LITTLE BEAR CREEK

ADVANCE MITIGATION SITE:

CONCEPT TO CONSTRUCTION

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Snohomish County

What is Mitigation?

"The action of reducing the severity, seriousness, or painfulness of something" (Google, 2023)

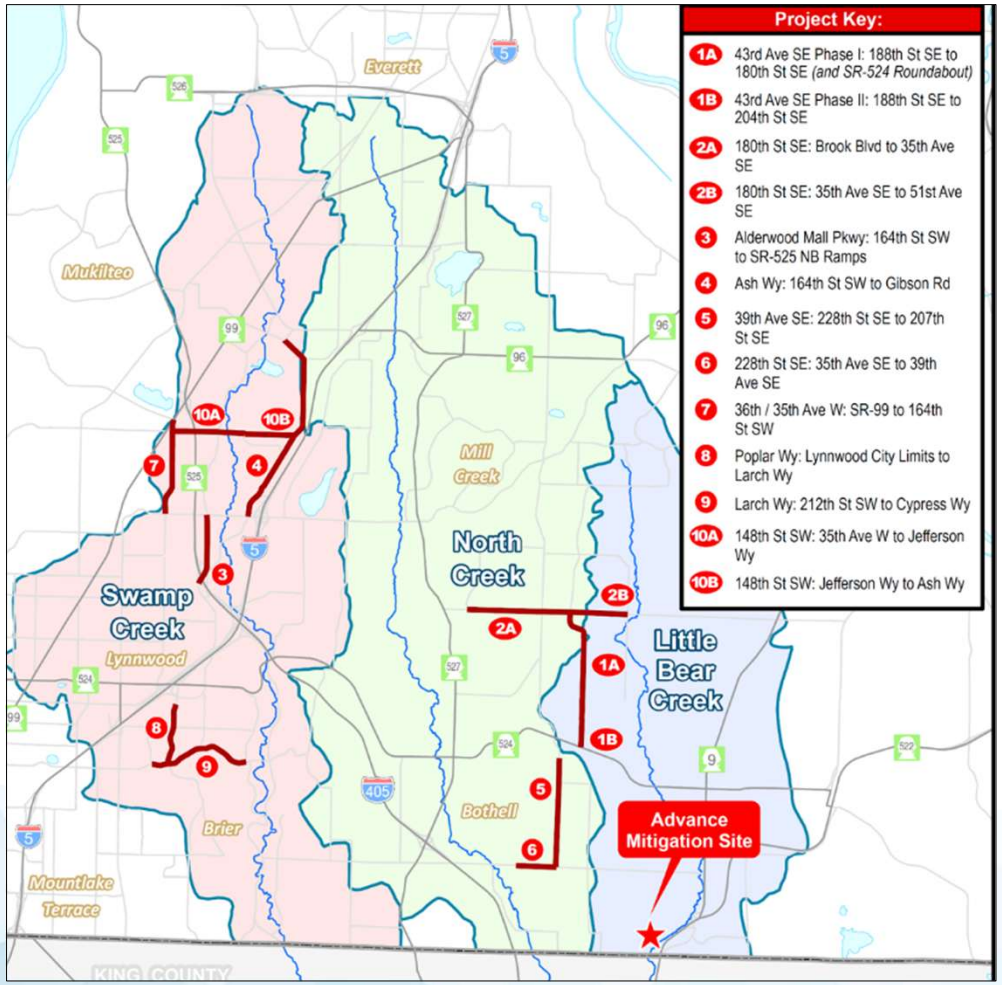
When is mitigation needed?

- When a project causes adverse impacts to a wetland, stream, river, lake, marine water, critical habitat, or critical and priority species (by filling, clearing, grading)

What Is Advance Mitigation?

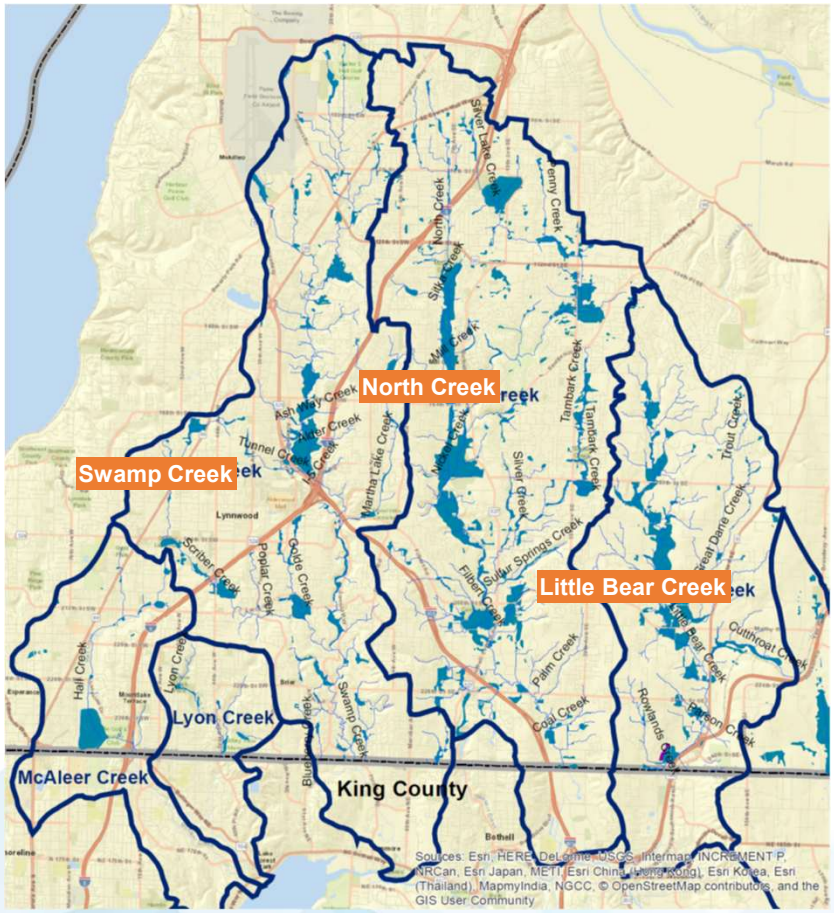
- Compensates for future expected impacts
- Implemented before an impact occurs
- Generates value or credits over a defined time
- Pre-defined and pre-approved performance standards
- Credit release by regulatory agencies when standards are met

Why Advance Mitigation? County Perspective



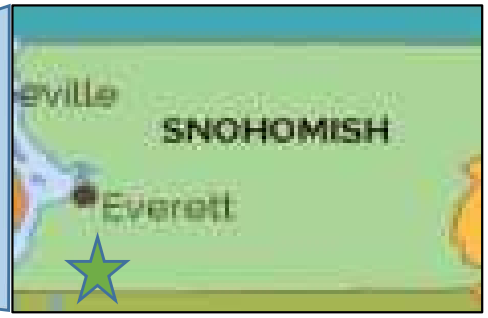
- Identified 11 transportation projects needing mitigation over next 10 years
- All projects included in the County's 6-year Transportation Improvement Plan
- Limited mitigation opportunities in SW County (northern Cedar-Sammamish Watershed)

Define Service Area



- Water Resource Inventory Area (WRIA) 8 Upper Sub-Basins
- Within only Snohomish County
- Includes 3 upper sub-basins
  - ✓Swamp Creek
  - ✓North Creek
  - ✓Little Bear Creek

Where is the Advance Mitigation Project Located?



Little Bear Creek Advance Mitigation Site (or LBCAMS) is located in southwest Snohomish County

2017 Opportunity

- Approached by landowner
- Existing human-altered conditions
- Ecological framework intact
- Reversible alterations
- 17-acres, $801K to acquire

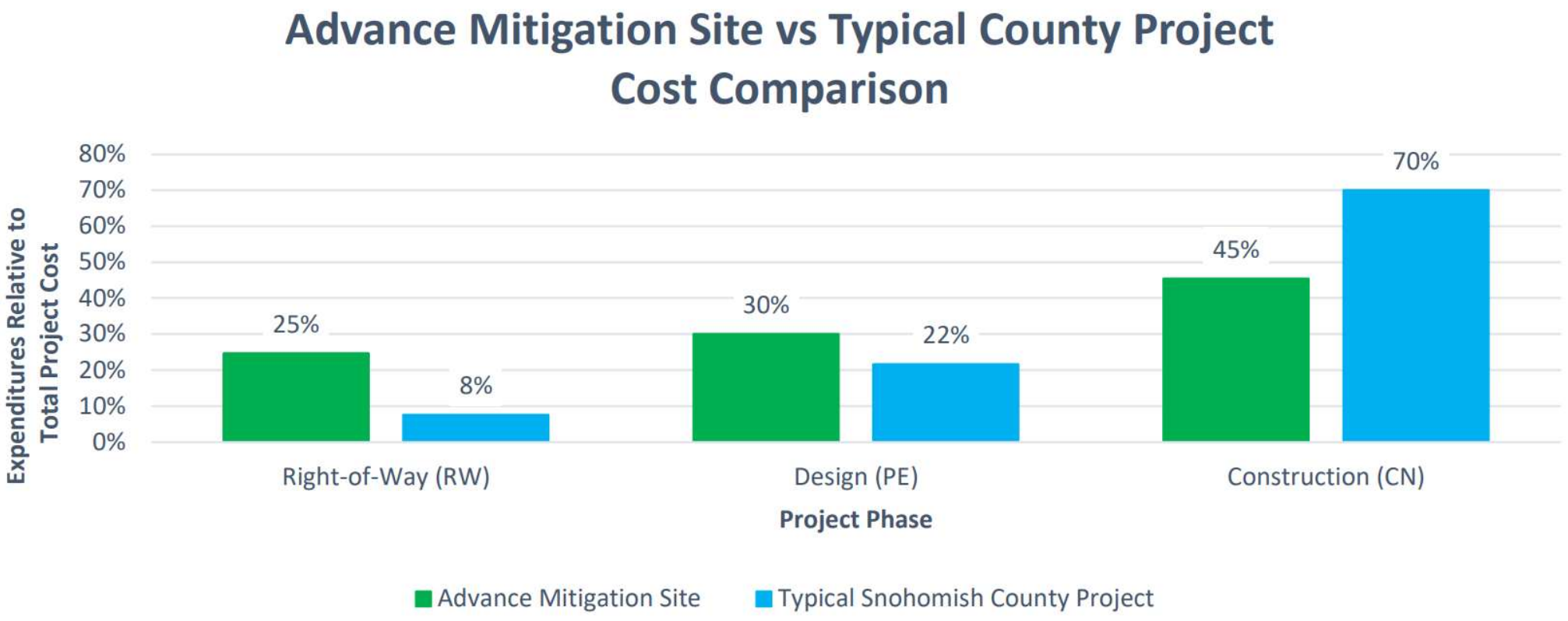
Site Potential

- Springs & high groundwater
- 4.25 acres of wetland fill
- Proximity to salmon-bearing Little Bear Creek

Funding a New Type of Project

- County Road Fund
- Management vision
- Return on investment started in 2025

Project Cost Comparison



Planning, Permitting & Design

14 Permits

5 Agencies

4 Years

Permits, Approvals, and Recorded Documents Timeline

Date Approved	Permit/Approval Type	Agency	Permit/Reference #
December 10, 2018	Demolition Permit	Snohomish County Public works (SPW)	18-151567
January 4, 2019	Notice to Proceed with Demolition	SPW	
March 29, 2019	Land Disturbing Activity Permit	SPW	
April 17, 2019	SEPA-DNS	SPW	
July 22, 2019	Well Variance	Ecology	
January 8, 2020	Hydrologic Permit Approval	Washington Department of Fish and Wildlife (WDFW)	2020-4-17+01
February 5, 2020	Critical Area Regulations Certificate of Compliance	SPW	
February 5, 2020	Shoreline Conditional Use Permit	Ecology	2020-NW-5011
October 29, 2020	Water Quality Certification Order	Ecology	18224
November 4, 2020	Letter of consistency with Washington's Coastal Zone Management Program	Ecology	
Dec 11, 2020	Certificate of Compliance with Nationwide Permit 17	Army Corp of Engineers	NWS-2019-505
June 15, 2021	Flood Hazard Building Permit	Snohomish County Planning and Development Services	19-113362 FHZ
April 22, 2022	Letter of Limited Agent Status under the Aquatic Noxious Weed Management General Permit	United States Department of Agriculture	
October 4, 2022	Conservation Covenant	Snohomish County	202210040123

Snohomish County
Planning and Development Services

DEPARTMENT OF ECOLOGY
State of Washington

USDA

MUCKLESHOOT INDIAN TRIBE

TULALIP TRIBES

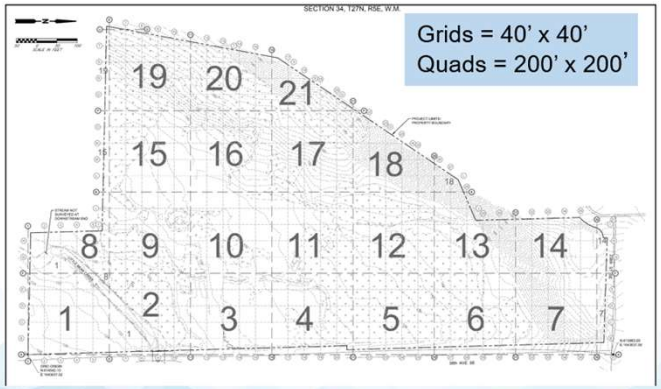
Construction Highlights

Before

- 17 structures removed
- 21,000 native plants installed
- 4.25 acres of fill removed
- Specialized grading and layout

After

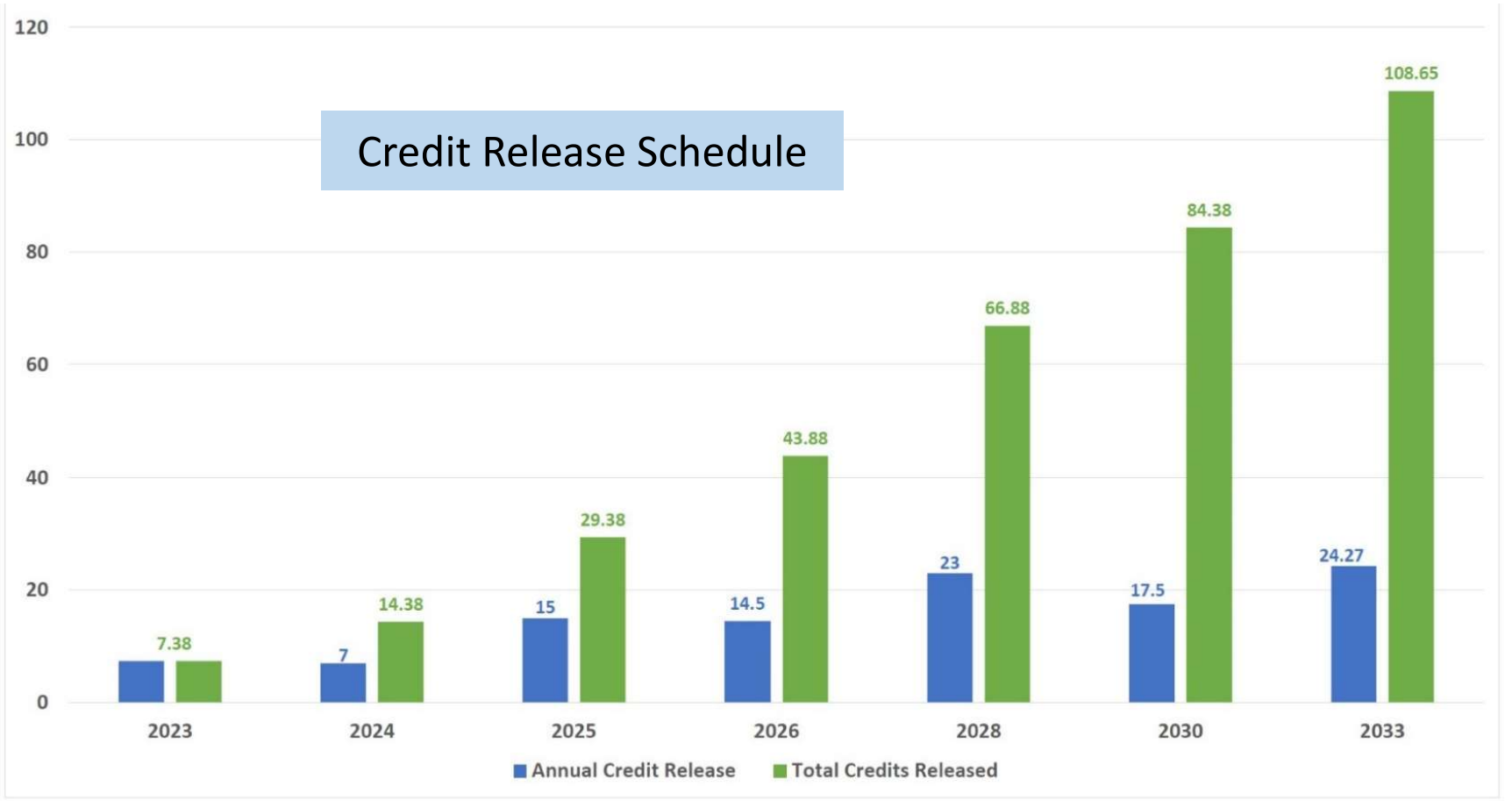
Construction Grids and Work Quadrants



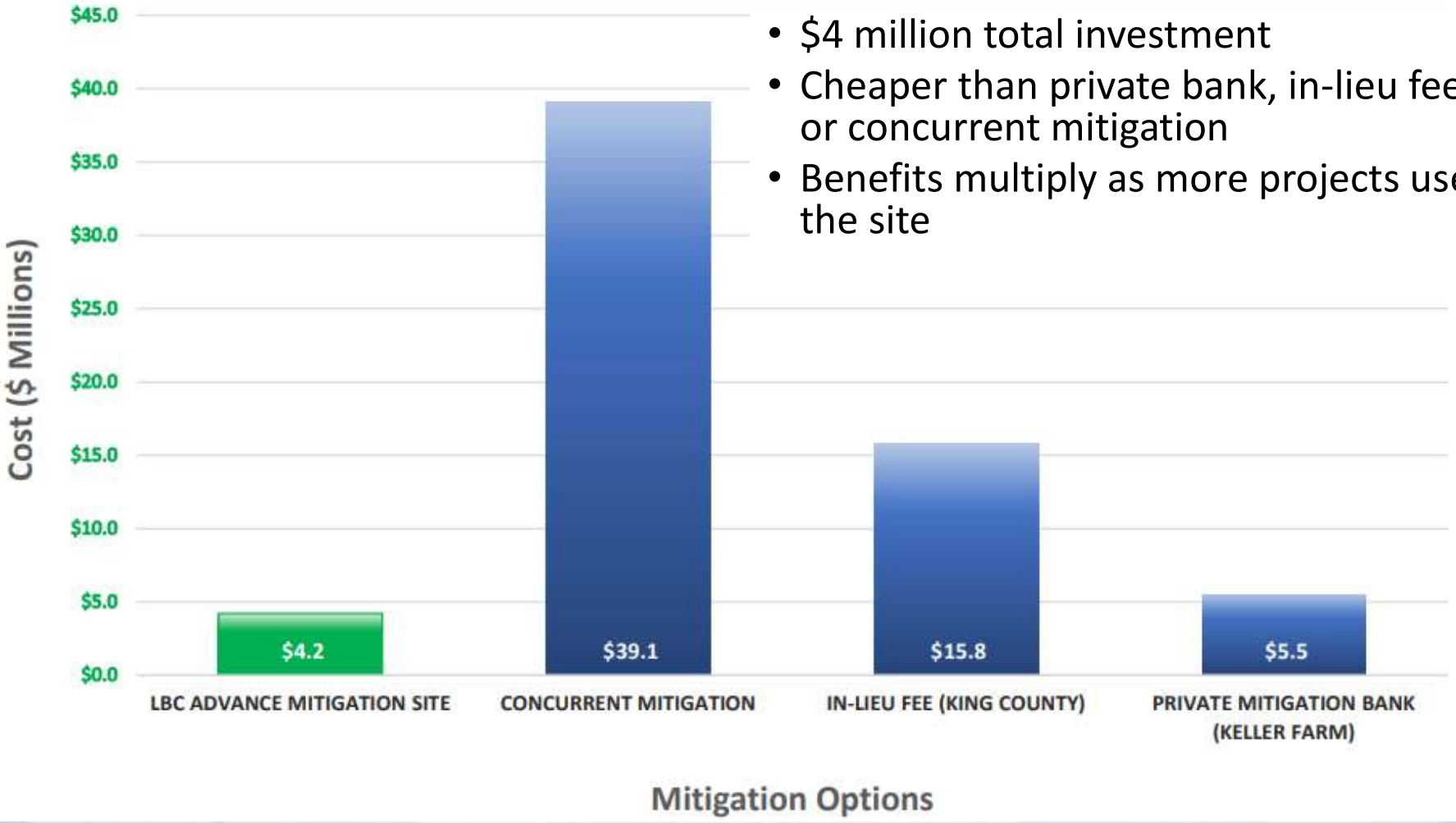
Mitigation Credits & Functional Uplift Goals

- 108.65 credits over 10 years
- Based on ecological lift
  - **Water Quality:** Pollutant source removal
  - **Hydrology:** Drainage restoration
  - **Habitat:** Invasive removal, native plantings, stream enhancement
- Tied to performance milestones

Expected Credits After 10 Years = 108.65



Cost & Return on Investment (*2021 Dollars)



- $4 million total investment
- Cheaper than private bank, in-lieu fee, or concurrent mitigation
- Benefits multiply as more projects use the site

Project Challenges

- Limited guidance on how to design and permit
  - Reviewed under the Shoreline Management Program
- Field-fit adaptations
  - Site grading and excavation

Monitoring & Maintenance

Post Construction and PSIPES Responsibilities	Staff	Associated tasks	Charge Code	Notes
Post and maintain the monitoring schedule	Monitoring Lead Biologist	Add LBCAM monitoring and maintenance to monitoring schedule in Share Point and Cartegraph, and document completion of tasks	RM100-5-13	Note targeted credit release schedule and upcoming project needs
Monitor to verify that performance standards are met	Mitigation Lead Biologist Intern	Monitor and document 4 shallow wells in created wetland areas (weekly beginning last week of Feb through mid May) Annual photo documentation at permanent photo points (June - July) Qualitative monitoring including other photo documentation as needed Quantitative monitoring	RM1	
Site Maintenance and Security	Biologist Road Maintenance or contractor	ongoing annual weed control irrigation through summer 2025 removal of temporary deer fence (target 2025) removal of irrigation system (target 2025) plant replacement (as needed, anticipated to be higher 2024 - 2025) ongoing site maintenance such as removal of dumped garbage, fence and lock repair, etc.	RM1	
Adaptive Management	Mitigation or Monitoring Lead Biologist Road Maintenance or contractor	corrective actions in the event of unforeseen challenges such as flooding, beaver damage, heavy browse, drought damage, homeless encampments, etc.	RM1	
Wetland Delineation for Created Wetlands (Year 2)	Monitoring Lead Biologists and/or consultant GIS Specialist	Delineate wetland creation boundaries only Coordinate staff or consultant work survey grade gps or ground survey boundaries prepare maps Compare findings to design boundaries and report findings to agencies		
Wetland Delineation of Site (Year 5 & 10)	Monitoring Lead Biologists and/or consultant GIS Specialist County Survey or Consulting Surveyor	Coordinate schedule and staff for delineation survey grade gps flagged boundaries (verify this is ok with agencies) complete delineation and wetland rating forms prepare maps report on findings		
Agency Credit releases	Mitigation Lead Biologist	Verify project wetland credit-debit sheet calculations, enter project debits on LBCAM ledger and update available credits	TBD	Establish internal credit use administrative process including book-keeping before credits are needed
SnoCo SCC 30.62A non-credit generating buffer mitigation request and release process and book-keeping	Mitigation Lead Biologist	Verify project buffer impact calculations, enter project NCG buffer debits on LBCAM ledger and update available credits	TBD	Establish process before mitigation is needed
Reporting	Biologist Intern	Prepare monitoring reports and figures Prepare delineation reports and figures Submit to DOE & Corps	RM100-5-13	Biologist prepare, Monitoring Lead to review, Goldenrod to Sr. Planner 2
Stewardship	Monitoring Lead Biologist	Long-term qualitative monitoring, maintenance, and adaptive management	RM100-5-13	possibly Mitigation Lead, Biologist, Intern, consultant

- Post and maintain the monitoring schedule to verify that performance standards are met
- Site Maintenance and Security
- Wetland Delineation of Site (Year 5 & 10)
- Credit generation and use tracking
- Agency Reporting
- Stewardship

County's Keys to Success

- Early site visits by agencies and tribes secured strong project support
- Firsthand view of degraded conditions reinforced urgency and value of restoration
- Restoration guided by Credit Release Performance Standards to maximize credit value
- Grading took an artistic approach tailored to future mitigation needs
- Used force account to compensate contractor for adaptive grading efforts
- Implemented a 200'x200' quadrant system, subdivided into 40'x40' grids
- Grid system improved contractor communication and quantity verification
- Still used today to guide plant replacement due to mortality

County's Lessons Learned

- Have enough budget for invasive species control
- Add specific bid item to reuse native soils (Type B) onsite
- Two bid items for wetland excavation:
  - For materials excavated and stockpiled onsite
  - For materials excavated and disposed offsite
- Schedule flexibility to allow working day suspensions
- Be thorough in documenting baseline conditions
- Set achievable performance standards
- Seek agency input on design early and often

LBCAMS Video

Thank You

Snohomish County
Public Works

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