Executive Summary

The WISE project is a multi-faceted partnership between water users and stakeholders working to improve water quality and quantity in the Little Butte Creek and Bear Creek watersheds for irrigation, aquatic habitat, and other uses in an economically and environmentally feasible manner. The WISE Project is needed because the Little Butte Creek and Bear Creek watersheds suffer from unreliable irrigation water supplies during drought years and degraded water quantity and quality for native anadromous salmonids and other uses during low flow periods. Specific goals of the WISE project are to:

- Improve efficiency of water deliveries to the Medford, Rogue River Valley, and Talent irrigation districts.
- Improve irrigation water supply reliability for the Medford, Rogue River Valley, and Talent irrigation districts.
- Improve water conservation through both system-wide and on-farm irrigation improvements.
- Improve water quantity, water quality, and water reliability for native anadromous salmonids.
- Improve aesthetics and recreation values of reservoirs, streams, and rivers.
- Improve water quality at the Robert Duff Water Treatment Facility intake by improving water quality in Little Butte Creek.
- Incorporate the most cost-effective solution for the reliable reuse of effluent from the Regional Water Reclamation Facility's future discharge permit requirements into the WISE Project.

WISE has six primary partners: City of Medford, Medford Water Commission (MWC), Jackson County, Talent Irrigation District (TID), Medford Irrigation District (MID), and Rogue River Valley Irrigation District (RRVID). In addition to the six primary partners, a Project Advisory Committee (PAC) that includes members from several stakeholder organizations provides input on the project and assists with public education and outreach. The WISE PAC also includes U.S. Bureau of Reclamation (BOR), Oregon Water Resources Department (OWRD) and Oregon Department of Environmental Quality (DEQ).

The outcome from this phase of the WISE Project is the *Preliminary Feasibility Report*. The purpose of the preliminary feasibility study is to complete a technical screening of conceptual projects that could address the WISE goals. Potential projects screened through this phase will be further developed and evaluated in a subsequent feasibility study/environmental impact statement. Additional engineering studies will be completed as project alternatives are further developed based on the recommendations of this *Preliminary Feasibility Report.* The WISE PAC intends to produce the final comprehensive integrated planning report and a National Environmental Policy Act (NEPA) compliance document that will be referred to as the WISE Feasibility Study/Environmental Impact Statement (FS/EIS). The U.S. Bureau of Reclamation (Reclamation) will be the lead federal agency for the NEPA document.

Study Area

The WISE Project is located within Jackson County in southern Oregon. The defined study area includes Bear Creek, Little Butte Creek, and tributaries and reservoirs that serve the Bear Creek and Little Butte Creek watersheds. Refer to Figure 1-1 for the extent of the study area. The Bear Creek Watershed includes six municipalities within its boundaries, including the Cities of Medford, Ashland, Talent, Central Point, Phoenix, Jacksonville, and White City. The City of Eagle Point is the only municipality within the Little Butte Creek watershed boundaries, though there are several small communities. The majority of the land use in the two basins is agricultural and lands are primarily served by the Talent, Medford, and Rogue River Valley Irrigation Districts.

The Reclamation's Rogue River Basin Project provides water to the irrigation districts and maintains the storage and transmission facilities. The Rogue River Basin project involves two river basins (the Rogue and the Klamath) and numerous storage and conveyance facilities (refer to Figure ES-2).

Alternatives Development Process

A wide range of possible solutions exist to address the goals of the WISE Project and the WISE PAC has developed a process to develop and identify the optimal solution. The four-step process is intended to identify a preferred alternative in the EIS:

1. The process begins with identification of solution concepts (termed "project elements" in this study) that may meet one or more objectives of the WISE project.
2. A qualitative ***"Level 1"*** screening process is used to assess the concept-level project elements and identify any fatal flaws or critical implementation issues that limit the viability of the individual project element. The evaluation criteria developed by the WISE PAC is listed in Table ES-1.
3. A ***"Level 2"*** screening process is applied to the remaining project elements. The project elements are further developed to the extent that evaluation criteria related to water supply reliability, environmental, and cost issues can be applied semi-quantitatively. In particular, "water supply reliability" is assessed quantitatively using a water allocation model developed by U.S. Bureau of Reclamation (MODSIM).
4. The remaining project elements will be further developed where some preliminary design concepts (e.g. 10% design) will be developed for the remaining project elements. The project elements can be combined, where appropriate and evaluated as "project alternatives" in the FS portion of the next phase of the project. A ***"Level 3"*** screening is applied to the project alternatives to identify preferred alternative(s) under the EIS.

This *Preliminary Feasibility Study* report presents the work completed for steps 1, 2 and 3 above. Once this process is completed, the WISE PAC will focus on the remaining viable elements and formulate them into workable alternatives and ultimately a preferred alternative in the subsequent Feasibility Study/Environmental Impact Statement (FS/EIS) phase of the project. At this stage of the WISE Project, the preliminary feasibility study findings are considered "planning level."

Table ES-1. Summary of Evaluation Criteria

Success Criteria	Description
Water Supply Reliability	Improve water supply reliability for the irrigation districts and for native anadromous salmonids
Irrigation System Efficiency	Improve efficiency of irrigation deliveries
Effluent Reuse	Minimize cost and maximize reliability of the reuse of the RWRF effluent for agricultural irrigation
Environmental	Minimize negative environmental impacts
Water Quality	Improve water quality for native anadromous salmonids and at the Robert Duff Water Treatment Facility intake and irrigation districts
Cost Allocation	Promote fair distribution of cost (capital, operational, and maintenance) among water users such that no stakeholder shoulders an unfair financial burden. It is assumed that the federal funds will provide a significant portion of the costs.
Aesthetics	Improve aesthetic values of the reservoirs, streams, and rivers

Table ES-1. Summary of Evaluation Criteria	
Success Criteria	Description
Institutional	Minimize the magnitude and difficulty of required institutional changes such as local/regional governmental and stakeholder reorganization, transfer of authority, or creation of new institutional entities
Legal/ Regulatory	Minimize legal and regulatory obstacles while maximizing the ability to meet local and regional goals
Recreation	Improve recreational values of the reservoirs, streams, and rivers
Financial	Minimize cumulative construction, operation and maintenance cost, and maximize the economic benefits of the water
Technical	Must be technically implementable

The WISE PAC has identified several project elements as listed in Table ES-2. The project elements have been classified under the following three categories based on Level 1 screening:

- *Not viable:* based on the qualitative ratings and discussions among the WISE PAC, several project elements were considered not to be viable for further evaluation in the alternatives development process (for Level 2 and Level 3 screening).
- *"Fixed" Project Elements:* fixed project elements are those that would be implemented under any alternative pursued under the WISE project (besides the "no-action" alternative). These project elements are considered essential to meeting the overall objectives of the WISE project, and the WISE PAC did not identify any fatal flaws or prohibitive implementation issues. These project elements are also generally very cost-effective (low capital cost) and can be implemented incrementally over time.
- *"Variable" Project Elements:* variable project elements are considered to have high potential to meeting the objectives of the WISE project – primarily with respect to the water supply reliability and environmental (instream flows) objectives. The WISE PAC generally did not identify any fatal flaws or prohibitive implementation issues for these project elements. However, their ability to improve water supply reliability and their costs may be significantly different. The relative impacts to the environment may also be different.

Table ES-2 also summarizes the status of the project elements based on the Level 1 screening process. The focus of this preliminary feasibility study is to evaluate the variable project elements.

Table ES-2. Status of Project Elements based on Level 1 Screening			
	Not Viable[1]	**Fixed Project Element**[1]	**Variable Project Element**[2]
Use reclaimed effluent			●
Encourage on-farm irrigation conservation		●	
Enhance riparian and stream habitat		●	
Acquire, transfer, or bank water rights		●	
Line irrigation canals	●		
Replace canals with piped system			●

Table ES-2. Status of Project Elements based on Level 1 Screening			
	Not Viable[1]	Fixed Project Element[1]	Variable Project Element[2]
Change irrigation system monitoring and control system		●	
Optimize water distribution within the watersheds			●
Create new storage	●		
Realign water conveyance system	●		
Increase existing reservoir storage			●
Transfer water from other watersheds	●		

[1] *Not evaluated as part of Level 2 Screening*
[2] *Evaluated as part of Level 2 Screening*

The variable project elements screened are developed further into distinct "options" with enough detail to allow Level 2 screening. Level 2 screening focuses on water supply reliability, cost and environmental review. The variable project elements are grouped into three categories: (i) conveyance options; (ii) storage options; and (iii) reclaimed effluent options. Table ES-3 summarizes the project element options under these three categories.

Table ES-3. Options Developed for the Variable Project Elements	
Option	Description
Conveyance Options	
C1	Keep the existing Bear Creek diversions, and pipe certain segments as part of a phased approach to the WISE project. • *Sub-Option C1a:* Pipe TID delivery area (Ashland, East, West, Frederick, Upper West, and Talent Canals (TID area) • *Sub-Option C1b:* Pipe Joint System, Phoenix, Medford, and Hopkins Canals (MID-RRVID area) • *Sub-Option C1c:* Pipe Cascade and Howard Prairie Canals (upper watershed area)
C2	Keep the existing Bear Creek diversions, but replace all main canals with pipes.
C3	Remove Bear Creek diversions and create a pressurized system.
Storage Options	
S1	Increase storage at Agate Reservoir to 8,000 acre-feet; increase of approximately 1,500 acre-feet with a raise of ~5 feet by installing flash boards across the spillway.
S2	Eliminate surcharge limit from operational rule curve at Fourmile Lake and Fish Lake; allow fill at any time to help ensure refill of these projects in a water-short years (not critical years).
S3	Remove 1/3 of flood control reserve space at Emigrant Lake for each monthly period.
S4	Increase storage at Howard Prairie Reservoir to approximately 80,000 acre-feet (increase of approximately 10,000 acre-feet with a raise of ~5-8 feet). Construction of a "structure" near the Grizzly Creek campground would increase the project storage by this modest amount.
Reclaimed Effluent	
RW1	Apply reclaimed effluent from the Medford Regional Water Reclamation Facility (RWRF) and the City of Ashland's reclamation facility services to off-set irrigation demands in adjacent lands. Estimated volumes of water available are a minimum of 23,200 acre-feet per year during a dry year to 29,700 acre-feet per year during a wet year for an average of 25,200 acre-feet per year.

Water Supply Reliability Evaluation

Operational modeling was conducted to evaluate the variable project elements. For the purposes of the preliminary feasibility study, the following question forms the basis of the operational model: *If the same hydrology that historically occurred was to reoccur under current conditions of water use, how would a change to the existing irrigation system affect irrigation deliveries, instream flows, and reservoir storages?*

The Modified Simyld model (MODSIM) software, version 8.0, was selected as the basis of operational modeling. MODSIM has previously been applied to the WISE area as part of Reclamation's biological assessment (Stillwater, 2003[1]). MODSIM uses an optimization technique to allocate water considering hydrology, water rights, and reservoir operations. The model simulates water use and flows on a monthly time step. Based on available climate data, a model period of record from 1928 to 2007 was selected. A total of 20 scenarios were evaluated using the model.

Table ES-4 lists the scenarios evaluated using the operational model. The option name consists of codes which provide the aspects included under each scenario. A set of scenarios was developed which considers individual project element options as well as combinations among the conveyance, storage options and reclaimed effluent options. Two different water demand scenarios were also evaluated in the model based on changes in consumptive use ratios.

Table ES-4. Operational Modeling Scenarios

Type	Option Name	Description
No Action	---	Existing conditions and operations
Conveyance Options	C1a D1	C1a: Ashland, East, West, and Talent canals piped D1: Assumption that crop consumptive use ratios increase by 50% of current ratios in areas served by the piped canals
	C1b D1	C1b: Joint System, Phoenix, Medford, and Hopkins canals piped D1: Assumption that consumptive use ratios increase by 50% in areas served by the piped canals
	C1c	C1c: Cascade and Howard Prairie Delivery canals piped. No on-farm water management improvements are included
	C2 D1	Combination of options "C1a D1", "C1b D1" and "C1c". The existing diversions from Bear Creek are maintained.
	C3 D1	Option "C2 D1" with all diversions from Bear Creek removed. The piped canals are realigned in Bear Creek to form a linked delivery pipeline.
Storage Options	S1	Agate Lake storage is increased to 8,000 acre-feet
	S2	Flood surcharge limits removed from Fourmile and Fish lakes
	S3	One-third of flood control pool converted to conservation storage in Emigrant Lake
	S4	Howard Prairie Reservoir storage is increased. An arbitrary large storage amount (80,000 acre-feet) was used to evaluate the ability of flows from South Little Butte watershed to fill the storage.
	S5	Combination of storage options "S1" to "S4"

[1] Stillwater, Leslie, Appendix B "Hydrology" in "Biological Assessment on Continued Operation and Maintenance of the Rogue River Basin Project and Effects on Essential Fish Habitat under the Magnuson-Stevens Act", U.S. Bureau of Reclamation: Boise, Idaho, August 2003.

Table ES-4. Operational Modeling Scenarios

Type	Option Name	Description
Option Combinations	C2 S5 D1	Combination of options "C2 D1" and "S5"
	C3 S5 D1	Combination of options "C3 D1" and "S5"
	C2 D1 RW1	Option "C2 D1" along with the use of reclaimed municipal water ("RW1")
	C3 D1 RW1	Option "C3 D1" along with the use of reclaimed municipal water ("RW1")
	S5 RW1	Option "S5" along with the use of reclaimed municipal water ("RW1")
	C2 S5 D1 RW1	Options "C2 D1", "S5", and "RW1"
	C2 S5 D2 RW1	Options "C2", "S5", and "RW1" D2: Assumption that consumptive use ratios achieve a maximum rate of 90% in areas served by the piped canals
	C3 S5 D1 RW1	Options "C3 D1", "S5", and "RW1"
	C3 S5 D2 RW1	Options "C3", "S5", and "RW1" D2: Assumption that consumptive use ratios achieve a maximum rate of 90% in areas served by the piped canals

The modeling results are evaluated in terms of *"irrigation shortage improvements"* and "*conservation storage."* For purposes of this report, an *irrigation shortage is defined as an on-farm delivery less than the estimated consumptive water use need*. Irrigation shortages are provided as a total of the three irrigation districts. The shortage criteria allow comparison of improvements in on-farm water management between scenarios. When discussing the results for "irrigation shortage improvements", the assumption is that conserved water (from implementation of the options) is applied to improve the level of service for the irrigation system. When discussing the results in terms of "conservation storage", the existing level of service for the irrigation system is retained. Shortages that occur in the No-Action scenario also occur in the modeling of various option, and conserved water is retained in reservoir storage. These results illustrate the potential maximum volume of conserved water that can be allocated to instream flow or other environmental benefit within with basin. The allocation approach would have to be negotiated among the stakeholders and would ultimately affect how the details of the project alternatives are developed in the next phase of the WISE project.

Table ES-5 summarizes the water supply reliability benefits of the variable project element options based on the operational model output. In general, individual and combined options including C1b generally result in the greatest irrigation shortage improvement and greatest net conservation storage relative to the no-action option. Option C2 also generally provides greater irrigation shortage improvement and net conservation storage than Option C3 (individually or combined with other options). The storage options (S1 to S4) provide the least irrigation shortage improvement and net conservation storage among the options evaluated. In fact, Option S1 (Agate storage increase) is the only storage option that provides any significant benefits to both irrigation shortage improvement and conservation storage. The addition of Option RW1 (reclaimed effluent to offset irrigation demand) adds significantly to both the conveyance or storage options alone.

Table ES-5. Summary of Water Supply Reliability Benefits of Project Elements		
Option	Irrigation Shortage Improvement (10th Percentile)	Net Total Conservation Storage (ac-ft) (10th percentile)
C1a	0%	3,400
C1b	3%	13,500
C1c	1%	4,900
C2	7%	13,300
C3	0%	4,900
S1	1%	3,100
S2	0%	1,700
S3	0%	2,400
S4	0%	1,000
S5	2%	5,200
C2S5	9%	16,900
C3S5	1%	8,100
C2RW1	8%	20,200
C3RW1	6%	13,900
S5RW1	5%	13,400
C2S5RW1	10%	22,200
C3S5RW1	9%	18,000

Note: Results are shown for the 10th percentile of output, i.e., 90% of the values exceed this amount; this value represents a dry or low flow condition. The values shown for "Irrigation Shortage Improvement" and "Net Total Conservation Storage" refers to the difference between the option and the no-action results.

Environmental Evaluation

Critical environmental issues were identified during the Preliminary Feasibility Study phase of the project and roughly reflect the proposed technical investigations that would be required to support the EIS. The list of critical environmental issues was narrowed to several key issues that would be used as environmental screening criteria:

- Effects on fisheries, including native resident and anadromous species, by altering base flows.
- Loss of wetland, vernal pool wetlands and associated fairy shrimp habitat (federally endangered) from canal piping and increased reservoir storage.
- Potential loss of shallow well recharge from canal piping.
- Potential loss of cultural and historic resources, including several archaeological sites and farmhouse from increased storage.
- Potential loss of existing stormwater conveyance.

Preliminary environmental assessment determined that none of the identified critical environmental issues would result in modification or screening out of the variable project elements. No fatal flaws were identified for any of the project options based on environmental criteria. While some options will require greater environmental and permitting challenges, none are considered significant enough to preclude further consideration of any of the variable project element identified. Stormwater conveyance issues and reduced groundwater recharge are considered to be the most significant environmental issues to address for the conveyance options; while vernal pool wetlands and historical/cultural sites are the most significant issue for the storage increase options at Agate and Howard Prairie.

At this stage of the evaluation, it is generally considered that the improved irrigation efficiencies and return toward more natural hydrographs in the tributaries will benefit fisheries, there are potential trade-offs (i.e., both benefit and detriment) that can occur for all of the project options. For example, with a more natural hydrograph and more water in the tributaries, fish habitat and fish passage would likely be improved, and decreased return flows to tributaries would water quality and temperature, both of which are beneficial to fish populations. However, there is also the possibility that tributaries could dry up late in late summer or early fall due to changed hydrographs. These specific flow timing impacts, as well as specific non-flow habitat impacts were beyond the scope of this screening phase. These specific issues will be evaluated for the project alternatives in the FS/EIS.

In terms of permitting and mitigation, further coordination with NMFS and USFWS will ensure appropriate mitigation for effects on listed species and streamline future consultation requirements of Endangered Species Act. The Department of State Lands, U.S. Army Corps of Engineers and USFWS would require measures to minimize temporary impacts from any of the project options reviewed. If loss of wetlands were to occur, wetland mitigation at a minimum 1:1 mitigation ratio would need to take place and will be complicated given the unique nature of vernal pools. Adverse effects to vernal pool fairy shrimp will be subject to the Endangered Species Act and coordination with USFWS. As the project progresses and alternatives are further refined, opportunities to avoid negative environmental impacts will be evaluated.

Table ES-6 summarizes the environmental assessment above based on the conceptual project element options.

Table ES-6. Summary of Key Environmental Issues for Project Element Options

Option	Fisheries	Vernal Pool Wetlands	Shallow Wells	Cultural/ Historical	Stormwater
C1a	●	–	●	○	●
C1b	●	●	●	○	●
C1c	●	–	●	○	–
C2	●	●	●	○	●
C3	●	●	●	○	●
S1	●	●	–	●	–
S2	●	–	–	–	–
S3	●	–	–	–	–
S4	●	–	–	●	–
S5	●	●	–	●	–
RW1	●	–	–	–	–

Note:

● *: Likely to affect resource; impact can be a benefit and/or detriment and requires further evaluation in the FS/EIS as part of a project alternative.*

○ *: Not likely to affect resource*

– *: Not applicable to the resource*

Cost Evaluation

Preliminary planning-level cost estimates were developed for the various project element options. Table ES-7 present the estimated cost ranges that account for contingencies. Significant contingencies are included in the estimates because the options are conceptual and additional engineering and predesign issues would need to be considered in the FS/EIS stage to develop more accurate estimates. For this preliminary feasibility study, the costs are used to determine "cost-benefit" ratios for each option for the purpose of comparing and "ranking" cost-effectiveness for future alternatives development.

Table ES-7. Summary of Cost Ranges for Project Options ($ thousand)

Option	Estimated Planning Costs[1]	+50% of Estimated Cost[2]	-30% of Estimated Cost[2]
C1a	$145,000	$164,850	$76,930
C1b	$200,000	$227,850	$106,330
C1c	$109,000	$123,900	$57,820
C2	$453,000	4514,500	$240,100
C3	$656,000	$745,500	$347,900
S1	$22,500	$27,750	$12,950
S2	$4,000	$4,500	$2,100
S3	$4,000	$4,500	$2,100
S4	$48,000	$60,000	$28,000
S5	$78,500	$96,750	$45,150
RW1	$71,000	$86,250	$40,250
C2S5	$531,500	$611,250	$285,250
C3S5	$734,500	$842,250	$393,050
C2RW1	$524,000	$600,750	$280,350
C3RW1	$727,000	$831,750	$388,150
S5RW1	$149,500	$183,000	$85,400
C2S5RW1	$602,500	$697,500	$325,500
C3S5RW1	$805,500	$928,500	$433,300

1 – Estimated costs include a construction, land acquisition, engineering and administration, permitting/environmental, and 40% contingency
2 – Cost range applied to the estimated planning costs without the contingency included

The "normalized cost-benefit ratios" calculated for the project options provide an indication of which project options are more cost-effective at this stage of the evaluation. With respect to costs, the conveyance options have the highest costs of any options, but provide much greater absolute improvements than the storage options in reducing irrigation shortages and yielding conservation storage for potential instream benefits. Of the individual conveyance options, C1b is the most cost-effective in terms of improving water supply reliability. While the storage option S1 (Agate Reservoir increase) has the best cost-effectiveness rating, it only provides minimal improvements in irrigation shortages and conservation storage. Use of reclaimed effluent (RW1) appears to be a cost-effective option in terms of water supply reliability. Finally, it should be emphasized that the costs presented in this Level 2 screening are highly conceptual. This is especially true for the storage options because those concepts are less defined at this stage of the project than the conveyance options.

Conclusions

Based on the Level 2 screening and evaluation, the following conclusions are made regarding the project elements.

- **Retain Conveyance Option C2 for alternatives development, but prioritize the RRVID and MID canals (C1b)**. In terms of phasing, piping the areas where there is limited potential for recapture of 'losses' downstream is most effective. So option C1b (RRVID/MID) or C1c (Cascade/Howard Prairie Delivery) would be first (with C1b more effective due to the flows passing through these canals) followed by C1a (TID areas).
- **Retain Conveyance Option C3 in alternatives development.** The Option C3 irrigation benefits are less than those from C2; however, there are other considerations such as desirability of maintaining a pressurized supply that C3 provides. Costs and O&M requirements are greater for Option C3 than C2 (more associated facilities in a pressure system); it is unlikely that power generation/revenue will off-set the life-cycle cost difference between C2 and C3. From a water supply perspective, the difference between options C2 and C3 is that C3 has one less source of supply. By removing connections to Bear Creek the potential to capture tributary flows and return flows upstream is removed.
- **Retain Storage Option S1 Agate Reservoir storage increase for alternatives development.** The estimated hydrology on Dry and Antelope Creek supports expanding Agate storage. As this reservoir storage is typically exhausted at the end of each season, an expanded storage would have use in meeting irrigation needs. This appears to be one of the more cost-effective options, despite having less absolute benefits to improving water supply reliability.
- **Eliminate Storage Option S2, S3, and S4 Operational changes (surcharge limit) to reservoirs from further consideration.** The options are cost-effective and likely have the least environmental issues. However, these options appear to have limited benefit for water supply reliability while increasing "risk/liability" from dams. If a year is too dry, a reservoir might not fill higher than the surcharge limits. If a year is wet the surcharge limits will have an effect but the reservoir may fill to capacity anyway. Removing surcharge limits only has benefits in a small number of years when the reservoir did not fill to capacity but could have if the limits were reduced/removed.
- **Retain Option RW1 to include reclaimed water for alternatives development.** From the perspective of reduced overall shortages, the reclaimed component has merit. By introducing this source to senior natural flow right holders on the Hopkins canal this provides greater opportunity for junior right holders in TID. This also encourages carry over storage capacity in Emigrant. This options also appears to be one of the more cost-effective, despite facing more substantial technical/regulatory issues than piping.
- **Microhydropower opportunities exist.** There appears to be some microhydropower potential in Option C2 at Cascade below Fourmile Reservoir, below Howard Prairie Reservoir, Bradshaw Drop, and below Emigrant Reservoir.

Limitations and Next Steps

The Preliminary Feasibility Study focused on water supply reliability, environmental impacts and cost to screen the project elements. Evaluation of the recommended alternatives will require additional engineering feasibility based on a more developed engineering pre-design. In addition, the water quality benefits and impacts need to be evaluated, as well as specific water rights planning for each alternative (in particular how conserved water will be allocated for instream or other environmental benefit). Finally, climate change impacts need to be evaluated in detail for each alternative. The operational model developed for this preliminary feasibility study can be modified to evaluate more specific water rights, climate change and water quality issues for each alternative.

Several of the options evaluated in the preliminary feasibility study are considered viable (individually or in combination). The next step in the WISE project is to develop formal alternatives that integrate the variable project elements above with the fixed project elements. Based on the findings from the preliminary feasibility study, the WISE PAC will have to convene and develop a list of project alternatives to evaluate in the FS/EIS. Ideally, the list of formal alternatives will be limited to four or less. The findings of this study indicate that the alternatives should, at a minimum, include: Option C1b, C2, S1 and RW1, in conjunction with the fixed elements identified in this report. While Option C3 provides benefits – namely its unique benefit of providing a fully pressurized system – its cost may be prohibitive.

With the conclusion of the pre-feasibility study, the next step for completion of the project is to initiate the Environmental Impact Statement (EIS), including the scoping phase. Before the EIS scoping and FS/EIS can occur, several procedural activities must be completed, including:

(1) Acquiring funding

(2) Implementing phase three of the contract to complete the EIS

(3) Continued implementation of the public outreach program, and

(4) Coordination of the WISE PAC and subcommittees.

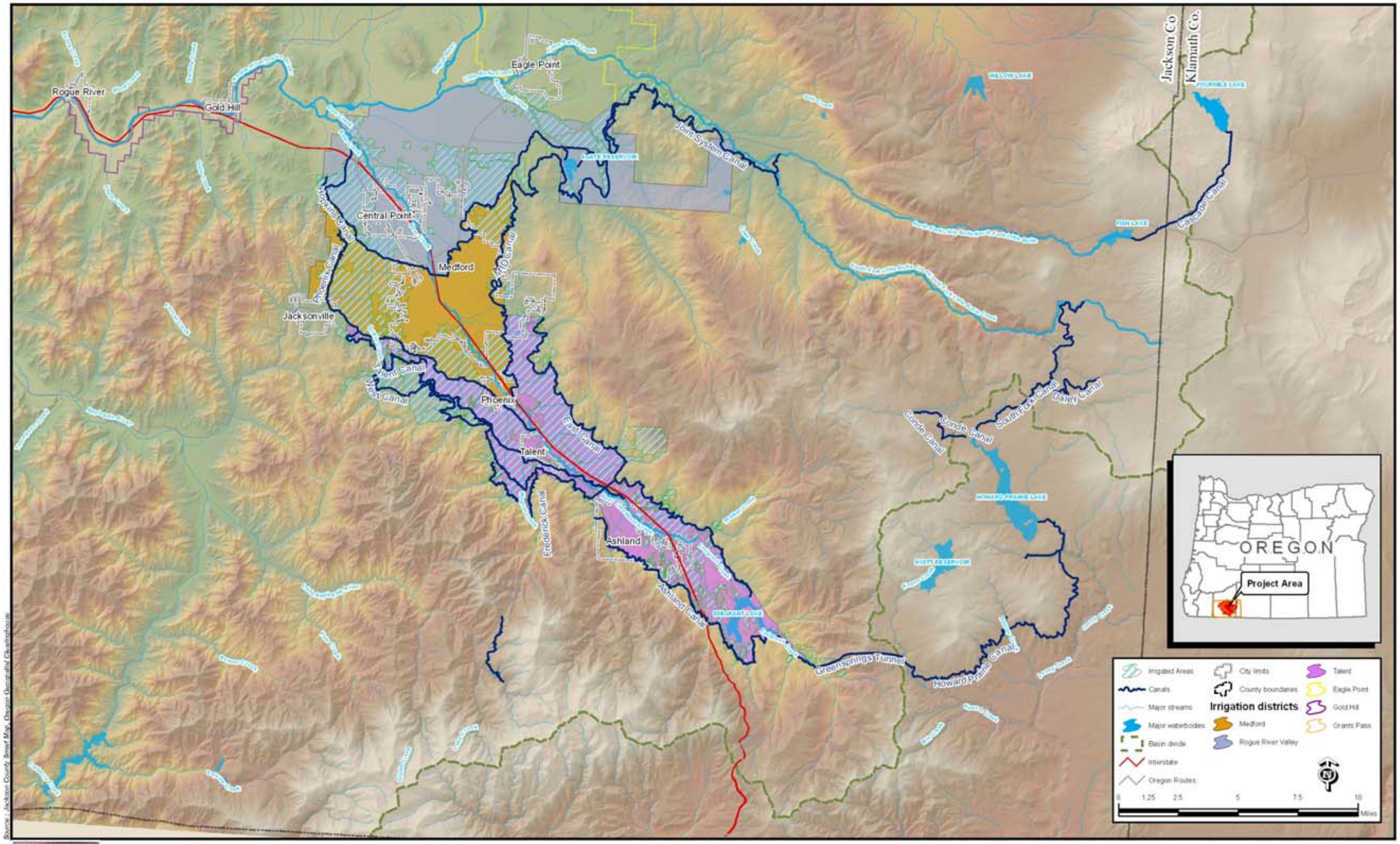

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FIGURE 1-1
WISE Study Area and Land Use Features
WISE Preliminary Feasibility Study | City of Medford

Figure ES-1. WISE Study Area and Land Use Features

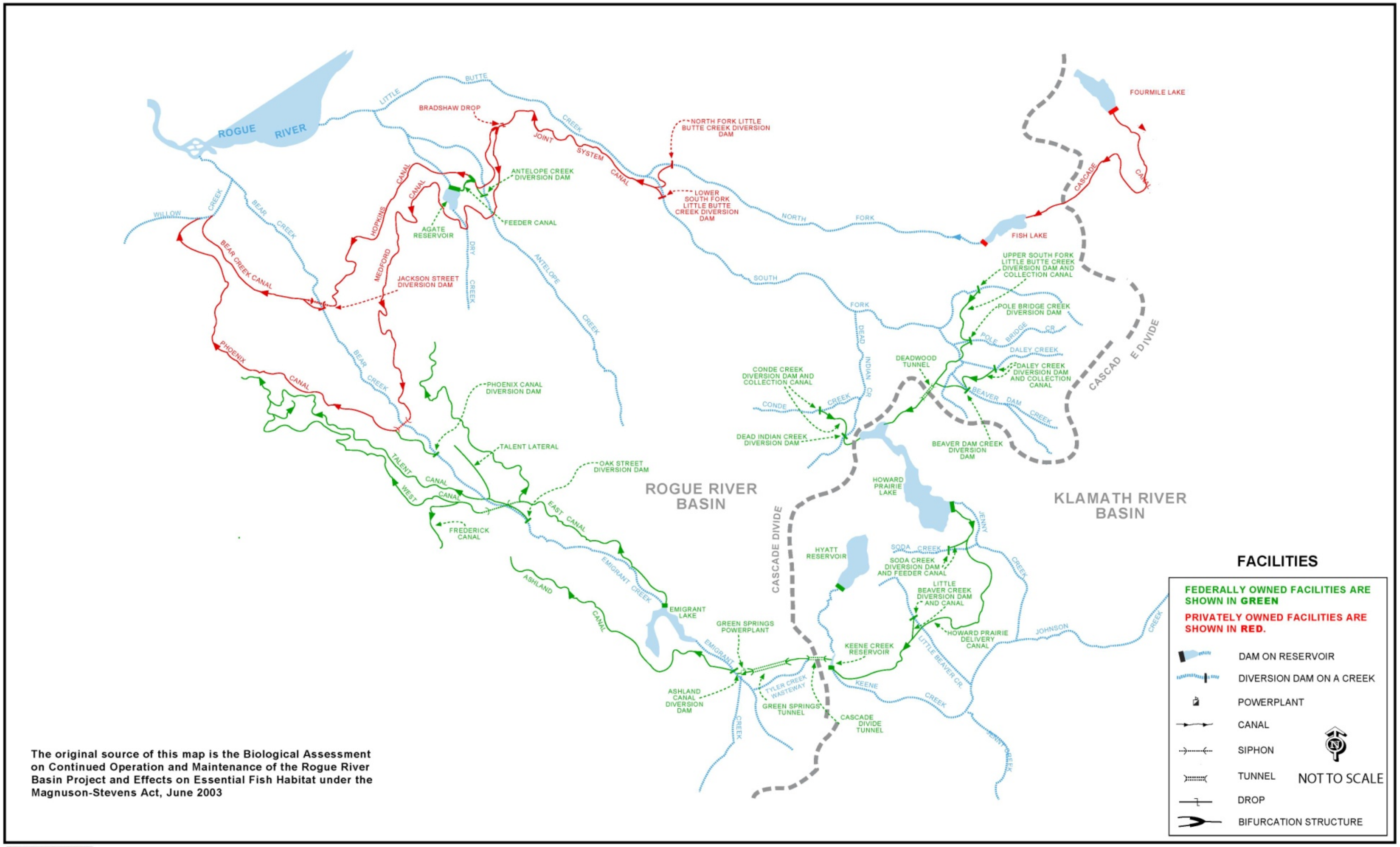

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FIGURE 5
Operations Schematic of the Rouge River Basin Project
WISE Preliminary Feasibility Study | City of Medford

Figure ES-2. Operations Schematic of the Rogue River Basin Project.