90 part (2)(b), “alternatives to groundwater for agricultural users in the Odessa subarea aquifer”.

Based on a review of potential water rights options that might be used for a pilot project, a temporary permit application would be the most feasible approach to obtaining the use of water for the pilot project. Other options reviewed include municipal and industrial use water acquired from Reclamation, long-term water rights agreements with Reclamation, a preliminary permit, and private water right lease and/or purchase. The temporary permit would provide authorization for the use of Lake Roosevelt water for a potential pilot project in which testing and subsequent beneficial use of water could occur. If the project is authorized for moving forward into the feasibility phase, a water right permit application would be completed and submitted to Ecology at the completion of a successful feasibility phase. This application would name the responsible authority that would take on the planning, permitting, construction, and operation of the pilot project. Other water right use options other than a new water right permit would be used to compile a water right portfolio to operate the system, inclusive of but not limited to, leasing water, purchase and transfer of water rights, and development of an Upper Lake Roosevelt water banking program.

Governance and landowner issues will need to be addressed in the feasibility study. Governance, or ownership, of the pilot project and a potential subsequent long-term project is important from the point of view that some entity will be responsible for owning and operating the project, holding necessary water rights and permits that will be required for the project to function, and planning and reporting on project activities. While no specific entity has yet been identified for this role, the currently inactive Lincoln PUD and the Lincoln Water Conservancy Board have expressed conditional interest in at least exploring potential roles in the project. Once an ownership, or governance, entity is identified, landowner agreements, NEPA/SEPA, and other activities can be completed.

A preferred Lincoln Pipeline Route for delivering water into the Lake Creek drainage has been identified in this Prefeasibility Assessment. This route is slightly longer than other potential routes, but overall has a more open construction route and would require lower head pumps.

Given the recorded history of stream flow losses and lake depletion in the lower half of the Lake Creek drainage we conclude that the lower reaches of the Creek are likely candidates for potential basalt aquifer recharge. At this time we believe that shallow basalt aquifer recharge (that staying with 200 to 300 feet of the surface) will most likely be local, and at best result in spring discharge into Crab Creek at and downstream of Odessa. On the other hand, and as seems likely given the distribution of the Sentinel Bluffs Member of the Grande Ronde Basalt, we interpret a high degree of recharge potential for the Sentinel Bluffs Member. Successfully recharging groundwater in this unit will result in down-dip/down-gradient recharge of the upper Grande Ronde aquifer system south of Crab Creek. Movement of recharged groundwater in this unit to the south of Crab Creek will occur because the creek does not incise deeply in the Sentinel Bluffs; therefore if water can get deeper in to the unit it has the potential to move unimpeded beneath Crab Creek and south into the core of the Odessa Groundwater Management Subarea.

## 5.2 Recommendations

Based on the results of this effort we recommend that the project move forward to the feasibility phase in order to further define how RCW 90.90 would benefit from the project, begin securing the necessary water rights and project authorizations for a pilot scale project, and select a pilot project route and an accompanying preliminary project engineering and routing design and monitoring and operations plan. In addition, the feasibility effort should focus on securing the cooperation of an owning/operating entity, gaining permission to access one or more proposed routes (including identifying potential mitigation actions that might be needed to secure some portions of the route), and writing a project plan that can be used to move the project forward.

Specific recommended actions for the feasibility portion of the project include the following:

- Gain the active participation of potential governing/ownership entities in the project. While such an entity may not need to be fully in place and operating at the end of the feasibility phase, it should be actively preparing for project participation as it will of necessity be holding water rights associated with the pilot project and executing land access agreements with private and public entities. In addition, this entity will have an important role in submitting and acquiring permit applications (including SEPA and NEPA documentation), soliciting funding for project construction, planning and conducting project construction efforts, and implementing characterization, background monitoring, mitigation, and related investigative efforts prior to the delivery of water.
- Identify land access requirements for the primary preferred route across private ground, prepare documentation (to the extent possible given available funding) and /or identify documentation needs for access to public lands, and prepare planning documents as needed to describe construction, mitigation, and routing needs for effected public and private entities.

- Conduct more detailed routing/engineering evaluations such as:
  - A field survey of the pipeline route and potentially other routes.
  - Bathymetric survey in the vicinity of the proposed lake intake.
  - A fish study and determine the intake fish screen structure required.
  - Review the permitting and environmental constraints associated with the project.
  - Perform geotechnical exploration at the pump station location and along the pipeline route.
  - Determine whether a pilot study is desired, or whether the project should proceed to the full build-out condition.
  - Perform a power requirement and availability analysis.
  - Perform more detailed design and analysis for the preferred option.
  - Determine availability of land, both at the pump station site and along the pipeline route. Potentially acquire easements.
  - Determine security requirements, such as fencing and alarms.
  - Determine operation and maintenance costs for the facilities.
  - Perform surge analysis on the pipeline. Determine size and location of surge protection devices, such as surge tanks and air valves.
  
- Prepare a monitoring plan to include surface water and groundwater monitoring. Surface monitoring would look at such things as: (a) gauging the effects of flow on stream channel stability and erosion, (b) improvement and/or degradation of habitat, (c) riparian conditions, (d) water quality, and (e) impacts to human structures, including culverts, farm ground, grazing ground, and homes. Groundwater monitoring would create a groundwater baseline for two primary uses. One use of the baseline would be for documenting changing conditions, if any, from the perspective of non-degradation of existing groundwater resources. The other use of the baseline would be to see if the project has a measurable impact on groundwater resources, e.g., is recharge occurring, if so when and where, and what is the fate of the recharged groundwater. Of necessity, both monitoring efforts would start with a characterization effort to define pre-project background conditions. Data gathering efforts for this endeavor would be guided by Ecology approved QAPP's.

- While the preparation of a water rights permit may not be completed during the feasibility portion of the project (because a governing/owning entity may not have yet be formalized), feasibility work should result in the collection and documentation of all information needed to support a water rights permit application requesting a temporary permit, once that entity is in place. The basic goal of the temporary permit will be to conduct a pilot scale project, the results of which will be used to assess the potential for a larger project meeting the goals and objectives of RCW 90.90.

### **5.2.1 Feasibility Study Work Plan**

A feasibility study work plan will need to be developed prior to the initiation of the study. Most of the elements of that plan are introduced in the recommendations. If the conclusions and recommendations provided herein are accepted, they will be converted to a work plan for guiding the feasibility phase. If the feasibility phase is authorized, the feasibility phase report will describe the proposed pilot project.

### **5.2.2 Pilot Project**

As noted in different sections of this report, the pilot project envisions the delivery of approximately 10 to 20 cfs of water to the upper reaches of one or more drainages in Lincoln County. At this time we recommend that this drainage be Lake Creek. The source of rehydration water will be the Columbia River (Lake Roosevelt).

Generally, the pilot project will pump water up to and over the drainage divide separating Lake Roosevelt from the Crab Creek watershed. This water will be delivered via a pipeline. The pipeline will convey water into a targeted drainage and it will then be allowed to flow under normal conditions down-stream. Channel modifications will be made as necessary to meet private and public access requirements, mitigate against erosion, siltation, and other unwanted impacts, promote through-flow in specific reaches, and if desired facilitate infiltration and groundwater recharge. Monitoring points for both groundwater and surface water conditions will be established throughout the project area to alert project operators of the presence of potentially adverse impacts and to allow operators to track project performance especially with respect to groundwater recharge, enhanced water resource supplies, and habitat improvements.

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