Eastern Snake Plain Aquifer (ESPA)

Comprehensive Aquifer Management Plan

ADOPTED BY **Idaho Water Resource Board**

JANUARY 2009

BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF THE EASTERN SNAKE PLAIN AQUIFER COMPREHENSIVE AQUIFER MANAGEMENT PLAN	)))))	RESOLUTION

WHEREAS, the Idaho Water Resource Board (IWRB), pursuant to its planning authorities in Article XV, Section 7 of the Idaho Constitution, and Idaho Code 42-1734A, has completed a Comprehensive Aquifer Management Plan for the Eastern Snake Plain Aquifer as requested by Senate Concurrent Resolution 136 passed and approved by the 2006 Idaho Legislature; and

WHEREAS, the Board is directed to identify goals and objectives, as well as make recommendations for improving, managing, developing or conserving the water resources of the aquifer in the public interest; and

WHEREAS, the Board has sought and received substantial public participation and comment throughout the planning process.

NOW, THEREFORE, BE IT RESOLVED that the IWRB hereby adopts the attached Comprehensive Aquifer Management Plan and directs that it be submitted to the Idaho Legislature.

DATED this 29h day of January, 2008.

TERRY T. UHLING, Chairman
Idaho Water Resource Board

ATTEST _____
BOB GRAHAM, Secretary

Attachment 1 to Meeting 3-09
Date 1-29-09
Idaho Water Resource Board

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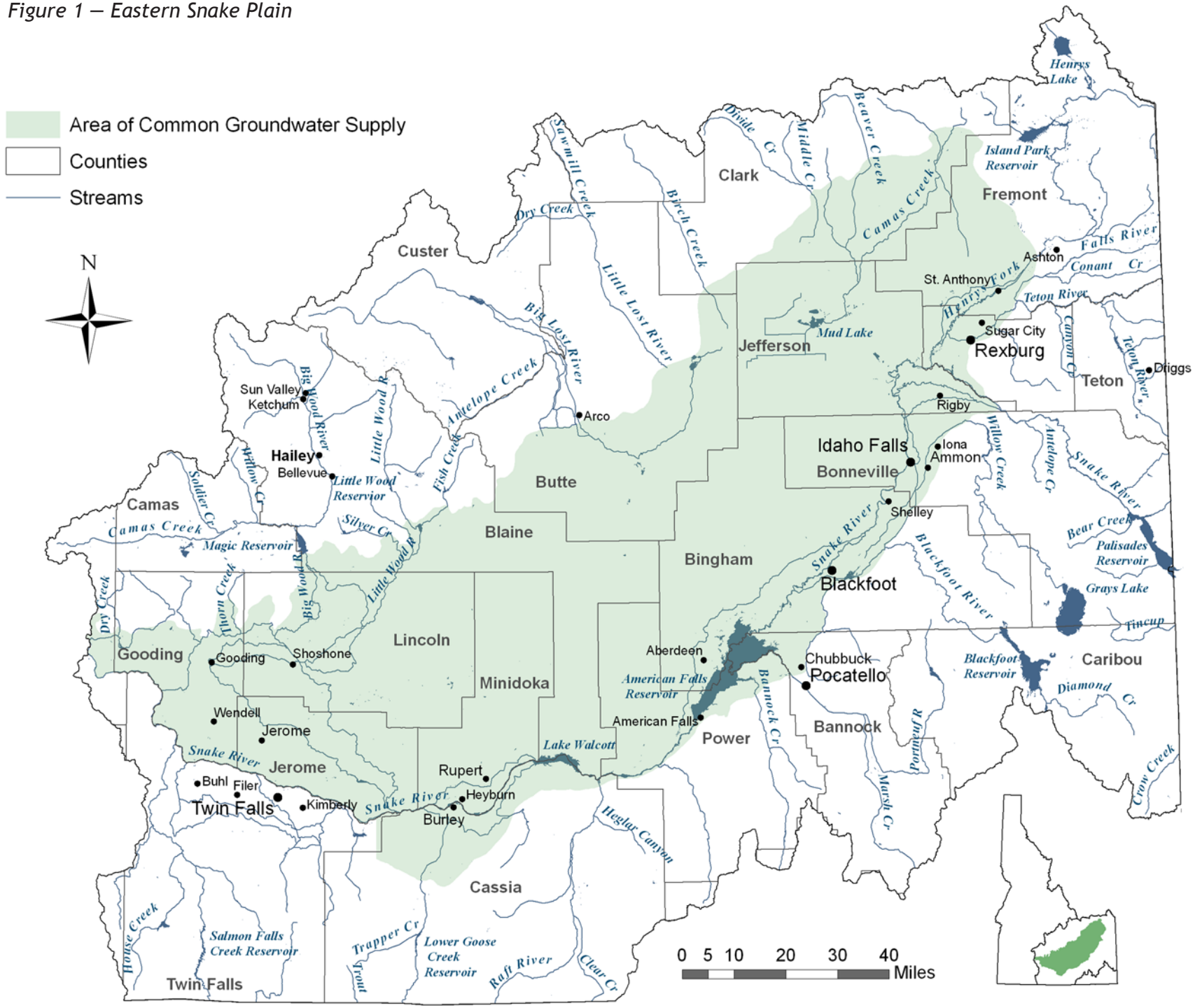
ACRONYMS & KEY TERMS

Table 1 — Acronyms & Key Terms

Committee	Eastern Snake Plain Aquifer Comprehensive Aquifer Management Plan Advisory Committee
BOR	United States Department of Interior Bureau of Reclamation
CAMP	Comprehensive Aquifer Management Plan
cfs	Cubic feet per second
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
ESPA	Eastern Snake River Plain Aquifer or Eastern Snake Plain Aquifer
EQIP	Environmental Quality Incentive Program
IDWR	Idaho Department of Water Resources (also abbreviated as “Department”)
IWRB	Idaho Water Resource Board (also abbreviated as “Board”)
kaf	Thousand acre-feet
M&E	Monitoring and Evaluation
Plan	Eastern Snake Plain Comprehensive Aquifer Management Plan
TEMP	Temperature Enhancement Management Program

Figure 1 — Eastern Snake Plain



INTRODUCTION

House Concurrent Resolution No. 28, adopted in 2007, directed the Idaho Water Resource Board (Board) to pursue, with support from the Idaho Department of Water Resources (Department), development of a comprehensive aquifer management plan based on the recommendations made in the Eastern Snake River Plain Comprehensive Aquifer Management Plan Framework (Framework). The Framework was adopted by the Board in 2006 and set forth the overarching goals and objectives for the management of the Eastern Snake Plain Aquifer (ESPA).

This document presents a Comprehensive Aquifer Management Plan (Plan) for the ESPA. At the direction of the Governor and the Board, the Plan was developed collaboratively by the ESPA Advisory Committee (Committee). This Plan in no way modifies or diminishes existing state water law, including the prior appropriation doctrine, or the power and duties of the Director of the Department.

1.0 EXECUTIVE SUMMARY

The ESPA region produces approximately 21 percent of all goods and services within the State of Idaho resulting in an estimated value of $10 billion annually. Water is the critical element for this productivity.

The Plan establishes a long-term program for managing water supply and demand in the ESPA through a phased approach to implementation, together with an adaptive management process to allow for adjustments or changes in management techniques as implementation proceeds. Due to the inherent complexities in the management and responses of the river and aquifer to water budget changes, a very deliberate choice was made to incrementally implement the various mechanisms proposed in this Plan. The long-term objective of the Plan is to incrementally achieve a net ESPA water budget change of 600 thousand acre-feet (kaf) annually. It is projected that this hydrologic goal can be achieved by the year 2030 through implementation of a mix of management actions including, but not limited to, aquifer recharge, ground-to-surface water conversions, and demand reduction strategies. The Plan sets forth actions which stabilize and improve spring flows, aquifer levels, and river flows across the Eastern Snake Plain.

The goal of the Plan is to:
"Sustain the economic viability and social and environmental health of the Eastern Snake Plain by adaptively managing a balance between water use and supplies."

The objectives of the Plan are to:

1. Increase predictability for water users by managing for a reliable supply.
2. Create alternatives to administrative curtailment.
3. Manage overall demand for water within the Eastern Snake Plain.
4. Increase recharge to the aquifer.
5. Reduce withdrawals from the aquifer.

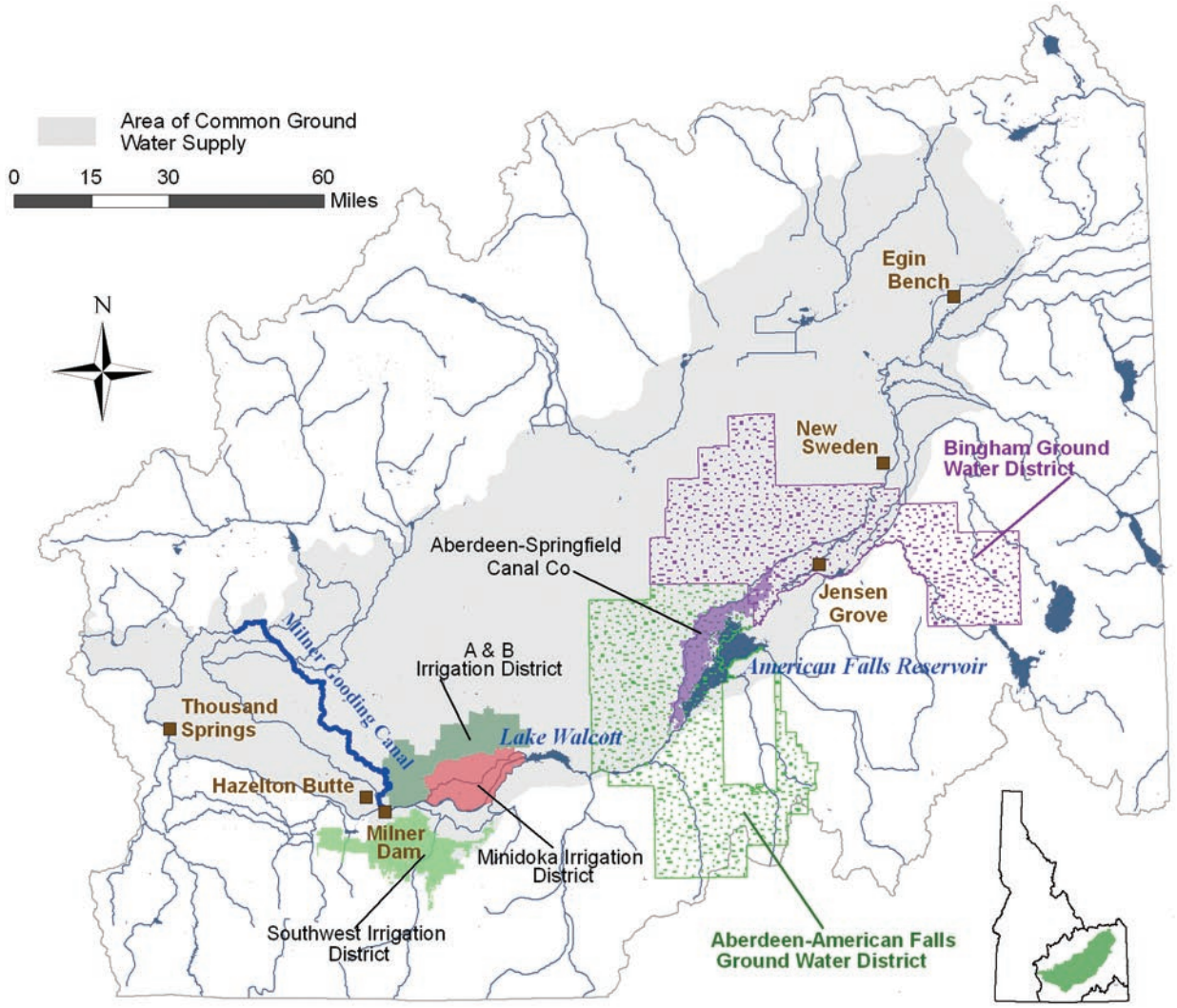
Immediate implementation of the Plan is necessary to achieve the stated goal and objectives.

The Plan approaches the 600 kaf target in phases. The Plan Phase I (1–10 years) hydrologic target is a water budget change between 200 kaf and 300 kaf. Phase I includes site-specific implementation actions based on the anticipated hydrologic effect of those actions, as outlined in Section 3.2.1. The water budget adjustment mechanisms include:

A. Ground water to surface water conversions.
B. Managed aquifer recharge.
C. Demand reduction, including:
    1. Surface water conservation.
    2. Crop mix modification in the Aberdeen/Bingham groundwater district.
    3. Buyouts, buy-downs, and/or subordination agreements.
    4. Rotating fallowing, dry-year lease agreements, and Conservation Reserve Enhancement Program (CREP) enhancements.
D. Pilot weather modification program.
E. Minimizing loss of incidental recharge.

To ensure that the valuable input of stakeholders continues during the implementation of Phase I and the design and implementation of subsequent phases, this Plan establishes an Implementation Committee. This committee will provide recommendations to the Board concerning Phase I implementation, assessment of Phase I effectiveness, definition of subsequent phases, and coordination of activities necessary for implementation. This committee will also evaluate the effectiveness and viability of continuing Plan implementation during Phase I. The Implementation Committee will include representation, at a minimum, from all interest groups currently represented on the ESPA Advisory Committee.

Figure 2 — Eastern Snake Plain Aquifer Region Key Locations



Although the Plan is built upon a substantial base of technical information and knowledge, it is recognized that present-day solutions may be refined and improved as new information and technologies are developed. Accordingly, the Plan includes an adaptive management component which requires ongoing coordination between the Board's staff and the Implementation Committee. The Plan provides for continued effort to identify and address all water use needs affected by this Plan, including the integration of environmental considerations in decision making.

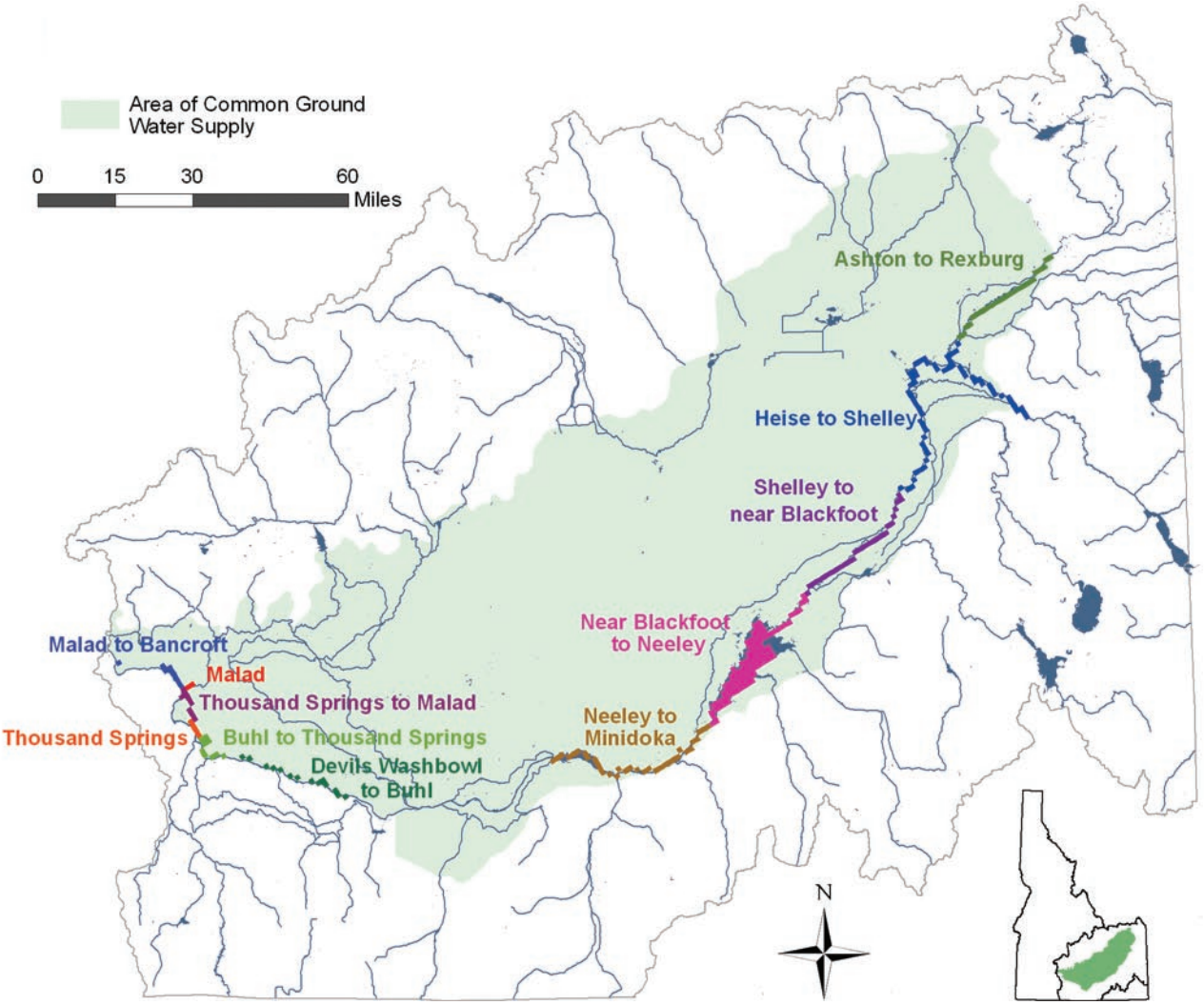
Full implementation of Phase I (10 years) is estimated to cost between $70 million - $100 million, or an estimated cost of $7 - $10 million annually. Subsequent phases and funding needs will be recommended by the Implementation Committee to the Board. Implementation funding will come from ESPA water users, state, federal, and private sources. This Plan is not designed to provide mitigation credit for any individual group, although it is expected that Plan implementation should reduce the demand for administrative solutions.

2.0 BACKGROUND

In response to declining aquifer levels and spring discharges and changing Snake River flows that resulted in insufficient water supplies to satisfy existing beneficial uses, the Idaho Legislature passed Idaho Senate Concurrent Resolution No. 136 in April 2006, and requested that the Board prepare and submit a comprehensive aquifer management plan for the ESPA. From the beginning, plan development took place in a public forum. After a series of public meetings with stakeholders, the Board presented the ESPA Plan Framework (Framework) to the Legislature on February 14, 2007.

The Framework recognized that supply of, and demands for, water are out of balance in the Eastern Snake River Plain and the connected Snake River, making more deliberate and coordinated management of surface waters of the Snake River and the underground waters of the ESPA a necessity. The Framework sets forth the overarching goal and objectives adopted by the Board for the management of the ESPA.

Figure 3 — Eastern Snake Reaches



As stated in the Framework, the goal of the Plan is to:
"Sustain the economic viability and social and environmental health of the Eastern Snake Plain by adaptively managing a balance between water use and supplies."

The objectives of the Plan are to:

1. Increase predictability for water users by managing for a reliable supply.
2. Create alternatives to administrative curtailment.
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The Framework outlined a process for development of the Plan that called for an advisory committee to prepare and recommend a plan to the Board. To that end, and pursuant to House Bill 320, the Board, in collaboration with the Governor, appointed stakeholder representatives to the ESPA Advisory Committee (see **Appendix A**). Beginning in May 2007, the Committee held monthly meetings. To ensure the process was transparent and inclusive, all meetings were open to the public and all related materials were posted on the ESPA website (www.espaplan.idaho.gov). In February 2008, the Board, with Committee recommendations, provided a Progress Report to the Natural Resources Interim Legislative Committee and outlined recommendations for initial water management actions (see **ESPA Plan technical documents at www.espaplan.idaho.gov**). The Board and Committee worked together to complete this Plan for submission to the 2009 Legislature.

2.1 Management Alternative Analysis

Guided by the goal and objectives in the Framework, the Committee identified and considered opportunities for managing available water supply and demand to address current and future water use needs including, but not limited to, those for irrigated agriculture, aquaculture, industry, hydropower, municipalities, real estate development, and domestic users and to protect environmental values. The Committee conducted a comparative analysis to assess the potential effects of a range of management options, including:

- Managed and incidental recharge.
- Groundwater to surface water conversions.
- Demand reduction strategies including but not limited to:
  - CREP.
  - Dry-year leasing and rotating fallowing.
  - Crop mix changes.
  - Buy-outs and subordination agreements.
  - Water conservation measures.
- Additional surface water storage.[1]
- Weather modification.
- Acquisition of water supplies below Milner Dam to meet Upper Snake River salmon flow augmentation obligations.

Working with the Committee, the Department developed alternative packages comprising a mix of these management options and analyzed each to ascertain the effects on reach gains and aquifer levels. The Department studied a range of potential water budget changes between 300 kaf and 900 kaf (see **ESPA Plan technical documents at www.espaplan.idaho.gov**). In addition, six packages of management strategies were examined to provide a comparison of the hydrologic benefit, economic consequences, and potential environmental impact of pursuing such actions.

2.2 Plan Implementation Benefits

Water is a unifying and critical feature of the region. About one-third of Idaho's population resides on the Eastern Snake Plain. The ESPA is the sole source of drinking water for both cities and

[1]The Idaho Legislature and Board are evaluating the feasibility of additional surface water storage across the state in order to increase available water supply. Ongoing studies will outline the benefits, costs, alternatives and impacts of such projects.

most rural residents. Agriculture is the largest segment of the local economy and the largest consumptive user of water. There are roughly 2.1 million irrigated acres on the ESPA (about 60% of Idaho's total). Of the 2.1 million irrigated acres, 871,000 acres are irrigated from surface water, 889,000 acres are irrigated from ground water, and 348,000 acres are irrigated from both sources. Beyond irrigated agriculture, food processing and aquaculture facilities (both public and private) depend on an ample supply of ground water. Springs discharging from the ESPA also sustain fish and wildlife habitat and provide water quality benefits. Hydroelectric power generation, recreation, and fisheries are also dependent on river flows. Though small relative to agricultural uses, DCMI (domestic, commercial, municipal, industrial) water use is also increasing. Providing for these DCMI uses is vital to the future growth of state and local economies. The value of the goods and services produced in the ESPA region was estimated at $10 billion in 2006.[2] This amounts to approximately 21 percent of all the goods and services produced in the State of Idaho.

Implementation of the Plan will meet the goal and objectives outlined in the Framework by:

- Improving aquifer levels (stabilization and potential enhancement).
- Increasing gains in some river reaches.
- Increasing water supply certainty for all users.
- Decreasing demand for litigation and administrative remedies.
- Allowing for municipal and industrial growth.
- Providing an ongoing public process for assessing the hydrologic, economic, and environmental issues related to the implementation of aquifer management strategies.

Implementation of the ESPA Plan will also provide a template of a collaborative planning process that can be used in other regions in Idaho. In addition, proactive management of water supplies will help address variability in climatic conditions, including drought. The expected changes in the water budget, resulting from implementation of the management plan, should provide flexibility for future water management.

2.3 Consequences of Inaction

The continued viability of irrigated agriculture, aquaculture, industry, hydropower, municipalities, future development, domestic uses and environmental resources will be adversely impacted if the current water supply trends continue on the ESPA. Implementation of the Plan is expected to change these trends and help protect the economic viability of Idaho as a whole.

Without increased precipitation and an adaptive plan to manage a balance between water use and supply in the ESPA, the following scenarios are expected:

- An escalation of conflict between water users.
- Increased litigation.
- Increased likelihood of ground water curtailment.
- Limited opportunities for community growth.
- More expensive water for industries and increased power costs, resulting in limited opportunities for economic and community growth.
- Adverse impact to the health of the state economy.

Inaction will result in continued uncertainty and instability for water users, increased vulnerability to changes in yearly supply, and less water for the expansion of municipal, industrial and commercial uses. Implementation of the Plan will provide certainty and stability and also provide a

[2]This figure was approximated by subtracting transfer payments from personal income on a county-level basis, using data published by the Bureau of Economic Analysis. This approach was recommended by Michael Ferguson, Idaho Chief Economist. Using this approach, the estimated value of goods and services produced in the ESPA region was $10 billion in 2006.

mechanism for taking advantage of periodic wet years and high flow events when surplus water may be available. Without the additional infrastructure recommended by the Plan, the region will not have the ability to take advantage of wet years and high flow. This could mean lost opportunities for municipal, industrial, and commercial growth. It could also mean increased vulnerability to changes in yearly supply, especially a problem as available water is stretched to cover more needs.

The State of Idaho and the Board, by implementing a collaborative approach to water management, have demonstrated that different interests that depend on the aquifer, springs, and the river can work together to develop a comprehensive water management plan. Therefore, it is essential that the State and the Board continue to provide direction and financial support to implement the Plan. Those involved in the Plan process devoted significant time and effort toward educating each other about their concerns and the ways in which different interests are affected by water management decisions. This process was vital to the development of the Plan and will continue through the establishment of an Implementation Committee that will assist the Board as it moves forward.

3.0 RECOMMENDATIONS

3.1 Long-Term Hydrologic Goal

The Plan establishes a long-term goal of 600 kaf average annual change to the aquifer water budget with implementation occurring over a 20-year period. A 600 kaf water budget change is considered an appropriate long-term goal considering present and future water needs, hydrologic impacts, and cost. It is currently estimated that achieving the long-term 600 kaf goal will cost more than $600 million. Full implementation of the long-term goal is dependent on many variables including water availability and funding. As such, specific actions will need to be developed by the Board after consideration of the recommendations submitted by the Implementation Committee. The Plan, by adopting a mix of strategies, represents a balanced approach to modifying the water budget. Specifically, the Plan includes aquifer recharge, groundwater to surface water conversions, and demand reduction efforts. Careful consideration was given to the following factors in the development of the long-term goal:

- Ability to target actions to accomplish specific hydrologic goals in specific locations.
- Time frame and ease of implementation.
- Environmental and economic impacts.
- Practicality, including financing and public and political acceptance.

The Plan provides for the implementation of the following management strategies:

Ground Water to Surface Water Conversions	Approximately 100 kaf/year annual average (by acquiring water supplies below Milner Dam to replace water required from the Upper Snake River for salmon flow augmentation).
Aquifer Recharge	Approximately 150-250 kaf/year (using the Board's natural flow water permit and storage water when available).
Demand Reduction	Approximately 250-350 kaf/year (using voluntary mechanisms based on the principle of willing seller/willing buyer to reduce aquifer and spring flow demands, including CREP, purchases, subordination agreements, fallowing and crop mix changes, and other mechanisms).
Pilot Weather Modification Program	Implement a 5-year pilot weather modification project in the Upper Snake River Basin and potentially the Wood River system, with state, local and other agency support. Include a detailed monitoring program for the weather modification program.

Table 2 — Plan Hydrologic Targets

PLAN HYDROLOGIC TARGETS		
ACTION	**PHASE I TARGET (KAF)**	**LONG-TERM TARGET (KAF)**
Ground Water to Surface Water Conversion	100	100
Managed Aquifer Recharge	100	150-250
Demand Reduction		250-350
Surface Water Conservation	*50*	
Crop Mix Modification	*5*	
Rotating Fallowing, Dry-Year Lease Agreements and CREP Enhancements.	*40*	
Buy Outs, Buy Downs, and/or Subordination Agreements	*No Target (Opportunity-Based)*	
Weather Modification	50*	No Target
TOTAL	**200-300**	**600**

*50 KAF was used in hydrologic modeling, based on a conservative estimate provided in the Upper Snake Weather Modification Feasibility Study.

3.2 Phase I Hydrologic Targets

The Phase I (1 – 10 years) hydrologic target is an average annual water budget change between 200 kaf and 300 kaf. Hydrologic analysis of Phase I implementation demonstrates significant hydrologic benefit across the ESPA. Phase I recommendations include site-specific implementation actions and the expected hydrologic effect of those actions. While implementing Phase I, it will be important to identify any unintended adverse consequences of such actions.

The following hydrographs provide an example of the benefits of Phase I actions. These hydrographs simulate the river reach gains and ground water level changes that would have occurred had Phase I actions been implemented in water years 1980 through 2005. Actual changes in the water budget will vary depending upon future climatic conditions and when the actions are implemented.

Monitoring and evaluation is an important component of each action. Monitoring and evaluation is required to assess the progress and effectiveness of each action and will assist in the development and implementation of future actions. In implementing Phase I, the Board will continue to solicit advice and recommendations from the Implementation Committee and the public.

Figure 4 — Snake River: Ashton to Minidoka Reach

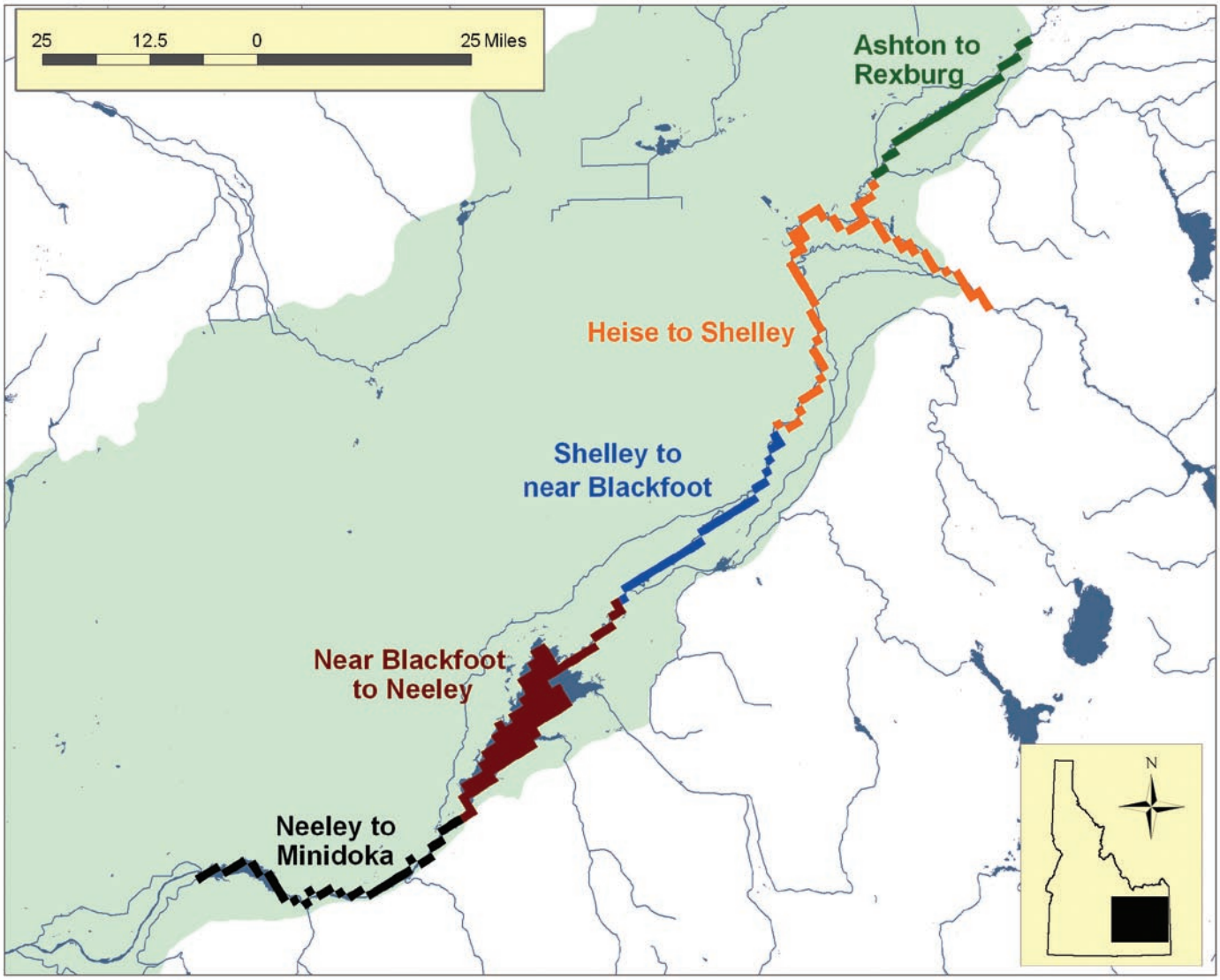
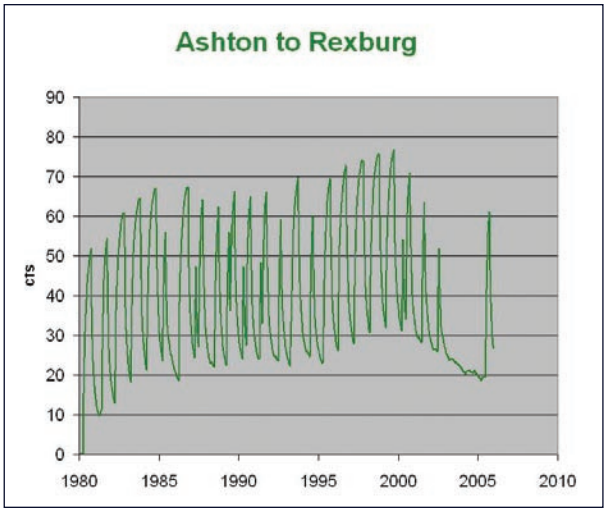
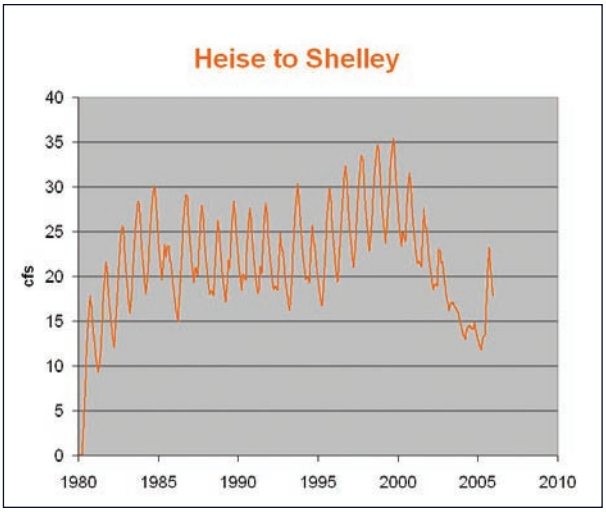
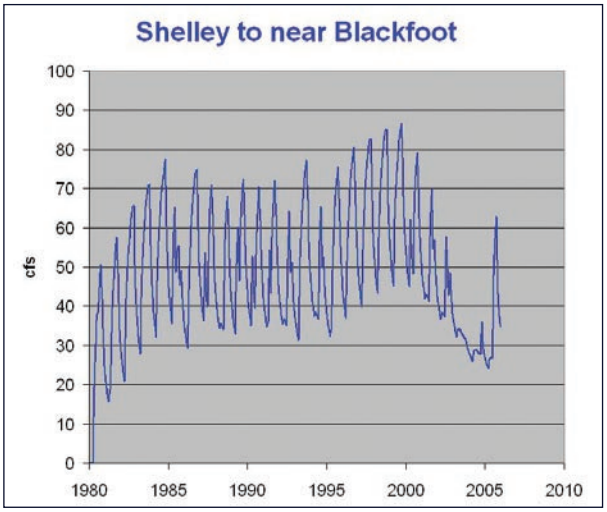
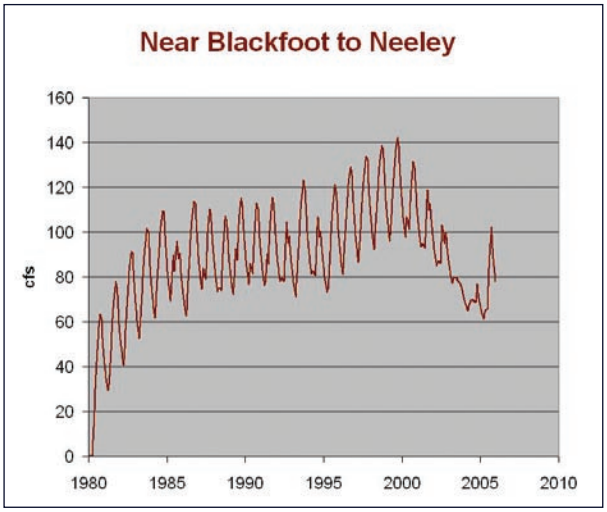


Figure 5 — Hydrographs of Simulated River Reach Gains Resulting from Phase I Implementation, in the Ashton to Minidoka Reach









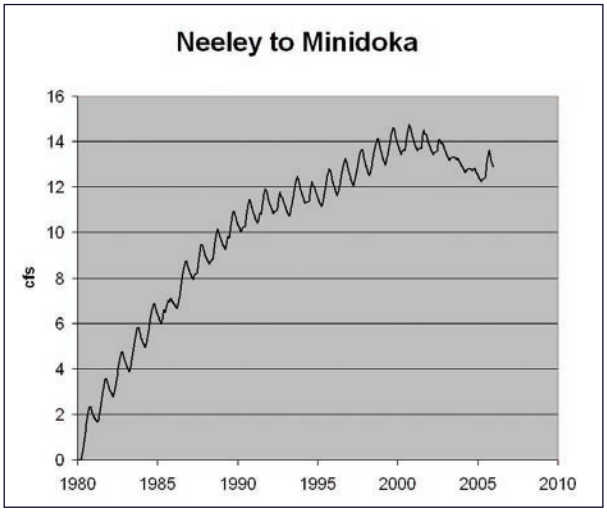


Figure 6 — Snake River: Devils Washbowl to Bancroft Reach

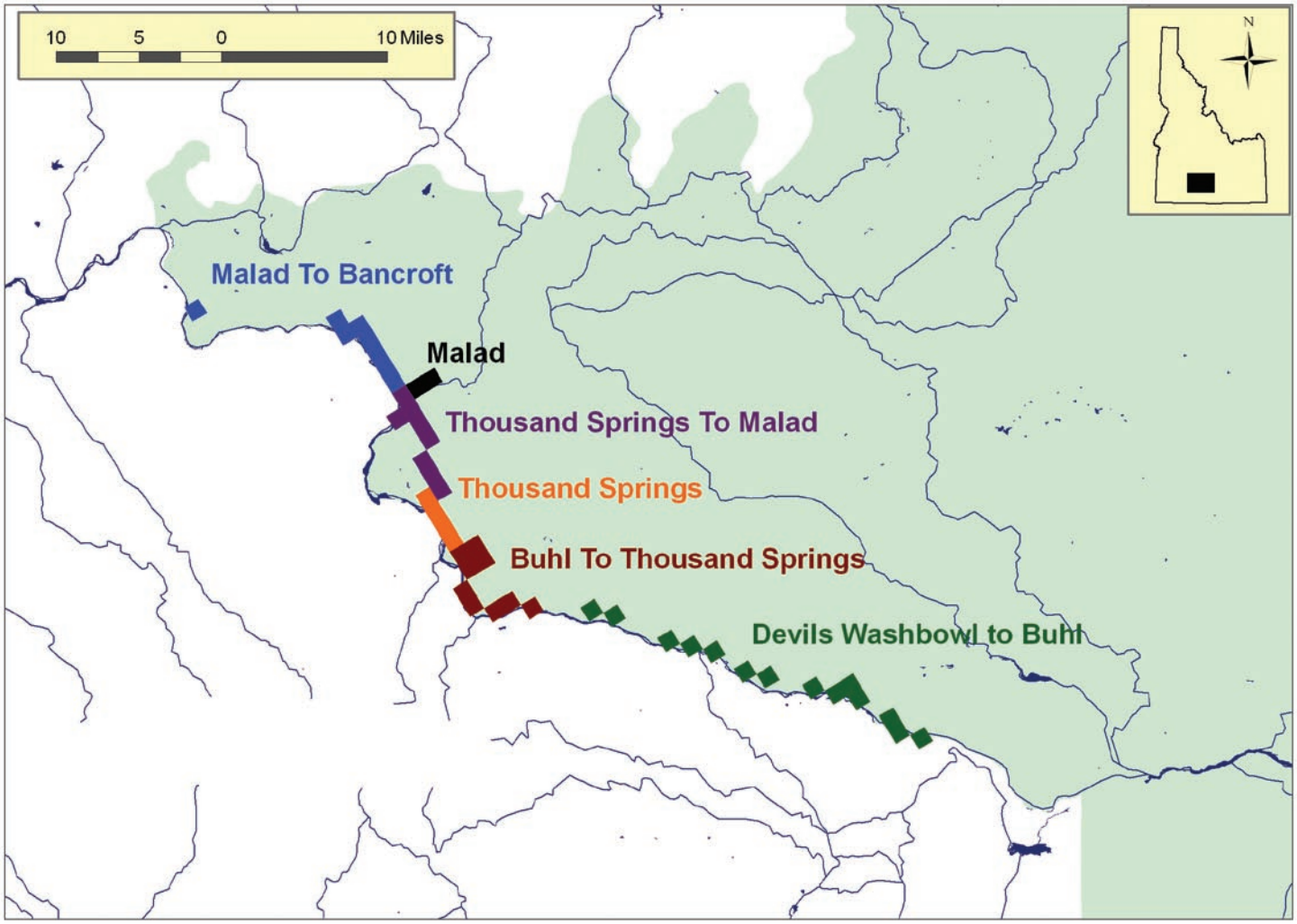


Figure 7 — Hydrographs of Simulated River Reach Gains Resulting from Phase I Implementation in the Devils Washbowl to Bancroft Reach

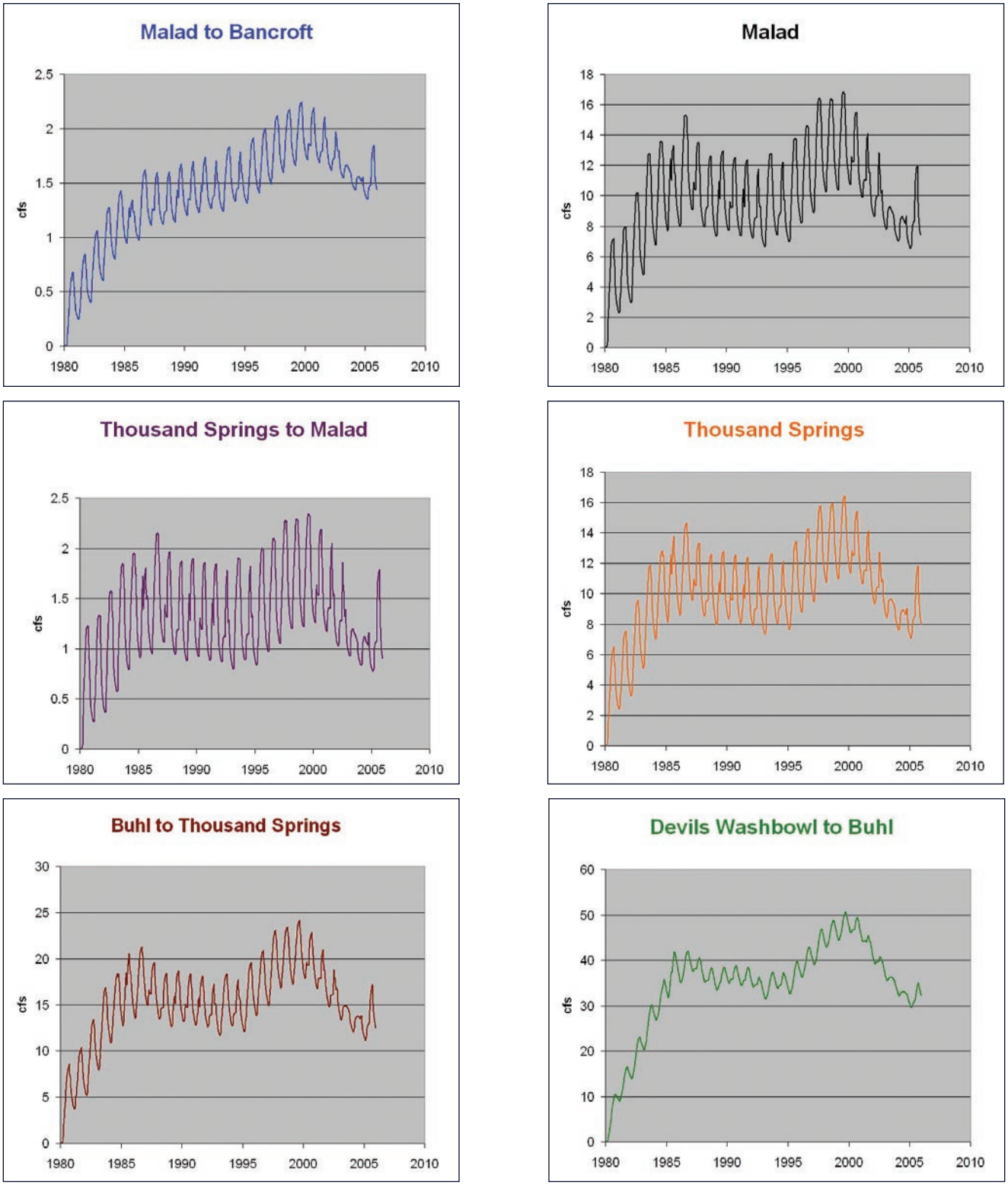


Figure 8 — Locations of Hydrographs Shown in Figure 9

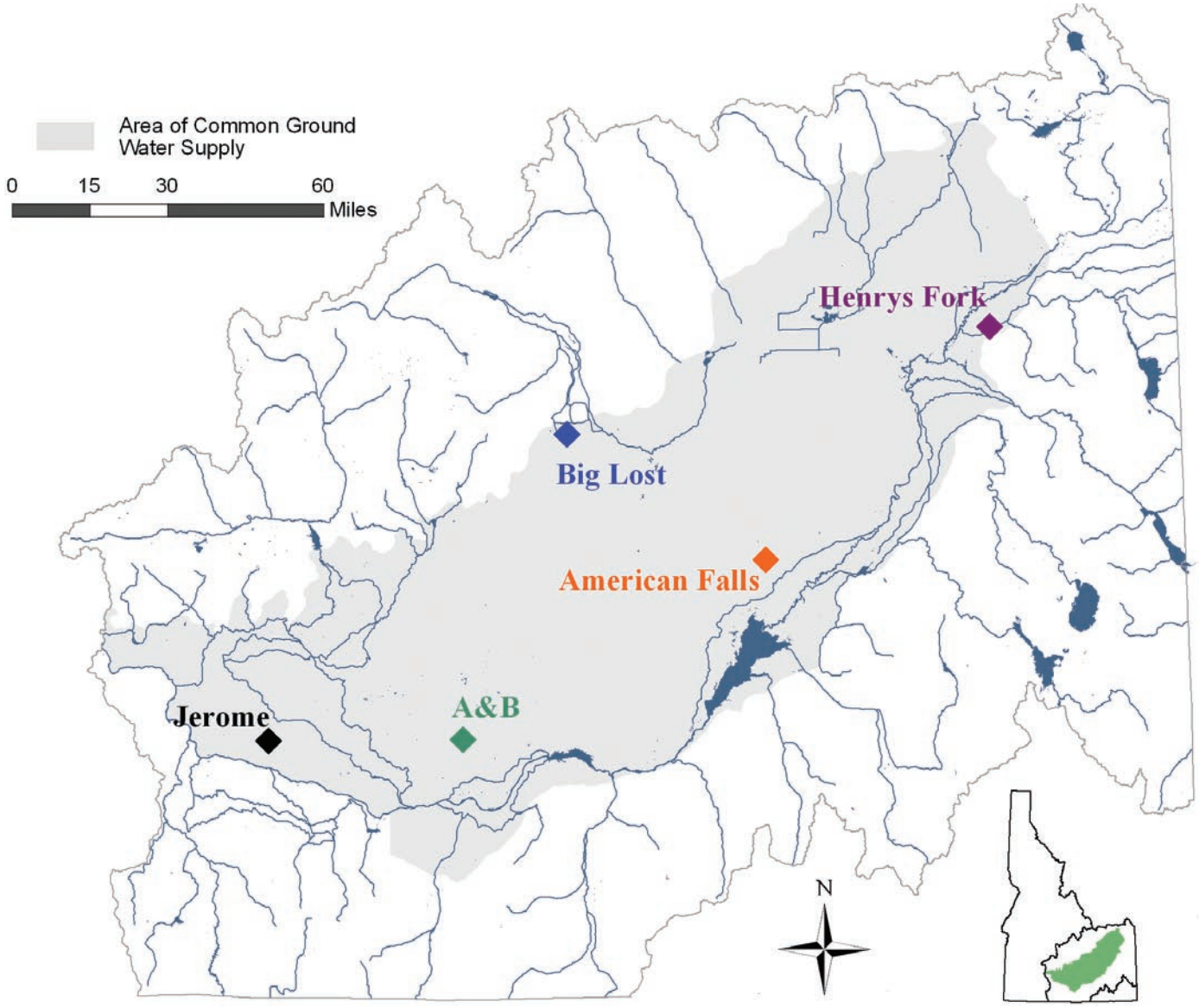
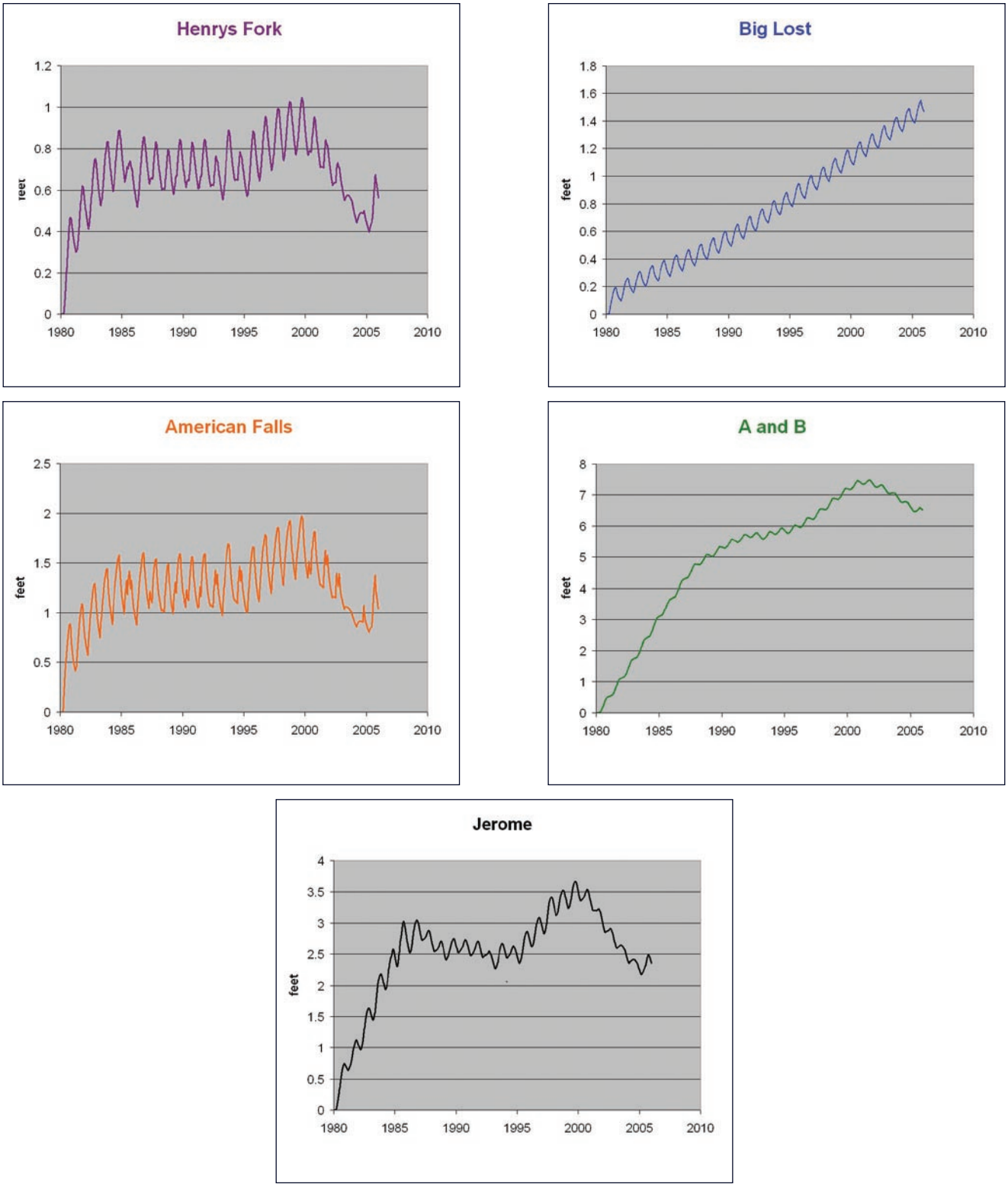


Figure 9 — Hydrographs of Simulated Groundwater Level Changes at Selected Locations Resulting from Phase I Implementation



3.2.1 Phase I Actions

A. Ground Water to Surface Water Conversions

GOAL:	IMPLEMENT 100 KAF ANNUAL AVERAGE BY YEAR 5
Actions:	• Opportunistically pursue conversions equally above and below American Falls. • Conversion opportunities include Hazelton Butte (estimated 9,000 acres); A&B service area through Milner Gooding canal and Minidoka Irrigation District; Aberdeen Springfield (lower end of system); South side of Minidoka (WD 140); Southwest Irrigation District, and others.
Issues:	• Examine capacity above American Falls for conversions (new wells in the last 40 years) on land previously using surface water. • Opportunistically acquire Snake River water below Milner Dam, or from other tributary basins, to be exchanged for flow augmentation water with consideration of potential third party impacts including but not limited to impacts on water quality, aquatic resources, and hydropower. • Opportunistically acquire upstream surface water rights on flow-limited streams and transfer them downstream to achieve both conversions and stream flow restoration. • Execute conversions during the spring and fall shoulder seasons as well as during irrigation season as capacity allows. • Coordinate with the United States Department of the Interior, Bureau of Reclamation (BOR) operations and other interested parties to plan for conversions and optimize outcomes for fish and wildlife, surface water quality, and recreation. • Identify sites and conduct engineering during winter 2009, focusing on high-lift pump areas. • Implement initial conversions by 2010 crop year. • Assume that a portion of costs may be born by irrigators who benefit from conversion (e.g., reduced power costs and value of water "on the land"). This is potentially the least expensive option available, although incentives will likely be needed to implement conversions. • Evaluate impact on surface water availability and the reservoir system operations.

B. Managed Aquifer Recharge

GOAL:	IMPLEMENT 100 KAF ANNUAL AVERAGE BY YEAR 5
Actions:	• 20 kaf of recharge above Blackfoot on the Egin Bench including both fall and spring recharge efforts. Evaluate results of fall 2008 recharge pilot project using storage water. Consider further recharge efforts in consultation with the Committee of Nine and with consideration of Henry's Fork winter flows. • 30 kaf of recharge above American Falls on Jensen Grove, Aberdeen Springfield Canal, and New Sweden systems, and with consideration of South Fork Snake River springtime flows. • 30 kaf of recharge that impacts the Thousand Springs Reach on the North Side Canal Company, Milner Gooding Canal. Explore opportunities for small scale targeted recharge in the Thousand Springs reach. • Explore recharge options on the north side of Lake Walcott. • 20 kaf estimated to maximize use of the Board's recharge water permit, Wood River Legacy transactions, and/or flood control releases on the Wood River system. • Develop and implement a detailed monitoring plan to assess the efficacy of recharge efforts.
Issues:	• Attempt to maximize recharge efforts on an annual basis unless recharge significantly impacts available supply for conversions or adversely effects ground water quality. • Prioritize the continued study of a recharge site at Lake Walcott. A recharge site in this area is expected to have positive effects on spring discharge above American Falls and at Thousand Springs. Use measurement and monitoring tools to demonstrate reach gain benefits. • Coordinate with BOR operations and other interested parties to plan for recharge efforts and optimize outcomes for fish and wildlife, surface and ground water quality, hydropower and recreation. • Develop long-term contracts with canal companies to deliver recharge water when the Board's permit is in priority. • Opportunistically acquire upstream surface water rights on flow-limited tributary streams and transfer them downstream to achieve both ground water recharge and stream flow restoration.

C. Demand Reduction

1. Crop Mix Modification in the Aberdeen/Bingham Groundwater District

GOAL:	5 KAF PER YEAR AFTER YEAR FIVE
Actions:	• Implement a pilot project, administered through Aberdeen-American Falls and Bingham Groundwater Districts that targets a reduction of groundwater use through alternate cropping patterns (e.g., exchanging hay for grain). • The program targets a reduction in ground water use of an average of 5 kaf annually by Year 5. Year 1includes a 1 kaf target and the target increases 1 kaf per year until Year 5. • Aberdeen/Bingham Groundwater District will determine most effective methods to accomplish targets.

2. Surface Water Conservation

GOAL:	MOST EFFICIENT USE OF AVAILABLE SURFACE WATER SUPPLY, 50 KAF
Actions:	• Evaluate opportunities for surface water conservation measures. • Construct check structures and automated gates, equalizing reservoirs and pump backs and investigate reducing transmission loss at specific areas where transmission loss does not benefit a ground water user or spring water user without impacting incidental recharge, thereby reducing return flows and saving water to be used for additional conversions. • Explore federal grants to leverage state monies and reduce cost to canal companies.
Issues:	• All conservation efforts will be site specific and examined on a case-by-case basis to ensure desired results. • Hydrologic effects of conservation actions could include an increase in natural flow and storage, and may provide water supply for conversions. • Pursue incentives for conservation activities and quantify hydrologic benefits, including water quality benefits from reduced return flows.

3. Buyouts, Buy-downs and/or Subordination Agreements

GOAL:	NO PHASE I TARGET – OPPORTUNITY-BASED
Actions:	• Opportunistically pursue buyouts, buy-downs, and/or subordination agreements across the ESPA, including in the Thousand Springs reach. • Set aside financial resources to enable transactions. • Pursue opportunities for environmental enhancements as a component of such agreements.

4. Rotating Fallowing, Dry-Year Lease Agreements and CREP Enhancements

GOAL:	NO PHASE I TARGET BUT ASSUMING CONTINUATION OF THE 40 KAF THAT HAS ALREADY BEEN ACHIEVED THROUGH CREP
Actions:	• Implement dry-year lease options proportionally above and below American Falls. • Develop a predictable and defined system to implement rotating fallowing program. • Employ Dry-year Lease Options that use storage water to provide water supply and incentives for conversions. • Pursue opportunities to leverage federal resources by providing additional incentives to increase CREP participation. Pursue other opportunities to increase CREP enrollment. • Utilize the State Water Fund, or other sources as available, to provide seed money for demand reduction projects. • Pursue opportunities for environmental enhancements as a component of such agreements.
Issues:	• Develop specific demand reduction program to implement and generate funds by the end of 2009. • Explore programs that may reduce ground water demands during dry years and programs that would have an impact on river flows during the growing season.

D. Pilot Weather Modification Program

GOAL:	SURFACE WATER SUPPLY ENHANCEMENT, UNDETERMINED QUANTITY
Actions:	• Implement a cooperative 5-year pilot weather modification project designed to increase winter snowpack in the Upper Snake River Basin and potentially the Wood River system.
Issues:	• Develop plan in 2009 and implement during winter 2010. • Design and implement a detailed monitoring and evaluation program. • Idaho Power Company has agreed to work with the State and interested counties to implement the experimental project. • Coordinate with the State of Wyoming regarding potential program partnership. • Develop procedures to suspend weather modification activities during heavy precipitation periods when additional rain or snow may increase the risk of flooding, or have adverse consequences for fish and wildlife resources and the public safety.

E. Incidental Recharge

GOAL:	NO REDUCTION IN INCIDENTAL RECHARGE OVER THE ESPA DURING THE 10 YEAR PHASE I PLAN
Action:	• Recognize the role of incidental recharge. • Work with canal managers and funding agencies that are implementing water conservation measures to offset the effects of conservation to the aquifer.

F. Plan Implementation and Growth

GOAL:	IDENTIFY AND ADDRESS IMPEDIMENTS TO MUNICIPAL, INDUSTRIAL, AND COMMERCIAL GROWTH.
Actions:	• Review administrative rules and processes that may be an impediment to growth and implementing Plan management actions; take administrative steps to assure that water is available to sustain future economic growth.

3.2.2 Additional Plan Components

In addition to the overall hydrologic goal and Phase I implementation steps, the Plan includes the following actions to enhance coordination, decision making, and aquifer management.

A. Plan Implementation Committee —
The Board will establish an Implementation Committee to assist in the implementation of the Plan. The Implementation Committee will assist the Board in the prioritization, development, implementation, and monitoring and evaluation of management actions. The Implementation Committee will consider and recommend actions and objectives to stabilize and improve spring flows and aquifer levels and effect changes in river flows. The Implementation Committee will include, but not be limited to, interest groups currently represented on the Advisory Committee. The Implementation Committee will also establish a coordination process that provides for the sharing of information on river and aquifer management actions and provides opportunity for public involvement. The Implementation Committee will serve at the pleasure of the Board and provide a forum for public participation. Board's staff and/or contractors will facilitate the work of the Implementation Committee and provide the technical information needed for its deliberations. The Board will continue to make all final decisions concerning Plan project priorities, implementation, and funding.

B. Environmental Considerations —
The Plan integrates environmental and other considerations into the decision-making and implementation process. With the advice of the Implementation Committee, the Board, through implementation of the Plan, will seek to optimize outcomes for fish and wildlife, recreation, hydropower, municipalities, irrigation, aquaculture, and other uses. Where feasible, the Board will pursue opportunities for cooperative program and funding arrangements that may expand resources available for optimizing environmental resources.

C. Clearinghouse —
During implementation of Phase I, options for implementing a flexible mechanism that connects willing participants in the implementation of ESPA water management projects will be considered as well as strategic approaches to implement recharge, conversion, and demand reduction strategies using a clearinghouse structure.

D. Outreach and Education —
During Phase I, the Implementation Committee will help develop and recommend funding mechanisms for a broad water education and outreach effort, building on existing water user outreach efforts and programs, with an initial emphasis on local governments, domestic well owners, and consumptive water users.

E. Management Flexibility & Innovation —
The Board will pursue and implement the most cost effective water management tools that achieve the overall goals and objectives for improving the ESPA. In addition, innovative approaches that can improve water supplies available for conversion, recharge, and/or enhancement of surface supplies will be identified for consideration.

F. Downstream Transfer Policy —
Opportunities for providing water for recharge and conversion projects through downstream transfers of surface water rights to the ESPA in a manner that enhances flows in flow-limited tributaries will be identified. Such transfers should be consistent with state law, policy and programs and utilize the water supply bank wherever appropriate.

3.3 Phase I Implementation Plan

A Phase I Implementation Plan will be developed within the first year of Plan approval. The Implementation Plan will outline the sequence of implementation steps and identify research and funding requirements and sources, required legislation and monitoring and evaluation protocols. The Implementation Plan will also describe an operating protocol to ensure continued public involvement and participation. The Board's staff and/or contractors will work with the Implementation Committee and the Board to finalize and approve the Implementation Plan.

The proposed plan outlined in the following table represents a multi-pronged approach for funding the Phase I actions over a 10-year period (see **Appendix B**). The Implementation Plan will further define the outlined necessary funding strategies and mechanisms. Funding participation targets are identified for each water user category.

Table 3 — Phase I Funding Participation Targets

WATER USER CATEGORY	PHASE I FUNDING PARTICIPATION TARGETS
Irrigated Agriculture (groundwater and surface water)	$3 million annually (based on participation of $2 million annually for ground water users and $1 million annually for surface water users)
Idaho Power Company/Co-Ops	$1 million – $1.5 million annually (for projects that qualify for TEMP)[3]
Municipalities	$700,000 annually (includes commitment to address rules and statutes that may inhibit municipal growth)
Spring Users	$ 200,000 annually (based on cfs)
Industrial/Commercial Users (not in municipalities or groundwater districts)	$150,000 annually (based on estimated 15 kaf annually)
State of Idaho	$3 million annually
Federal	Pursue EQIP/Water America Initiative/CREP and other funding opportunities
Recreation/Conservation	Pursue grants and other funding opportunities

[3]In connection with the relicensing of the Hells Canyon hydroelectric project, Idaho Power Company has proposed to implement a Temperature Enhancement Management Program (TEMP) as part of the Clean Water Act Section 401 water quality certification process. Through the TEMP, Idaho Power Company intends to develop, fund and implement watershed management and enhancement projects that will assist in ameliorating Snake River water temperature conditions. Idaho Power Company will work with the Implementation Committee and Board to identify Plan actions that qualify for inclusion in the TEMP. The § 401 application is currently pending before the Idaho Department of Environmental Quality and has not yet been approved.

It is estimated that $70 million - $100 million dollars will be needed to implement the Phase I, 200-300 kaf annual change in the ESPA water budget.[4] The ESPA water users[5] have conceptually agreed to contribute 60% of the required funds, with the State of Idaho contributing the balance. In addition, other potential sources of funding, including federal and private sources, will be identified and secured to advance implementation of the Plan.

All fees and assessments collected for Plan implementation and accrued interest will be deposited into a dedicated sub-account within the Board's Revolving Development Fund. The Board, with consideration of the recommendations of the Implementation Committee, legislature, and Governor's office, will make all final decisions concerning project priorities and implementation and allocation of funds from the dedicated sub-account.

[4]Not including operations and maintenance costs.
[5]Including consumptive and non-consumptive industries and municipalities.

4.0 ADAPTIVE MANAGEMENT

This section sets forth an adaptive management strategy for implementation of the Plan. The goal of adaptive management is to support improved decision-making and performance of water management actions over time.

Key principles fundamental to this approach include:

1. Anticipating possible future uncertainties and contingencies during planning.
2. Employing science-based approaches to build knowledge over time.
3. Designing projects that can be adapted to uncertain or changing future conditions.

Adaptive management involves taking actions, testing assumptions, and then monitoring and adapting/adjusting the management approach as necessary. It is a way of taking action – even in the face of uncertainty – in a complex system with many variables and constant change. Developing perfect knowledge concerning any system, including the ESPA, is impossible, and therefore an adaptive management approach is critical to the successful attainment of the qualitative and quantitative goals set forth in the Plan. Successful adaptive management requires patience and long-term commitment, as acquiring enough data to make decisions about program changes takes time.

The adaptive management strategy will allow the Board to:

- Develop protocols for revising management actions and/or quantitative targets as necessary.
- Compare costs and impacts of different actions to manage and improve the water budget in the ESPA.
- Adjust funding allocation between projects to get the most "bang for the buck."
- Concentrate funding on management actions that show results.
- Make adjustments and revisions to the Plan as new information becomes available or in response to changing water supply and demand needs.
- Proceed with flexibility depending on results and analysis of monitoring and measurement data.

4.1 Coordination & Implementation

Management of the ESPA affects numerous stakeholders and the State of Idaho. Effective implementation of the Plan will require the participation and cooperation of stakeholders and governmental entities with jurisdictional authorities and responsibilities. The Implementation Committee will be charged with providing guidance and recommendations concerning the implementation of management strategies and review of goals and objectives. The Implementation Committee will provide a forum for discussing Phase I implementation, establishing benchmarks for evaluating the effectiveness of actions, coordinating with water users and managers, evaluating and addressing environmental issues and identifying and pursuing funding opportunities.

The Implementation Committee will include interest groups currently represented on the ESPA Advisory Committee. In addition, the Board will appoint at least one of its members to serve as a liaison between the Committee and the Board. The Implementation Committee will serve at the pleasure of the Board and provide a forum for public participation. Board's staff will facilitate the work of the Implementation Committee and provide the technical information needed for its deliberations. The Board will make all final decisions concerning Plan project priorities, implementation, and funding.

4.2 Monitoring & Evaluation

A monitoring plan has been funded and developed for the ESPA, but additional monitoring and evaluation will likely be required beyond the existing program. The ground water model (and other modeling tools) are subject to technical review by the Eastern Snake Hydrologic Modeling Committee on a periodic basis. As various water budget adjustment programs are implemented, additional monitoring or modifications to the modeling program will likely be needed, e.g., specific projects may require site specific measurement and analysis, which are not currently provided. Additional modeling scenario analysis will likely be required to assist the Board and the Implementation Committee in the implementation process. Additionally, increased measurement of water use across the ESPA and an increased understanding of the hydrogeologic complexity of the aquifer are necessary to inform and raise public awareness about this valuable resource during the planning and management process.

With data gathered through the monitoring process, the Implementation Committee and Board's staff will be able to assess the impacts of each management activity. In some cases, it may take a number of years to obtain sufficient data to achieve a comprehensive understanding of the effects of particular actions. Regardless, the success of the Plan depends upon the development and maintenance of state-of-the-art monitoring and evaluation tools that provide the information necessary to make sound planning decisions for the future.

4.3 Legislative Reporting and Plan Revision

The Board will provide periodic reports to the legislature documenting the progress made on the implementation of the Plan. The Board will evaluate the Plan after 10 years of implementation for Phase I, and make planning recommendations to the legislature and Governor's office.

5. APPENDICES

PLAN TECHNICAL DOCUMENTS

Technical documents were used to design Phase I actions and these and other technical information will guide the Implementation Committee. These and all Plan-related materials can be found at www.espaplan.idaho.gov in the Technical Document folder.

APPENDIX A — Advisory Committee Membership List

	REPRESENTATIVE	ALTERNATE
MUNICIPALITIES/COUNTIES	**Mayor Lance Clow**, City of Twin Falls	**Mayor Correll**, City of Jerome
	Mayor Fuhriman, City of Idaho Falls	**Mayor Roger Chase**, City of Pocatello
BUSINESS	**Alex S. LaBeau**, IACI President	
LAND DEVELOPERS	**Rebecca Casper**, Ball Ventures LLC	**Bob Muffley**, Board of Realtors/ Mid-Snake Commission
SURFACE WATER USERS	**Jeff Raybould**, Fremont-Madison Irrigation District	**Lloyd Hicks**, Rigby
	Randy Bingham, Burley Irrigation District	**Steve Howser**, Aberdeen-Springfield Canal Company
	Vince Alberdi, Twin Falls Canal Company	**Albert Lockwood**, Northside Canal Company
GROUND WATER USERS	**Don Parker**, Water District 110-100	**Scott Clawson**, Water District 110-100
	Tim Deeg, Water District 120	**Craig Evans**, Water District 120
	Dean Stevenson, Water District 130-140	**Lynn Carlquist**, Water District 130
SPRING WATER USERS	**Randy MacMillan**, Clear Springs Foods, Inc.	**Linda Lemmon**, Thousand Springs Water Users Association
HYDROPOWER	**James Tucker**, Idaho Power Company	**Dee Reynolds**, Fall River Electric
DOMESTIC WELL OWNERS	**George Katseanes**, Blackfoot	

	REPRESENTATIVE	ALTERNATE
ENVIRONMENTAL AND CONSERVATION INTERESTS	**Kim Goodman**, Trout Unlimited	**Will Whelan**, The Nature Conservancy
MIXED-USE INTEREST	**Dan Schaeffer**, A&B Irrigation District	**Stan Standal**, Spring Water User
COUNTY ASSESSOR	**Max Vaughn**, Minidoka County	**Steven Seer**, Bonneville County

AGENCY PARTICIPANTS	
IDAHO DEPARTMENT OF WATER RESOURCES	**Hal Anderson**, Administrator — Planning and Technical Services Division
IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY	**Barry Burnell**, Water Quality Administrator
IDAHO WATER AND ENERGY RESOURCES RESEARCH INSTITUTE	**Roy Mink**, Former Director
IDAHO FISH AND GAME	**Dave Parish**
BUREAU OF RECLAMATION	**Richard Rigby**, Special Assistant to Regional Director
US FISH AND WILDLIFE SERVICE	**Damien Miller**
GOVERNOR'S OFFICE	**John Chatburn**

APPENDIX B — Phase I Funding Recommendations

The following table outlines a recommended funding approach for Phase I implementation, including participation targets. These participation categories have been discussed and conceptually agreed to, but necessary mechanisms have yet to be finalized. As noted above, the estimated funding required for Phase I implementation is $70 million - $100 million ($7 – $10 million per year for 10 years).

WATER USER CATEGORY	PHASE I FUNDING PARTICIPATION TARGETS
Irrigated Agriculture (groundwater and surface water)	$3 million annually (based on participation of $2 million annually for ground water users and $1 million annually for surface water users and conceptually agreed to)
Idaho Power Company/Co-Ops	$1 million – $1.5 million annually (for projects that qualify for TEMP)[3]
Municipalities	$700,000 annually (includes commitment to address rules and statutes that may inhibit municipal growth)
Spring Users	$200,000 annually (based on cfs)
Industrial/Commercial Users (not in municipalities or groundwater districts)	$150,000 annually (based on estimated 15 kaf annually)
State of Idaho	$3 million annually
Federal	Pursue EQIP/Water America Initiative/CREP and other funding opportunities
Recreation/Conservation	Pursue grants and other funding opportunities

The proposed funding approach seeks to raise the needed funds through a flexible strategy that is broad-based, provides for equitable benefits and efficient revenue collection, and minimizes interest expenses. Potential funding strategies are set forth below for further discussion and consideration.

[3]In connection with the relicensing of the Hells Canyon hydroelectric project, Idaho Power Company has proposed to implement a Temperature Enhancement Management Program (TEMP) as part of the Clean Water Act Section 401 water quality certification process. Through the TEMP, Idaho Power Company intends to develop, fund and implement watershed management and enhancement projects that will assist in ameliorating Snake River water temperature conditions. Idaho Power Company will work with the Implementation Committee and Board to identify Plan actions that qualify for inclusion in the TEMP. The § 401 application is currently pending before the Idaho Department of Environmental Quality and has not yet been approved.

A. **ESPA Water Users Component:**

1. **Pay-As-You-Go.**
   Pay-As-You-Go is a financial policy that funds capital outlays from current revenues rather than through incurring debt. Modified Pay-As-You-Go is an approach that funds some improvements from current revenues and others by incurring debt.

2. **Idaho Water Resource Board Contract.**
   Using the existing Board's authority to issue revenue bonds, in which principal and interest are payable entirely from the revenue received (ultimately by the people and businesses that benefit by the facility). This approach would be potentially taxable.

3. **Water Management Improvement District (WMID).**
   This approach allows for the assessment of a fee to defray part or all of the costs of a specific improvement or service. Legislative action would be required to grant the Board's authority to establish a WMIDs.

B. **State Component:**

1. **State Water Management Project.**
   General Fund Appropriations from kilowatt per hour (kwh) power franchise fee, a state sales or property tax, special product or service tax, etc.) would be used to pay for the state portion of the management plan.

2. **State Water Fund.**
   Develop a state-wide water fund, funded through a state water management project, to authorize and fund such projects. The Board would request annual appropriations to fund proposed projects.

Based on an analysis of the alternatives developed, a combination of funding strategies may represent the most viable approach to effectuate implementation of the Plan. This approach, using a pay-as-you-go strategy, the Board's existing loan and grant program, and the establishment of WMIDs will undergo further review by the Board for consideration by the legislature. Together, these strategies could finance the water user component of Plan implementation costs. The inclusion of a pay-as-you-go strategy would eliminate interest rate exposure. Board's authority to establish WMIDs would:

1. Simplify administration and collection of water-user contributions.
2. Reduce interest rate expense.
3. Augment the ability to raise funds from specific geographic areas within the ESPA.
4. Increase the likelihood of public acceptance of Plan fees.

The Board will also take under consideration the feasibility of establishing a state water project fund. Power franchise fees, sales tax, product tax, or other sources could be collected and deposited in the state water project fund and matched with contributions by water users and other partners. Where water users and implementation partners secure their 60% funding for a project or group of projects, the Board would request that the legislature authorize matching funds for the proposed projects. A collection approach that should be further evaluated involves using water districts as vehicles for collecting contributions from water user groups, including irrigated agriculture, municipalities, spring-users, and industrial/commercial users.

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