February 14, 2023

Mindy Brooks
Senior Long Range Planner
Lewis County Community Development
2025 NE Kresky Ave
Chehalis, WA, 98532
mindy.brooks@lewiscountywa.gov

Lee Napier
Director
Lewis County Community Development
2025 NE Kresky Ave
Chehalis, WA, 98532
lee.napier@lewiscountywa.gov

Re: Supplemental Information
YMCA Mineral Lake Rezone Application
Application No. RZ20-00002

Dear Ms. Brooks and Ms. Napier:

The YMCA of Greater Seattle ("YMCA" or the "Y") submits this letter providing supplemental information and comments for the record regarding our land use application related to the proposed Mineral Lake YMCA Rezone. We ask that this letter be included in the public comments and record in this matter and provided to the Board of County Commissioners for their review.

As the applicant in this land use action, the YMCA appreciates the opportunity to further engage with the County as the Board reconsiders its original decision regarding our application for a master plan resort overlay on 500 acres of property we own on the northeast shore of Mineral Lake. We are not applying for project-level approvals at this point; our application is to determine whether the rezone and our proposed use for our property is an appropriate one under applicable land use principles. The findings presented in the staff report Section E confirms that the proposed use meets those requirements.

Background

As you know, our intention is to build a camp and center for outdoor learning, composed of cabins and support buildings spread across a small portion of the subject property. Our current plan is that remainder of the 500 acres – along with another 1,600 adjacent acres that we now own that are not part of this application – would remain in their natural state and would be used in the practice of sustainable forestry. Even with the approved overlay, our plan is that the underlying zoning will remain Forest Resource Land, and we envision that the vast majority of our property will remain undeveloped. To put the size of proposed overlay into context, more than 72% of all land in Lewis County is designated Forest Resource Land, so the 500 acres receiving the Master Plan Resort would change less than one half of one percent (0.005) of the total Forest Resource Land in the county.

In contrast, there currently is no land in Lewis County designated as a Master Planned Resort (MPR) area to support enhanced recreational activities and the tourism economy. This was a county need identified in the comprehensive plan. Confirming the recommended MPR designation for our property would meet the intent laid out by the County in creating this use option.

However, a number of uses that would normally and otherwise be allowed within an area designated as MPR land are not relevant to this application. As such, we support the staff recommendation to specifically exclude options like golf courses and condominium developments and retain only those uses that align with our much smaller scale intentions. These important restrictions will reinforce our contention and the Planning Commission's finding that this is at the same time both the best use of the property, and the least intensive or impactful development option for the area.

Both the county planning staff and the Planning Commission have recommended approval of our application. The conclusion of the county SEPA review process was a mitigated determination of non-significance, meaning that appropriate mitigation measures are available to ensure that our application will not have a significant negative impact on the environment or our neighbors. Additionally, the staff and Planning Commission conclusion was that our application successfully met the four criteria for approval for MPR designation.

It is important to remember that this application and the recommendations you have received from staff and the Planning Commission related to whether the MPR designation, as conditioned, is an appropriate one for this property. While this is not a project-specific application, we are aware that a number of issues have been raised about the design and operation of the camp. We know that we will be required to address details regarding design and development requirements as well as mitigation measures in the next phase of project planning. I can assure you that as issues arise during the project-specific planning, we are prepared and committed to responding to them and resolving them in ways that minimize impacts on our neighbors and provide certainty for the county.

Non-Project vs. Project Level Review

Throughout the review process to date, the Y has provided extensive documentation to comply with the requirements of the county's SEPA review and to answer additional questions about the property and our plans for it. Some of that material was created as we did our own due diligence on the property's suitability for a camp before we acquired the property. While that information is more germane to the eventual site-specific permit applications, in the spirit of transparency, we have made it available in the record for your review now. I would like to offer some additional comments to highlight some of that information and respond to the most-asked questions regarding our proposal, again with the understanding that many of these questions are project-specific issues beyond the scope of this application.

As a condition of Lewis County's SEPA determination, the Y will be required go through MPR and binding site plan (BSP) review and permitting, and per the MDNS, will be entering into a site-specific development agreement that spells out what measures we must take regarding important issues like water supply, wastewater treatment, transportation, and emergency response services. If we fail to meet the identified requirements, we won't be allowed to build the camp, and if we fail to build the camp, the MPR overlay would be removed and the land would revert to its underlying Forest Resource Land designation.

The detailed answers to some of the questions being asked right now will not be available until we move into that next planning phase, when we will work with the planning staff to address site-level impacts and complete that binding site plan. That work cannot begin until we have secured the overlay because planning for a camp can't take place until we know that a camp is going to be an allowable use. That limitation aside, I would like to share what we currently know on some of the most important questions being asked.

Need for Additional Outdoor Youth Camps

First, is there a need for another camp facility like this in Western Washington? The answer is clearly yes. The Y's existing camps, Orkila and Colman, are significantly oversubscribed, and we turn away far too many youth and families each year. Often our camp slots are filled a year in advance, and there are hundreds of kids on the waiting list for summer camp sessions. There also continues to be strong demand for outdoor education experiences for children of all ages, and we are at capacity to serve schools looking to provide those experiences to their students. This demand has grown and will continue to grow as a result of the state policy of providing quality outdoor education for all students in 5th or 6th grade, because there are not enough facilities to accommodate these requests. A study conducted for the Legislature found that students from disadvantaged backgrounds benefited from outdoor programs the most, and that universal access would reduce financial barriers and increase attendance.

Local camps like Cispus Learning Center here in Lewis County and the Outdoor School Consortium are working to address the gap with the help of groups like the YMCA, and we are hoping to make a larger contribution to the effort. Of note, Cispus has been and continues to be a strong supporter of the YMCA's proposal and has submitted comments of support in the record.

We know that some commissioners have had questions about the outdoor education curriculum that will be offered at the camp at the Mineral Lake property. While this subject is well beyond the scope of a land use application, we are providing some examples, including sample lesson plans, from one of our existing facilities to provide you with a sense of our approach. The exact details of Mineral Lake sessions will be tailored to the unique lake and forest environment at the camp. They will comply with Washington state educational standards, and will be developed in coordination with local schools, outdoor education specialists, and other partners when the creation of our facilities is further along and preparations are underway for welcoming campers.

The kind of camping and outdoor education experiences provided at a Y camp are more important than ever. Time spent outdoors is connected to positive mental and behavioral health, and too many kids spend too much time behind their screens. In a recent study, parents of children 8-12 years old say their kids spend three times as many hours with technology than they do outdoors. Campers learn to overcome challenges as individuals and as a group, using problem solving, curiosity, self-discipline, leadership, decision-making, and confidence in their own capabilities. Additionally, some of the more common causes of depression among youth, such as social isolation, lack of self-confidence, and lack of motivation, can be addressed in physically active, socially stimulating and cognitively challenging activities like those available in a camp setting. Finally, youth who experience the outdoors are more likely to respect and steward the land, understanding how nature and communities are connected.

Lewis County Interests and Benefits

Additionally, we know you have a particular duty to represent the interests not only of the residents of Mineral but all those living in Lewis County. With that in mind, we have been considering what other commitments we can make to enhance the benefits we will provide to your constituents.

First, questions have been raised about whether Lewis County youth and families will be able to take advantage of having a camp nearby. To ensure this benefit, we are willing to commit to providing Lewis County residents with an early registration window for all youth and family camp sessions held at Mineral Lake. This will ensure that interested local residents have every opportunity to participate in camp sessions in their own county. Our range of financial aid programs, which are available due to the generosity of donors who give to the Y, will also be made available to ensure that ability to pay is not a barrier to participation.

Second, there have been concerns about the impact ownership of the land by a non-profit organization like the Y will have on property tax collections. Despite the fact that it is a not-for-profit organization, the YMCA does not intend to apply for a property tax exemption on the portion of the property used in support of its non-profit mission. As a result, we will be paying property taxes on the land we have acquired. Additionally, because we will continue to maintain the vast majority of the site as a working forest, we also will continue to pay timber taxes on revenue from timber sales.

Finally, questions have been raised about public access to the property. While controlling access to any property is a basic property right and not a function of zoning, we recognize the importance of access for many residents of Mineral and the rest of Lewis County. We plan to form an advisory group during the next phase of project applications, and our intention would be to invite community representatives to join us to provide recommendations and discuss issues as the Y considers various options regarding access and other issues.

These specific commitments are in addition to and will enhance other general public benefits for Lewis County residents, like economic development and job creation. We expect that local companies will be able to secure contracts for work in creating the camp, and that local youth may pursue summer jobs as counselors and members of our maintenance crews.

Water Availability and Water Resources

Another important consideration is water availability. The YMCA's proposed water use will not affect the surrounding community's water supply, and will not impair other water users, the underlying aquifer, or the watershed's rivers and streams. The YMCA's conservatively estimated demand, based on approximately 500 campers and staff, is only a small fraction of the aquifer system's natural yield and is in fact very small compared to other types of uses such as irrigation, or municipal supply. In fact, the Y's proposed camp would use less water than comparable residential development or more intensive uses the property could be put to. Given the more than 2,000 acres we own, our property is contributing approximately 2,500 acre-feet of recharge to the sub-basin compared to our projected consumption of approximately 2 acre-feet. Again, this difference underscores that our proposal is the least impactful form of development for the property.

In Washington, the Department of Ecology (Ecology) is tasked with the responsibility of making decisions regarding water supply. Given how critical water is to the viability of this project, the Y took the proactive step of initiating early studies to determine whether the property would be suitable for the construction and operation of a youth camp and not impair neighboring water users. The initial study was conducted by Aspect Consulting and the results were shared with Ecology. Upon reviewing the results, Ecology determine that there is sufficient water to serve the site, and that the Y's water usage will not impair other users or the watershed's streams and creeks. Ecology's investigation recognized that most of the camp's water use will be non-consumptive, with approximately 90% of its withdrawals being returned to groundwater system and likely to provide instream flow augmentation. Ecology further recognizes that the YMCA's proposed retention of significant open space and forested acreage creates passive benefits and mitigation to any water impacts. Under the state Water Code, Ecology may only issue new water right permits if it determines that the new withdrawal is legally and physically available and that it will not impair existing rights. [RCW 90.03.290(3).] In analyzing impairment, Ecology must make a determination as to whether existing water rights, including adopted instream flows, may be impaired by the withdrawal and proposed use. Ecology found that no other wells are known to exist within about 1,000 feet of the proposed YMCA well, and any minimal drawdown within the bedrock aquifer is expected to diminish with increased distance away from the well. Based on the available water columns determined for nearby wells, no impairment is reasonably expected to occur from approval of the proposed request. Ecology's findings are summarized in its Final Report of Examination G2-30759 dated November 8, 2021

(ROE). If any person or party had any concerns about Ecology's conclusions, ample opportunity was available to protest the application, comment to Ecology, or appeal Ecology's decision. Ecology received no protests on the YMCA's application and no party appealed Ecology's decision.

On January 11, 2022, the State of Washington Department of Ecology (Ecology) issued the YMCA Water Right Permit No. G2-30759.

Water Quality (Arsenic)

The YMCA separately takes this opportunity to supplement the record and provide additional comments and context regarding water quality concerns, specifically including arsenic. The YMCA understands and is well aware of the existing arsenic impacts in area groundwater.

According to media accounts, when arsenic was discovered in private wells in the Mineral community in the early 2000s, the County's proposal at the time was to create a special purpose district and Group A public water system to serve the Mineral area, which was rejected by the community. The arsenic impacts previously noted in shallow, largely hand dug wells, are not subject to the same stringent monitoring, testing, and treatment requirements of public water systems. However, the YMCA does propose, and is required under Department of Health (DOH) regulations to develop a Group A public water system to serve the camp. *See* WAC 246-290-020. All drinking water issues (including arsenic) would be addressed and regulated by DOH, and if any issues were identified. Group A water systems have robust regulatory requirements for obtaining source approval and for ongoing testing, reporting, and treatment, as required. All such issues will be reviewed and regulated DOH in accordance with all applicable state and federal guidelines.

The County has already recognized and addressed this issue by flagging it for additional detailed review at the project stage, when more information is available, and a specific project is proposed. For example, the record reflects Lewis County Public Health & Social Services comments that "[t]he project will require a well site inspection by Lewis County Environmental Health and subsequent water system review and approval by the Washington State Department of Health Office of Drinking Water Southwest Region." The MDNS also requires that "arsenic testing" must be addressed as part of the project-level review and the required Master Planned Resort (MPR) and Binding Site Plan (BSP) application, and that mitigation associated with any such project-level impacts would be addressed at that time.

Being proactive, the YMCA has done preliminary testing which showed arsenic levels not inconsistent with other wells in the area (revealing 40.3 ppb compared to area wells tested at between 12 and 140 parts per billion). These test results are not surprising. Of further note and for point of reference, while the test results revealed some exceedances, the measured arsenic impact at the YMCA's test well (40.3 ppb) are less than County MCL standard (50 ppb) for existing Group B systems constructed before January 1, 2014. LCC 8.55.220(4). Notable, final well siting has not occurred, and the YMCA would perform additional investigation and testing at the project stage and prior to any water use or development. Here, pursuant to DOH regulations, prior to operation, the YMCA would develop a water system plan under the oversight and regulation of the DOH, which would address all issues, including arsenic,

applicable to a public water supply system, including any required testing, reporting, and treatment. As a public water system, the YMCA's water use would be subject to greater regulation, oversight, and scrutiny than individual resident wells. Treatment for arsenic is not uncommon, and utilizes well-understood and available technology and methods that can be scaled for the YMCA's needs and is protective of human health. DOH would not and will not approve any source or water system operation unless and until all applicable criteria are met.

Regarding disposal of any post-treatment residuals, per EPA guidance materials addressing treatment options (provided into the record by County staff) EPA has advised that "[b]ased on existing data, EPA does not believe that the drinking water treatment technologies used by small systems will generate hazardous wastes." Regardless the issue of post-treatment disposal is and would be regulated by EPA and DOH, and the YMCA would be required to and committed to meeting all applicable standards to be protective of human health and the environment. Under the County's direction and oversight, this issue will again be more thoroughly reviewed at the BSP stage.

The YMCA is committed to both environmental stewardship and protection of the health and well-being of the youth it serves and of its neighboring communities. Even at this advance planning stage, the YMCA has sought to proactively address issues concerning water rights, availability, and quality. At this non-project rezone stage, there is no indication that arsenic or other water quality issues are implicated by the proposed rezone of the property. Specific issues related to the YMCA's future well siting, water quality issues, treatment and disposal will be thoroughly evaluated at the project stage, including additional SEPA and County review, to ensure any actual proposed use associated with the project meets all applicable criteria and is protective of human health and the environment. The YMCA is committed to working with the County and DOH on these important issues.

Emergency Services

A similar area of concern has been emergency services – which also relates to identifying road requirements for access to and movement around the property. Again, both of these are project-level impacts that will have to be addressed in the binding site plan and resolved to the county's satisfaction before we can move forward. We have a long history of working productively with these rural fire districts, and we are confident that a similarly positive relationship can be established at Mineral Lake.

To that end, we have already funded specialized consultants, the Modern Volunteer Fire Service, to engage with Lewis County Fire District #9 and begin the process of planning for cooperation and support regarding emergency services. The Y funded the effort, but did not direct the consultant's work, which was performed directly with District #9. This work will serve as the foundation for further work to identify mutually agreed-upon fire safety and emergency response strategies as part of the site-specific development agreement. Additionally, the Y staff includes experienced grant application writers and we can offer their expertise to help the District compete for additional funding from state or federal sources.

Conclusion

In conclusion, I want to again thank the Board for reconsidering this application, and to thank the members of the staff and the Planning Commission for their many hours of hard work in reaching the recommendation that our application for a zoning adjustment be approved. Extensive materials have already been entered into the record in support of this application, and we understand that even more work will need to be done on site-level impacts before we have approval to move forward with construction. But the first step remains approval of the zoning application before you today.

We remain committed to working with the county and the community in the months and years ahead. Thank you.

Sincerely,
Gwen Bagley

Gwen Ichinose Bagley
Senior Vice President and Youth Development Officer
YMCA of Greater Seattle

Enclosures:

Center for Economic and Business Research, Washington State Outdoor School Study (Sept. 2021)

YMCA of Greater Seattle, Sample Outdoor Education Curriculum and Activities

Department of Ecology, Final Report of Examination G2-30759 (Nov. 8, 2021)

Department of Ecology, Water Right Permit No. G2-30759 (Jan. 11, 2022)

U.S. Environmental Protection Agency, Treatment Technologies for Arsenic Removal (Nov. 2005)

Department of Health, Guidance Document: Arsenic Treatment for Small Water Systems, DOH PUB # 331-210, (Nov. 2005)

Class Abstracts: Curriculum Guide

Environmental Education

Beach Walk (Highly suggested for spring schools)
Location: The Beach

Possible Learning Outcomes:
Students observe and interact with the marine inter-tidal ecosystem on a short marine hike
Students relate the beach formation with the tidal and geological cycles
Students will discover and respond to the human impact and use of beaches and rocky shores

Possible Activities:
By hiking on our beautiful beach, students observe and examine the shore community (including tidal pools, invertebrates, marine algae, and coastal wildlife) and show understanding of concepts related to tides and tidal zones. At the different coastal habitats, students explore the physical features of the beach and organisms living there. In this course, students are active participants in their own learning: they question, explore, and identify their living surroundings.

Main Vocabulary and Concepts:
Intertidal Zones
Tides and Currents
Phyla and Species of Marine Invertebrates

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5SL 4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5SL 6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5L 1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.

6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
6 NS5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6 NS8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
6 SP4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6 SP5 Summarize numerical data sets in relation to their context.

Marine Invertebrates

Location: The Marine Center and the Beach

Possible Learning Outcomes:
Students discover the characteristics of tidal zones and the animals living in them
Students identify the adaptations of marine invertebrates common to the Puget Sound
Students understand and draw connections among organisms in a marine food web and discuss role of plankton
Students discuss the effects of human impact and preservation of both local and global marine habitat

Possible Activities:
Students meet creatures from the saltwater ecosystem. Through hands-on activities, students explore how marine invertebrates have adapted to different habitats and why these critters are suited to their habitats. Depending on the tides, students will identify and get to know creatures on the beach or in the Marine Center's touch tanks. Through interactive lessons, students will uncover the interconnectedness within the marine community.

Main Vocabulary And Concepts:
Marine Invertebrate
Habitat (sandy, rocky, muddy, and sub tidal)
Niche
Adaptations (locomotion, protection, and nutrition

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5SL 4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5SL 6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5L 1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
6 NS5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

Squid Dissection

Location: Squid Lab (Morris Room)

Possible Learning Outcomes:
Students learn the internal and external anatomy of a squid.
Explore some of the Phyla of Marine Invertebrates present in the Puget Sound.
Discover, recognize and discuss squid adaptations that make the animal suited for survival in an aquatic environment.

Possible Activities:
Students will learn various steps of hygienic and safe dissection by observing an instructor dissecting a large squid. Students will then have a chance to dissect a market squid in pairs and will make and discuss observations about the external and intern anatomy of a squid. A

discussion about various adaptations and ethics of dissection will be lead.

Main Vocabulary And Concepts:
Adaptations
Basic Anatomy Terminology
Taxonomy Key Words

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST 3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Pacific Salmon

Location: The Lagoon, the Marine Center, or the Beach

Possible Learning Outcomes:
Students describe the life cycle of the Pacific salmon (egg, alevin, fry, smolt, and, adult)
Students are introduced to the unique physical adaptations salmon make between fresh and salt water environment

YMCA CAMP ORKILA

Class and Night Program Descriptions

OUTDOOR ENVIRONMENTAL EDUCATION

At Orkila, we offer a variety of classes to meet your program goals. Almost all learning takes place outside utilizing our beautiful outdoor learning areas, from forests, to beaches, to open fields. Some classes meet in the Marine Salmon Center on the waterfront.

Marine Ecology Classes

Beach Walk

By hiking on our beautiful beach, students observe and examine the shore ecosystem (including tidal pools, invertebrates, marine algae, and coastal wildlife) and show understanding of concepts related to tides and tidal zones. At the different coastal habitats, students explore the physical features of the beach and organisms living there. In this course, students are active participants in their own learning: they question, explore, and identify their living surroundings.

Marine Investigation

Students can participate in a variety of investigation options on the beach or in the Marine Center. The level of inquiry in the investigation will depend on the prior experience of the students in scientific investigation. During this class, students can collect data about species presence and potentially contribute it to a Nature Mapping database.

Plankton

Students collect samples of ocean water and discover a universe through the guided use of microscopes. They play games to learn the role of plankton in the marine food web, invertebrate and algae life cycles, and in the production of the world's oxygen. This class provides a solid foundation of what plankton are through hands-on exploration and reinforcing ideas in fun activities.

Marine Invertebrates

Students meet creatures from the saltwater ecosystem. Through hands-on activities, students explore how marine invertebrates have adapted to different habitats and why these critters are suited to their habitats. Depending on the tides, students will identify and get to know creatures on the beach or in the Marine Center's touch tanks. Through interactive lessons, students will uncover the interconnectedness within the marine community.

Super Salmon

Students have the opportunity to explore Orkila's hatchery and, seasonally, see salmon develop at different the stages of their lives. Through active role-playing and lessons, students experience the life cycle of the salmon, learn of salmons' physical adaptations, and understand salmons' role in the food chain. As our hatchery and Marine Center grow, students can become more involved and informed in the lives and experiences of salmon. Students also discuss the cultural impact of Salmon and the different stakeholders involved in the conservation or Salmon in the Pacific Northwest.

Forest and Aquatic Ecology

Forest Ecology

In hiking through our majestic trees, students explore Orkila's forests and woodland ecosystems. Along with seeing the forest as a whole, interdependent, ever-changing community, students play games and participate in activities to learn about individual species in the forest and how they live.

Forest Investigation

Students will ask a group question and perform an investigation in the Forest. Orkila instructors will guide the students through their testable experiments. The level of inquiry in the investigation will depend on the experience each group has with inquiry.

Pond Study

The pond allows students to see and explore a unique and vital ecosystem. Students use dip nets, magnifying glasses, and microscopes to identify the many kinds of plant and animal life in the pond. They might investigate seasonal changes of the pond and the life cycles of the insects that make it their habitat.

Life in the Forest

"Life in the Forest" is an advanced hide-and-seek game. Students role-play plants, herbivores, omnivores, and carnivores foraging for nutrition. After the game, there is a debriefing session to recognize and evaluate students' animal-like strategies, their adaptations, and human impact in the food chain and forest.

Garden and Sustainability

Garden & Sustainable Living

The farm and garden at Orkila are used as models for the energy cycle. Students will be able to explore the sustainability of plants, animals, and people living together. They will learn what sustainable living means by using our farm and garden as examples for discussion. Students will participate in hands-on activities such as planting, harvesting, composting, and recycling in the garden.

Earth Science

Geodesic Dome

The Geodesic dome is a fantastic structure developed by Buckminster Fuller in the late 1940's. Today, students can build one with teamwork, logs, and rope. In addition to building a Geodome, they learn the history behind it and important geometric principles that enable all the students to climb on the structure.

Rope Bridge

The title really explains the class: the students build a bridge from heavy ropes. The students also learn several knots used to anchor the bridge between two trees. Through teamwork they get to walk across the bridge they made together.

Outdoor Living Skills

Students play games and participate in practicing outdoor living skills. This class helps to inform students about what materials they need in order to be safe while camping outdoors and how to experience the outdoors with a minimum impact on their environment. If indicated beforehand, this class could be combined with map and compass skills.

Archery & Camp Skills

In this class, students have a chance to do one of their favorite camp activities in a small group. In addition to archery, instructors will pick some other camp activities including, but not limited to: Ga-Ga ball, arts and crafts, an obstacle course, a camp hike, survival skills. It is sure to be a favorite among students.

TEAMBUILDING, LEADERSHIP, and ADVENTURE

At Orkila we strive to build strong group dynamics, break down cliques, and build a strong community for your group. One way we accomplish this is by facilitating teambuilding, leadership, and adventure activities on our challenge course. You can choose the activities that fit the goals for your experience.

Safety: Our staff are expertly trained and certified to facilitate our challenge course. Our facility is held to highest industry standards for safety. Our equipment is inspected with each use and careful logs are kept to ensure all equipment is in safe and working order. While there is inherent risk involved with all activities at camp, our staff aim to minimize that risk in order to keep participants safe.

Each class is designed to take 90 minutes with a group of 15 students. You may choose which classes you want to take based on the goals and age range of your students.

Initiatives

In this class, students work together to solve physical and mental challenges. The group starts with simple problems requiring basic communication and problem solving skills. Groups work up to more difficult problems requiring trust and strong reliance on each other. The instructor uses props to create problems that must be solved with teamwork and group participation. We require groups to take this class in order to best prepare them for their time at Orkila. Initiatives allows each group to build a solid foundation in working as a team as well as gives the Orkila instructor the opportunity to get to know the students.

Initiatives II

This class advances students in group-building activities past the basics of Initiatives I. Most groups progress to the low element initiative course in the forest. The course is composed of obstacles that require the groups to cooperatively problem solve and devise safe and effective solutions. Progression through the elements is dependent on the group's ability to work together safely.

Traditional High Ropes

Students climb elements constructed of wire cable, logs, and rope that have been built from ground level to 20-30 feet high in the trees. There are four types of courses all with a different method of getting from one tree to the other—some with ropes, some with cables, and one with a log spanning the distance. Each group experiences one of the courses. In all courses, students climb up staples in a tree to get to the ropes or log.

All participants use safety equipment: helmets, belay lines, harnesses, and other climbing safety gear. Staff also take care to minimize the physical and emotional risks inherent in these activities, allowing the activity to provide a sense of perceived risk for those who choose to take on this challenge. Each participant requires steady support from the rest of the group both emotionally and physically. In most cases, we use a group belay facilitation which allows for more students to be involved even when they are not the one climbing. Afterwards, staff facilitates a debriefing discussion to help student's process their experience and express their feelings.

Giant Swing

In the Giant Swing, the participant decides how far the class should pull the rope so that the participant is high in the air. The participant then releases themselves into a harnessed, free-fall swing. During this activity all participants use safety equipment: helmets, belay lines, harnesses, and other climbing gear. Staff also take care to minimize the physical and emotional risks inherent in these activities, allowing the activity to provide a sense of perceived risk for those who choose to take on this challenge. Each participant requires steady support from the rest of the group. Afterwards, staff facilitates a debriefing discussion to help student's process their experience and express their feelings.

Climbing Tower

Students climb an outdoor climbing wall consisting of various hand and foot holds to a height of up to 50 feet. Staff also take care to minimize the physical and emotional risks inherent in these activities, allowing the activity to provide a sense of perceived risk for those who choose to take on this challenge. The climbing wall, for some students, is a physical challenge, while for others it provides more of a mental challenge to overcome. The climber is in a harness and belayed by an instructor or a group of students. Each participant requires steady support from the rest of the group. Afterwards, staff facilitates a debriefing discussion to help students process their experience and express their feelings.

Washington State Outdoor School Study

Prepared by the Center for Economic and Business Research

Authors:

Bethany King

Brianna Berkson

Ellie Potts

Jackson Lapinski

Niki Crowe

Tate Van Patten

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WESTERN WASHINGTON UNIVERSITY

CENTER FOR ECONOMIC AND BUSINESS RESEARCH

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About the Authors

The Center for Economic and Business Research (CEBR) is an outreach center at Western Washington University located within the College of Business and Economics. In addition to publishing the Puget Sound Economic Forecaster, the Center connects the resources found throughout the University to assist for-profit, non-profit, government agencies, quasi-government entities, and tribal communities in gathering and analyzing useful data to respond to specific questions. We use a number of collaborative approaches to help inform our clients so that they are better able to hold policy discussions and craft decisions.

The Center employs students, staff, and faculty from across the University as well as outside resources to meet the individual needs of those we work with. Our work is based on academic approaches and rigor that not only provides a neutral analytical perspective but also provides applied learning opportunities. We focus on developing collaborative relationships with our clients and not simply delivering an end product.

The approaches we utilize are insightful, useful, and are all a part of the debate surrounding the topics we explore; however, none are absolutely fail-safe. Data, by nature, is challenged by how it is collected and how it is leveraged with other data sources. Following only one approach without deviation is ill-advised. We provide a variety of insights within our work – not only on the topic at hand but also the resources (data) that inform that topic.

We are always seeking opportunities to bring the strengths of Western Washington University to fruition within our region. If you have a need for analysis work or comments on this report, we encourage you to contact us at 360-650-3909 or by email at cebr@wwu.edu.

To learn more about CEBR visit us online at https://cebr.wwu.edu or follow us online through your favorite social media stream.

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 instagram.com/wwucebr

The Center for Economic and Business Research is directed by Hart Hodges, Ph.D. and James McCafferty.

Executive Summary

The research presented within this report was conducted on behalf of the Washington State Legislature, which requested that Western Washington University's Center for Economic and Business Research (CEBR):

> *Assess the feasibility and benefits of expanding outdoor residential school programs to equitably serve either all fifth and sixth grade students, or only fifth or only sixth grade students statewide. The study shall explore the equity concerns exacerbated by the COVID-19 pandemic in the areas of outdoor recreation and outdoor learning experiences, with a focus on using physical activity and exposure to natural settings as a strategy for improving health disparities and accelerating learning for historically underserved populations. The study must also consider programs and facilities at outdoor residential schools, youth camps, and state parks and assess the impact of COVID-19 on these institutions, and recommend strategies to preserve and expand capacity for outdoor school.*

Before reading farther into this report, it is important to note that there is no standard term for type of programs Washington State is interested exploring. In the literature, the terms outdoor school, outdoor education, outdoor learning, environmental education, and environmental learning are all commonly used. In some cases, "outdoor school" is used to specifically reference residential (overnight) outdoor education. To account for the diverse needs of Washington students and best practices identified in the literature, this report considers both residential and day programs. Throughout the report, the terms "outdoor school" and "outdoor education" are used interchangeably to describe any program where learning occurs outdoors, with a focus on multi-day programs.

Another important factor to consider in this research is the geographic distribution of outdoor education programs (supply) relative to the distribution of 5th or 6th grade students (demand). For this analysis, we disaggregate data into Washington State's 12 Workforce Development Areas (WFDAs). These regions are designed to capture typical workforce commuting patterns. In this study, it is assumed that many schools looking for outdoor education programs will not commute beyond their WFDA.

Figure 1: Washington State Workforce Development Areas

Source: *Washington Workforce Training and Education Coordinating Board*, https://www.wtb.wa.gov/planning-programs/regional-workforce-plans/

To guide the development of the research methodology and to help assure inclusion of programs, CEBR assembled a group of 16 advisors from Washington State agencies, outdoor school advocacy organizations, school districts, tribes, and outdoor education programs. These advisors provided feedback on study methodology and survey development, as well as promoting the study within their circles of influence.

Table 1: Outdoor School Study Advisory Group

Name	Organization
Aliza Yair	Washington State Department of Children Youth and Families
Cassie Anderson	Camp Fire Snohomish County
Chase Buffington	Cispus
David Troutt	Nisqually Nation
Elizabeth Schmitz	Washington State Office of Superintendent of Public Instruction
Ellen Ebert	Washington State Office of Superintendent of Public Instruction
Greg Barker	Association of Washington School Principals
John Haskin	Islandwood
Jon Snyder	Washington State Governor's Office
Karissa Lowe	Cowlitz Tribe
Michele Branconier	American Camp Association
Rex Burkholder	We Win Strategy Group
Roberta McFarland	Camp Waskowitz
Scott Seaman	Association of Washington School Principals
Todd Graves	Ridgefield School District
Trevor Greene	Yakima School District

Report Structure, Key Findings, and Recommendations

The report is organized to seven sections. Key findings and recommendations from each section are summarized below. Note that grants for outdoor school are anticipated to be allocation based, not competition based. Additionally, note that it is anticipated that each student would be able to attend outdoor school once, either in 5th grade or 6th grade depending on the needs and preferences of the school district. It is unlikely that 5th and 6th grade students would attend outdoor school together.

Background on State Outdoor School Programs

- The most established statewide outdoor school program is in Oregon
    - The program was initially started in 1957, with updates more recently in 2016
    - Oregon provides funding for all 5th or 6th grade students to attend a 3 to 5-day outdoor school program
- Other states with some level of statewide coordination on outdoor education include Alaska, Arizona, California, Colorado, Maine, and New Mexico

Outdoor School Landscape in Washington State

- Outdoor Education Programs
    - Surveyed 86 outdoor education programs
        - Representation from all 12 Workforce Development Areas
    - Interest in expansion:
        - 97% can expand their program or months of operation
        - 91% have some level of interest in expansion
        - 59% have a plan to expand, but need funding
    - Barriers to expansion:
        - Funding is a barrier for 87% of respondents
        - Staff acquisition/retention is a barrier for 78% of respondents
        - Facility constraints are a barrier for 73% of respondents
    - A series of 5 discussion groups yielded insights into best practices, equity, and expansion
        - Many of the findings from these groups were used to inform the "Expansion Opportunities and Partners" section of this report
- Schools and School Districts
    - Surveyed 161 schools (public/private), school districts, and homeschool organizations
        - Representation from all 12 Workforce Development Areas
    - Typical outdoor education offerings:
        - 41% of respondents typically offer an outdoor education program
        - 78% of these outdoor education programs are residential (overnight)
    - Ideal outdoor education offerings:
        - In an ideal world, 98% of respondents would like to offer outdoor education for their students
        - 79% would like to attend residential outdoor education
        - 89% of respondents agree that providing funding to make outdoor education free for all students is the best way to ensure equitable access
    - Three discussion groups with principals and superintendents provided insight into the benefits, equity, key attributes, and expansion of outdoor education
        - Findings from these discussion groups helped to inform the recommendations and partners included in the "Expansion Opportunities and Partners" section of this report

Equity in Outdoor Education

- While all demographic groups report significant benefits from outdoor education programs, students from disadvantaged backgrounds tend to benefit the most
    - Benefits from outdoor education may spill over to help close achievement gaps and achieve other lasting equity enhancing outcomes
- Access to outdoor school is not currently distributed equitably by race and income
- Universal access to state-funded outdoor education increases attendance by reducing financial barriers to attendance

- ***Recommendation***: Curriculum and camp environments should be designed to allow children from all backgrounds and of all abilities to feel like they belong and to facilitate equitable learning
- Washington State's outdoor education capacity is threatened by closures due to COVID-19, thus potentially exacerbating inequity with economic consequences for the rural economies surrounding these programs

Outdoor School Best Practices and Benefits

- A variety of best practices for outdoor education were identified through surveys, discussion groups, and literature reviews. Based on the literature, three key best practices stand out, including the creation of:
    - An environment purposed for exploration
    - Strong connections and communication between outdoor education programs and the communities they serve
    - An emphasis on environmental stewardship among students
- The list of benefits for students who attend outdoor school is long; however, they can be summarized in two categories – educational and SEL (social and emotional learning)
    - These benefits have been shown to carry over to the classroom and persist long after the student returns from their outdoor education experience
- In addition to students, many other groups benefit from outdoor education including:
    - School teachers
    - Outdoor education staff
    - Communities surrounding outdoor education programs

Outdoor School in WA: Supply, Demand, and Cost

- We estimate that it would cost Washington State between ***$28 million*** (60% participation) and ***$52 million*** (100% participation) annually to fund outdoor education for 5th or 6th grade students
    - Uses per-student costs based on Oregon State University's research and Oregon's threshold values for outdoor school funding
        - Costs include provider fees, stipends/personnel expenses, program costs incurred by the school, and unreimbursed transportation costs
    - Assumes students can receive funding for 3-5 days and 0-4 nights of outdoor education
    - Overall participation rate and distribution of students between overnight and daytime programs are key factors in estimating total cost
        - As a statewide program becomes more established, the total participation rate is likely to increase along with participation in longer, residential programs
- ***Recommendation***: Flexibility of funding is important, as transportation costs for outdoor education can often be a significant barrier for schools

- To estimate whether there is sufficient outdoor school capacity in Washington State to support all 5th or 6th grade students, we compare the outdoor education capacity reported by programs within our survey to the regional population. Potential capacity shortages were identified in the following Workforce Development Areas:
    - Benton-Franklin
    - Eastern
    - Seattle-King
    - Snohomish
    - Southwest
    - Spokane

Economic Impacts of Outdoor School

- The report also considers the economic impacts of outdoor school funding by comparing to models:
    - "Economic Analysis of Outdoor Recreation in Washington State" by Johnny Mojica and Angela Fletcher at Earth Economics
    - An economic impact analysis of the *Recreational and Vacation Camps (Except Campground)* sector (NAICS 721214) using JobsEQ software
- Total sales/output economic impacts for every $1 million spent on outdoor school are estimated between $1.65 million and $1.84 million
- Total employment impacts for every $1 million spent on outdoor school are estimated between 11.2 and 12.5 full time equivalents (FTE)
    - Note that 8 of these FTEs represent a potentially approximate 16 full-time seasonal outdoor school employees

Expansion Opportunities and Partners

- A key factor in a statewide expansion of outdoor education capacity is collaboration between groups. Key players include:
    - Current Outdoor Education Programs
    - WA State Parks
    - WA Department of Natural Resources
    - WA Department of Fish and Wildlife
    - WA Office of Superintendent of Public Instruction
    - K-12 Educators
    - Other State Agencies
    - Western Washington University
    - Other Outdoor Education and Community Groups
    - Tribal Communities
    - Foundations and Other Funding Partners
    - New Outdoor Education Programs

- ***Recommendation***: Fund at least one outdoor school program at a Washington State Parks and Recreation (Parks), Department of Natural Resources (DNR), or Department of Fish and Wildlife (WDFW) facility in each Educational Service District (ESD)
    - This ensures equitable access for students in all geographic regions and offers high levels of accessibility for students with disabilities
    - Initially, Parks may just provide facilities while the school or school district provides instruction, activities, and supervision; however, in the long term the goal would be to have Parks staff involved in curriculum design and implementation

Policy and Funding Options

- While there is no right way to run a statewide outdoor school program, flexibility is crucial to support the needs of all students and schools
    - Areas for flexibility include duration (number of days), residential vs. day programs, and learning outcomes
    - ***Recommendation***: Allow both residential and day programs ranging in length from 3-5 days to be eligible for outdoor school funding
    - ***Recommendation***: Create a list of standard learning outcomes for outdoor school and require that programs meet at least a certain number of outcomes to be eligible for funding
- Additional insights into policy design were gathered from Rita Bauer, Assistant to the Program Leader at Oregon State University's (OSU) Extension Service
    - OSU's Extension Service has overseen distribution of Oregon State's outdoor school funding to school districts since the 2017-2018 school year
- Outdoor education has strong connections to career-focused learning and the outdoor recreation industry
    - Research has shown outdoor education to benefit students in a variety of career-connected disciplines (i.e. STEM, natural history, and sustainability) and skills (i.e. teamwork and leadership)
- Funding strategies can include:
    - Appropriations from the State general fund
    - Appropriations from State lottery or other funds
    - Interest on moneys in the fund
    - Grants from various companies and nonprofits
    - Donations (individual, foundations, associations)
    - ***Recommendation***: A key factor for the long-term success of a statewide outdoor school law is sustainable and reliable funding. As such, appropriations from the general fund may not be ideal because they are subject to fluctuations due to economic conditions.
- ***Recommendation***: Washington State's Recreation and Conservation Office (RCO), in partnership with the Office of the Superintendent of Public Instruction (OSPI), may be well positioned to administer funds for a statewide outdoor school grant given its experience administering grants through the No Child Left Inside program. It is also recommended to involve the Association of Washington School Principals within this process.

Background on State Outdoor School Programs

There is a long history of outdoor school in the United States; however, few states have longstanding statewide programs and substantial infrastructure to support them. In this section, we will consider Oregon, Colorado, New Mexico, Arizona, Alaska, Maine, and California as case studies.

Note that for most statewide initiatives and programs, their costs per student are not publicly available. It is also worthwhile considering program start-up and operational costs. For programs with publicly available figures on funding, the numbers are included below. However, this is typically an annual figure without breakdowns by cost type.

Oregon

The Outdoor School program in Oregon was first established in 1957. It is geared towards serving 5th or 6th graders throughout the state. The program mostly consists of residential programs where the students stay for between 3-5 nights. This time outdoors is packed with various learning experiences that relate to and highlight the curriculum taught in traditional schools. One of their goals over the years has been to make these outdoor schools inclusive, especially for children with specific needs who might otherwise not be given outdoor school opportunities. An interesting trait of the Oregon program that is not included in other statewide programs is its opportunities for high school students to volunteer as counselors.

The original program had become too underfunded to reach Oregon's outdoor school aspirations. Through the efforts of the State Legislature, the State Lottery, and Oregon voters, Ballot Measure 99 was passed in 2016. This ballot measure secured long-term funding to help every student at the 5th or 6th grade level participate in an outdoor school program. This system of funding sets aside a minimum of 5.5 million dollars and a maximum of 22 million dollars from the state lottery ever year (adjusted routinely for inflation over time) to allow for a reliable source of funds for outdoor school programs.

Outdoor school programs are not mandatory, but rather something that public and charter schools can opt in. Private schools can also ask for Outdoor School funding from the Gray Family Foundation- another collaborator looking to provide outdoor school for every student. Oregon State University's Extension Service department oversees the distribution of funds, as well as management, standards, and support for outdoor schools across Oregon.

Sources:

"History of Oregon's Outdoor School Law." *Friends of Outdoor School*, https://www.friendsofoutdoorschool.org/statewide-ods

"Lottery Dollars Support Outdoor School." *Oregon Lottery*, https://www.oregonlottery.org/outdoor-school/

"Oregon Outdoor School Lottery Fund, Measure 99 (2016)." *Ballotpedia*, https://ballotpedia.org/Oregon_Outdoor_School_Lottery_Fund,_Measure_99_%282016%29

Oregon State University: Extension Service Outdoor School, https://outdoorschool.oregonstate.edu

Colorado

In Colorado, a statewide plan to implement outdoor education began in 2010 with the Colorado Kids Outdoor Grant Program. From that piece of legislation, the State Board of Education was tasked with designing a comprehensive outdoor education plan for the state's youth that would lend itself to increased environmental literacy in the coming generations. The plan (Colorado Environmental Education Plan or CEEP) sought to incorporate and partner with pre-existing organizations, communities, schools, business owners, and more to ensure long-term success.

A leadership council consisting of a variety of individuals and groups was created to implement CEEP. In addition, there was representation from the Department of Education, the Department of Natural Resources, and numerous other agencies that depend on and use the environment. Among other things, CEEP has generated a wealth of writing linking school curriculum subjects to outdoor education.

The outdoor education network in Colorado is loosely organized and supported by the Colorado Alliance for Environmental Education, a nonprofit organization. This organization helped to put together the CEEP plan, which was created after prompting from the legislature. The CEEP plan has not resulted in a government-sponsored or government-run program. Instead CEEP plays a supportive and collaborative role working with the existing network of outdoor education providers, schools, families, and sponsors. Environmental education has continued in Colorado on a case-by-case basis, with each school district deciding what works in their situation.

Sources:

"About CAEE." *Colorado Alliance for Environmental Education*, https://caee.org/about-caee

Colorado Department of Education and Department of Natural Resources. "Colorado Environmental Education Plan: Leveraging Resources to Advance Environmental Literacy." *Colorado Department of Education*, 2012, https://cpw.state.co.us/Documents/Education/TeacherResources/CEEP/CEEP2012FINAL2.pdf

"Our Philosophy." *Colorado Outdoor Education Center*, https://www.coec.info/our-philosophy.html

New Mexico and Arizona

These two programs are not statewide and do not rely on government funding, yet they have impressive coverage. Both the New Mexico (1991) and Arizona (1980) non-profit programs have existed for multiple decades, with major updates to plans and goals within the past 5 years. The two programs collaborate closely, since both EENM (Environmental Education of New Mexico) and AAEE (Arizona Association for Environmental Education) work together with the Southwest Region of the USDA Forest Service. This collaboration led to the founding of an umbrella organization: the State of Outdoor and Environmental Learning (SOEL) which provides resources for environmental education providers, catalogs the opportunities from the two state organizations (you can search for providers in either state), offers resources for parents and educators, and much more. Their programs seek to integrate environmental education with local K-12 educational curriculums.

New Mexico's organization has a new, ambitious goals of having every child, at every grade level, engage in some level of outdoor education every day. Both programs have a strong focus on working to ensure equity for the children participating and provide extensive resources online outlining how they are working towards being more equitable and inclusive. The programs embrace a wide variety of outdoor education providers and do not have a set template for what qualifies as an outdoor school program. They also welcome collaborations with local Native American tribes. Both programs are non-profit organizations, so rely on funding from donations, fundraising, grants, etc.

Sources:

"EENM's Vision, Mission, and Theory of Change." *Environmental Education of New Mexico,* https://eenm.org/about/

"The Arizona Environmental Education Certification Program." *Arizona Association for Environmental Education,* https://www.arizonaee.org/arizona-environmental-education-certification-program/

"The State of Outdoor and Environmental Learning." *Environmental Education of New Mexico,* https://public.tableau.com/app/profile/eileen.everett/viz/shared/MK793TYBH

Alaska

Outdoor Education in Alaska has mostly been spearheaded by volunteers, with the main organization being the Alaska Natural Resource and Outdoor Education Association that began in 1984. It is a nonprofit that provides support and structure for educators, parents, and students. They also connect a large network of providers across the state, thus making programs easy to find for schools, parents, and students. This is quite an impressive organization and resource for Outdoor Education across Alaska.

Sources:

"Our Mission." *Alaska Natural Resource and Outdoor Education Association,* https://www.anroe.net/about/

Maine

There is currently no statewide program in Maine, but there are several advocacy groups and initiatives that have surfaced recently. The Nature Based Education Consortium has several groups, one that worked for climate education to be included in Maine's Climate Council Action Plan. Currently, the same group is working towards climate education legislation. A different advocacy group within the Nature Based Consortium is focusing on telling the stories of BIPOC, LGBTQ+, and other marginalized community members who have strong relationships with the outdoors.

While Maine does not have a statewide outdoor school program, there was a Joint Resolution passed this year in the State Legislature recognizing the values of environmental education to better support youth. Maine is not only prioritizing teaching students about the environment to foster environmental awareness and compassion, but they also hope to teach about climate change to involve the next generation in the conversation from an early age.

Sources:

"Climate Education Advocacy Working Group." *Nature Based Education Consortium,* https://www.nbeconsortium.com/climate-change-education

California

In California, there is a very recent (2020) campaign to create outdoor education opportunities for students at every grade level. This effort has a focus on equity — providing outdoor education for those who can receive the most benefit from it and are simultaneously not likely to get the opportunity to participate otherwise. While there is not an existing statewide program in California, it shares similar goals to Washington State's considerations for statewide outdoor education.

Sources:

California Statewide Outdoor Learning, https://www.californiasol.org/about

Outdoor School Landscape in Washington State

Washington State has a long history with outdoor school and was a national leader in the movement in the 1930s-1970s. The following timeline draws from research by Outdoor Schools Washington:[1]

1939
- First outdoor school in the United States is started near Ellensburg, WA

1940s-1950s
- Outdoor education programs run by Washington school districts are popular

1969
- Washington Appoints the first Outdoor Environmental Education Supervisor

1970s
- OSPI acquires and runs an outdoor education program through Cispus

1981
- OSPI delegates management of Cispus to the Washington School Principals' Education Foundation (WSPEF)

1980s-Present
- Statewide funding and support for outdoor school is inconsistent
- Outdoor school access is not equitable (only ~10% of students attend and tend to come from higher-income schools/districts)
- "Pursuant to RCW 28A.230.020 instruction about conservation, natural resources, and the environment shall be provided at all grade levels in an interdisciplinary manner through science, the social studies, the humanities, and other appropriate areas with an emphasis on solving the problems of human adaptation to the environment"
- Washington creates No Child Left Inside Grant

2021
- Washington provides the Washington School Principals' Education Foundation (WSPEF) with $10 million to send 20,000 students to outdoor school
- $4.5 million allocated to No Child Left Inside grants
- Legislature funds this study into the feasibility of state-funded outdoor school for all 5th or 6th grade students

[1] "It All Began Here: Outdoor Schools in Washington State." *Outdoor Schools Washington*, 2021, https://www.outdoorschoolswa.org

Outdoor School Programs

To better understand the outdoor school landscape in Washington, the Center for Economic and Business Research at Western Washington University (CEBR) conducted both a quantitative survey of outdoor education programs and a series of qualitative discussion groups. This research provides insight into outdoor education capacity, distribution, best practices, programmatic offerings, benefits, equity, and accessibility in Washington State.

Survey Results

CEBR compiled a very broad contact list of potential outdoor education programs. These programs were contacted weekly by email and twice by phone to remind them to participate in the survey. In addition, the research was promoted by the American Camp Association (ACA), the Washington Outdoor School Coalition (WOSC), and individual outdoor education programs. The survey ran from July 8th through August 18th and gathered 124 responses.

The initial contact list was generated by both primary and secondary research, which knowingly identifying organizations that may not offer programs. The desire was to cast a wide net to capture information from any organization that self-identified its programming as outdoor education. Throughout the study period additional organizations were added to the list as identified.

Of those who responded, 69 percent offer some form of outdoor education. In terms of expansion, the most common barriers are funding and staff acquisition/retention. Over 90 percent of respondents are willing to consider expansion either of their facility or of their months of operation. For more detailed results, see *Appendix A – Outdoor School Program Survey Results.*

Program Discussion Groups

To fully understand the diverse perspectives of outdoor education program stakeholders, discussion groups were conducted during August and September of 2021. Survey participants were asked if they would like to take part in discussion groups. Those who indicated interest were asked to sign up for two-hour sessions to discuss their thoughts, feelings, and opinions about outdoor education.

A significant barrier to participation in this process was the timing of the research. For some providers we requested their assistance at either a peak season (summer camps) or at the seasonal break (dedicated outdoor education facilities) which greatly diminished their ability to participate in extended research engagements such as a discussion group. Responses are shown in more detail in *Appendix B – Outdoor School Program Discussion Groups*.

Interviews of National Leaders in Outdoor Education

In addition to talking to outdoor education programs in Washington State, it was important to also gather feedback from national leaders in the outdoor education field. Each interview covered topics including best practices, the benefits of outdoor education, expansion planning, as well as equity and accessibility. Detailed responses are shown in Appendix *C – Interviews with National Leaders in Outdoor School*. Due to busy schedules, some interviewees were unable to provide input on some questions. The three leaders interviewed were:

Ross Turner

Ross Turner is the president of Guided Discoveries, which offers residential outdoor education programs at various locations within California and Virginia. He began his career as a high school science teacher in the 1960s. Soon he realized the value of teaching science outdoors and began on a journey learning about outdoor education programs. In 1978, Turner and his wife started a nonprofit outdoor education program on Catalina Island in an old boarding school. Initially, they served high school students, but later expanded to younger students. Now they have three locations that serve approximately 60,000 4^{th}-9^{th} grade students per year.

Tom Madeyski

Madeyski has worked since 1990 as the executive director for San Diego YMCA Camps. In the 1970s, Madeyski worked for the YMCA in Pennsylvania as the organization began a push to offer programs year-round. In some cases, this meant leasing out camp facilities to outdoor education providers who were looking for residential options. In other cases, YMCA camps developed their own outdoor education programs. He currently oversees the YMCA's residential outdoor education programs for San Diego.

Jane Sanborn

Jane Sanborn is co-chair of the American Camp Association's National Government Relations Committee, as well as the director of development at Sanborn Western Camps in Colorado and a board member for the Colorado Outdoor Education Center (COEC). She has been involved in with summer camps and outdoor education for more than 50 years. She described COEC as a pioneer in the realm of summer camps that have developed and sustained successful residential outdoor education programs.

Schools and School Districts

In addition to gathering data and input from outdoor education programs, the Center for Economic and Business Research (CEBR) surveyed and conducted discussion groups with staff from public schools and districts, private schools, and homeschool organizations. This research provides insight into pre-pandemic outdoor education offerings by schools, COVID-19 impacts, and preferences for the future.

Survey Results

CEBR received a contact list from the Association of Washington School Principals (AWSP) that included school principals (K-12), school district superintendents, and educational service district (ESD) superintendents. The list also included contact information for leadership in many private schools and Bureau of Indian Education (BIE)/Tribal Schools. CEBR conducted additional research to add charter schools, magnet schools, and homeschool organizations to the list.

Between August 2nd and September 7th, the survey gathered 161 responses. In addition to weekly email reminders from CEBR, AWSP also promoted the research to their members. CEBR also called principals, with a focus on schools serving 5th or 6th grade students in counties without completed survey responses. Respondents represent all 12 Workforce Development Areas and all but 7 counties.

In typical years, 41 percent of respondents offer some form of outdoor education to their students – 63 percent in 5th grade and 42 percent in 6th grade. When asked, 98 percent of respondents reported that they would like their students to participate in outdoor education at least once during their K-12 education. Data on responses to all survey questions are shown in *Appendix D – K-12 School and District Survey Results*.

School Discussion Groups

Survey participants were asked to participate in a discussion group to add more depth to the narrative surrounding outdoor school. Respondents could choose from four dates throughout August and September of 2021. Again, the timing of the research posed a significant barrier to participation. Most educators were out of the office over the summer, and when they returned, they were busy planning for school year, preparing COVID-19 precautions, and managing the first weeks of school. As such, most survey respondents opted not to participate in further research and many who signed up for discussion groups had last-minute issues at their schools which took precedence over the discussion groups.

Moving forward, participants would like to see student involvement in outdoor education expansion. They also suggested that legislators visit an outdoor education program while students are there to see the benefits for themselves. Detailed discussion group findings are presented in *Appendix E – K-12 School and District Discussion Groups*.

Equity in Outdoor Education

Existing literature overwhelmingly supports the conclusion that Outdoor School promotes equity. While those who benefit most from OE programs are the most historically disadvantaged, they often do not have equal access to outdoor education. Increasing government funding can potentially help reduce financial hurdles for students wishing to attend OE programs, thus providing more equitable access. A further challenge will be restructuring programs and curriculums to affirm all identities, backgrounds, and learning styles. Given the large benefits of outdoor school programs, it is essential that access to and inclusivity of these programs is expanded.

Distribution of Benefits

While literature has shown outdoor school has benefits for all students, the strongest benefits are enjoyed by students from disadvantaged backgrounds. A study of outcomes in Oregon found Native American students saw the largest benefits followed by Black and Hispanic students on an index of overall social and academic outcomes, shown in the table below.[2] The same study found female and students reported greater benefits from outdoor school than male students. Students who require behavioral supports were overwhelmingly (84 percent) reported by teachers as having been positively impacted by outdoor education.

In the table below, outdoor school outcomes are compared by student race/ethnicity and gender. For individual outcomes, demographics with above average positive impacts are shown in green. Note that impacts are measured from 0 (No Impact) to 10 (Strong Impact). A result of 5 suggests that students were "Somewhat" impacted with respect to the given outcome.

While the study suggests that some groups may benefit more than others, it is important to note that *all* groups report somewhat (greater than 5) benefitting across all outcomes. Above average impacts were seen across all 11 outcomes for American Indian/Native Alaskan students, as well as female students. Other demographics commonly reporting above average benefits include students who identify as:

- Hawaiian/Pacific Islander (9)
- Hispanic (9)
- Mixed/Two or More Races (9)
- Black, not of Hispanic Descent (6)

While Asian, White (not of Hispanic descent), male, and non-binary students did not have reported benefits that were above average, they are all still shown to benefit significantly from outdoor school. The smallest benefit was seen by non-binary students with respect to "21st century skills" – 5.0 out of 10. The largest impacts were seen by American Indian/Native Alaskan students and female students with respect to "environmental attitudes" – 8.9 out of 10.

[2] Braun, Steven. "Outdoor School for All! Diverse Programming and Outcomes in Oregon 2018 Pilot Study Evaluation" 2018. https://grayff.org/wp-content/uploads/2019/02/OSfA-Evaluation-highres-2.19.19.pdf

Figure 2: Outdoor School Outcomes by Race[2]

	Average	Student Race/Ethnicity								Student Gender		
Outcome	**Average**	**American Indian/ Native Alaskan**	**Asian**	**Black, not of Hispanic Descent**	**Hawaiian/ Pacific Islander**	**Hispanic**	**Mixed/Two or More Races**	**Other**	**White, not of Hispanic Descent**	**Male**	**Female**	**Other or Non-Binary**
Overall Learning	**7.7**	7.9	7.3	7.9	8.3	8.3	7.9	7.4	7.5	7.4	8.1	7.7
(Environmental) learning	**7.8**	7.9	7.8	7.9	8.3	8.2	7.9	7.7	7.7	7.6	8.1	7.7
Interest/motivation to learn	**6.4**	7.1	6.1	6.2	6.3	6.0	6.7	6.5	6.2	6.1	6.7	6.0
Meaning/self-identity	**7.2**	7.7	6.9	7.3	7.3	7.6	7.5	7.1	7.0	6.7	7.6	6.8
Place connection (attachment)	**7.8**	8.6	7.2	6.7	6.7	8.0	8.0	7.8	7.7	7.3	8.3	7.3
Environmental attitudes	**8.7**	8.9	8.3	8.7	8.9	8.8	8.7	8.6	8.7	8.6	8.9	8.1
Self-efficacy	**8.2**	8.8	7.9	8.3	8.5	8.2	8.1	8.1	8.2	8.2	8.3	6.9
21st century skills	**6.3**	7.0	5.8	6.2	6.6	6.8	6.5	6.8	6.0	6.0	6.6	5.0
Actions: environmental stewardship (intentions)	**7.2**	7.8	7.0	7.0	7.6	7.5	7.6	7.4	7.0	6.7	7.6	6.9
Actions: cooperation/collaboration	**7.1**	7.6	6.9	7.2	7.6	7.6	7.4	7.4	6.7	6.7	7.4	6.3
Actions: school (positive behaviors)	**7.0**	7.8	6.9	7.5	7.6	7.5	7.6	7.0	6.6	6.6	7.5	5.4

Note: All groups benefitted from outdoor school (scores above 5). Green numbers represent above-average positive impacts.

Current access to outdoor education programs is not equally distributed. White students make up 70% of outdoor school students despite making up only 49.7% of the population nationally.[3] Nationally, only 3% of OE students are Black and just 7% are Latino.[4]Universalizing access to outdoor education has positive implications for distributional equity. Oregon's Measure 99 increased access to outdoor education and reduced opportunity gaps, although specific qualitative data is not available.[5] Washington State has also made some inroads to increase access to outdoor School. Washington State was the first state to license outdoor preschools, which resulted in increased equitability and access for students because licensure brings state and local funds to subsidize low-income families' enrollment.[4] Increasing access improves distributional justice (fewer students are unable to attend for financial reasons), however curriculums must also be changed to create inclusive experiences for all.[6]

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[3] Children and Nature Network. "Connecting Youth to Outdoors With Equity". *Giving Compass,* https://givingcompass.org/article/working-toward-equity-and-inclusion-when-connecting-youth-to-the-outdoors/

[4] Deines, Tina. "The benefits of outdoor education aren't accessible to all" *HCN, 2*/19/2021, https://www.hcn.org/articles/education-the-benefits-of-outdoor-education-arent-accessible-to-all

[5] "Oregon State University Equity, Diversity, and Inclusion Statement". *Oregon State University*, November 2020, https://outdoorschool.oregonstate.edu/equity-diversity-and-inclusion/equity-diversity-and-inclusion-statement/

[6] Warner, Robert and Dillenschneider, Cindy. "Universal Design of Instruction and Social Justice Education: Enhancing Equity in Outdoor Adventure Education" *Journal of Outdoor Recreation,* Dec 2019, https://www.researchgate.net/profile/Robert-Warner-

Work needs to be done to make outdoor education programs more inclusive. People of color may feel out of place or that they 'don't belong' in nature, especially when camps continue to have disproportionately low minority attendance.[4] Communitarian approaches to justice suggest OE program curriculum should be restructured to acknowledge participant's unique backgrounds.[6] Ensuring that curriculum affirms identity will be critical to student success. To improve DEI (Diversity, Equity, and Inclusion) outcomes, camps should train workers on active listening, implicit bias, and culturally inclusive language.[7] Seemingly trivial microaggressions by staff can have the unintended effect of making some campers feeling unwelcome or even unsafe. Even cabin names or some camp traditions can be offensive if they are rooted in a racist legacy. While many camps have taken action in recent years to increase focus on DEI, more work is needed, and it is important to try to maintain and accelerate efforts. Universal Design of Instruction (UDI) can increase learning by providing information in a variety of formats so different types of learners are all able to access curriculum equitably.[6] By presenting content in multiple formats, equitability is enhanced, and learning outcomes may improve.

COVID-19 Impacts

Covid-19 threatens to shutter many outdoor camps across Washington state.[8] Without additional funding, it is uncertain whether infrastructure will remain for increased demand in future years. These closures have disparate impacts and raise equity concerns. Seventy-four percent of communities of color in the contiguous United States live in nature-deprived areas, compared with just 23 percent of white communities.[9] Given that many communities already have subpar access to greenspace, closing camps could exacerbate existing inequities.[8] The camps are also disproportionately in rural Washington, which means many rural local economies that are struggling could be made worse off by a camp closure. National data from the American camp association has found "an 85% drop in revenue, an 81% drop in wages, a 79% drop in staff, and a 70% drop in overall participants for 2020." To maintain future capacity of outdoor education programs it is important to adopt policy to help struggling camps and prevent unnecessary closures.

7/publication/337063819_Universal_Design_of_Instruction_and_Social_Justice_Education_Enhancing_Equity_in_Outdoor_Adventure_Education/links/5e73dc8b92851c35875985ef/Universal-Design-of-Instruction-and-Social-Justice-Education-Enhancing-Equity-in-Outdoor-Adventure-Education.pdf

[7] Hale, Ingrid. "Understanding the Effectiveness of Diversity, Equity, and Inclusion Initiatives at Youth Summer Camps" *School of Professional and Continuing Studies Nonprofit Studies Capstone Projects 14,* 4/30/21, https://scholarship.richmond.edu/cgi/viewcontent.cgi?article=1013&context=spcs-nonprofitstudies-capstones

[8] "Outdoor School & Covid-19" *Outdoor School for All,* https://outdoorschoolforall.com/outdoor-school-covid19

[9] Rowland-Shea, Jenny and Doshi, Sahir. "The Nature Gap". *Center for American Progress,* 07/21/21, https://www.americanprogress.org/issues/green/reports/2020/07/21/487787/the-nature-gap/

Outdoor School Best Practices and Benefits

Utilizing the best practices of outdoor education can result in better outcomes and benefits to students, staff, and community members. Formulating programs with good practices involves collaboration between outdoor education providers, educators/schools, and community leaders to ensure success in student learning and social objectives.

Best Practices

Outdoor education throughout the United States is provided in various formats of curriculum. Practices to create effective outdoor education learning spaces include:

- An environment purposed for exploration
- Strong connections and communication between outdoor education programs and the communities they serve
- An emphasis on young environmental stewardship

According to Jim Parry, a leader in outdoor education at American Camp Association, "outdoor education is most valid when it utilizes hands-on, cross-disciplinary, experience-oriented activities."[10] Rather than lectures, students learn through guided exploration where "in effect, they develop their own outdoor science curriculum."[11] Students should use a variety of senses and learning strategies to maximize active learning.[12]

Within the community, for programs to meet the needs and academic requirements of students, communication between outdoor education programs and schools must be strong. This ensures students are prepared to discover first-hand the concepts they were introduced to in the classroom, as well as to build on what they learned in outdoor education back to the classroom afterward. Programs that are local and community-oriented can better serve students by helping them understand their land's history, local indigenous knowledge, and environmental ethics and stewardship.[13]

Community ties can foster stronger outdoor education program organization and structure; however, many programs are linked to a parent organization whose focus may not be outdoor education.[14] These close ties to an outdoor education program's "parent" organization impede outdoor education's legitimacy, base, and the potential for outdoor education to expand in networking, conferences, sharing resources and ideas.

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[10] Parry, Jim. "Raising the Bar: A Case for Quality Outdoor Education." *American Camp Association*, Sept 2011, https://www.acacamps.org/resource-library/camping-magazine/raising-bar-case-quality-outdoor-education

[11] Tringali, Melanie. "Outdoor Education." *National Institute for Student-Centered Education*, May 2015, http://nisce.org/blog/best-practices/outdoor-education/

[12] "Outdoor and Environmental Education: Defining Terms, Objectives and Purposes, Instructional Methods, History and Status in the United States and Abroad." *State University*, https://education.stateuniversity.com/pages/2305/Outdoor-Environmental-Education.html

[13] Sabet, Michelle. "Current Trends and Tensions in Outdoor Education." *Brandon University Journal of Graduate Studies in Education*, 2018, https://files.eric.ed.gov/fulltext/EJ1230274.pdf

Benefits of Outdoor School Programs

The benefits of outdoor education are reaped in a variety of sectors and groups. In this section we will explore benefits to students who participate in outdoor education, benefits to their teachers and schools, benefits to outdoor education staff, and benefits to the Washington community more broadly.

> "Outdoor education offers students an opportunity to connect with nature…This connection can serve both to help develop an individual's sense of self as well as how they connect to others and the earth. Students practice skills to develop perseverance and self-reliance while also learning to become lifelong stewards of the land."
>
> *- An Outdoor Education Provider's Response to CEBR Survey Question, "What are the Key Benefits of Outdoor Education?"*

Students

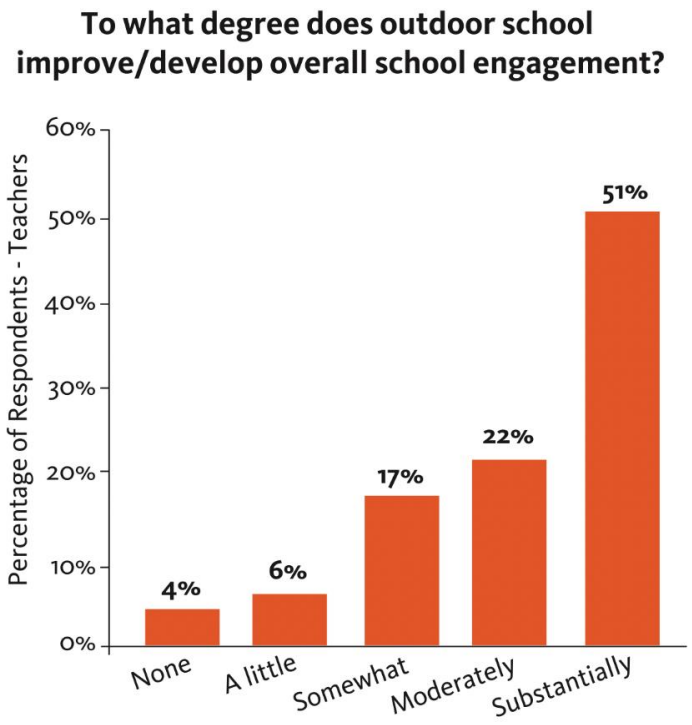
Dr. Steven Braun, in collaboration with the Gray Family Foundation and Oregon State University identifies 12 key Environmental Education Outcomes for the 21st Century (EE21) and find significant positive impacts for students who participate in outdoor school in Oregon:[14]

- ***Enjoyment***: Positive emotions toward an experience
- ***Place Connection (Attachment)***: Appreciation and the development of personal relationships and meaning with the physical location and its story
- ***(Environmental) Learning***: Knowledge regarding the interconnectedness and interdependence between human and environmental systems
- ***Interest in Learning (Motivation)***: Enhanced curiosity, as well as increased interest in learning about science, the environment, or civic engagement
- ***21st Century Skills***: Critical thinking and problem-solving; communications; collaboration; and creativity and innovation
- ***Meaning/Self Identity***: Individual purpose and identity as well as positive character traits. These may include a heightened sense of purpose, gratitude, and optimism
- ***Self-Efficacy***: Individuals' belief of their ability to use critical thinking to solve problems, make a difference in their community, address environmental issues, and influence their environment
- ***Environmental Attitudes***: Sensitivity, concern, and attitude toward the environment
- ***Action Orientation***: Intentions to perform behaviors relevant to the program's content or goals
- ***Actions – Environmental Stewardship (Intentions)***: Intentions to perform stewardship-related behaviors
- ***Cooperative and Collaborative Actions***: Cooperation and collaboration with others
- ***Actions – School (Positive Behaviors)***: Pay more attention and work harder in school

[14] Braun, Steven. "Outdoor School for All! Diverse Programming and Outcomes in Oregon." *Oregon State University*, 2018, https://grayff.org/wp-content/uploads/2019/02/OSfA-Evaluation-highres-2.19.19.pdf

This research also finds that many of the benefits of outdoor education continue to be seen when students return to their classroom. For instance, 73 percent of teachers surveyed reported that outdoor school *Moderately* or *Substantially* improved or developed their students' overall school engagement.[14] Within outdoor school programs, curriculum can be directly tied to Next Generation Science Standards (NGSS) and Common Core State Standards (CCSS) to align with and enhance students' classroom curriculum.

Figure 3: Outdoor School Improves/Develops Overall School Engagement



Source: Braun, Steven. "Outdoor School for All! Diverse Programming and Outcomes in Oregon." Oregon State University, 2018, https://grayff.org/wp-content/uploads/2019/02/OSfA-Evaluation-highres-2.19.19.pdf

Social benefits for students include an increase in peer connection, community, motivation, culture, and attitudes about school. [15] In addition to hands-on learning, students have more physical activity and development in outdoor learning spaces than indoor, fostering confidence, self-awareness, and healthy habits.[16] In some cases, outdoor exploration is used as wilderness therapy for court-involved youth to "improve self-esteem, peer relationships, and teamwork."[17] Providing outdoor exploration opportunities for all students can have similar therapeutic effects and health benefits. Outdoor Education has also shown to increase physical activity and positively impact physical development of youth. These benefits can be capitalized upon when outdoor education programs collaborate with community exercise and physical activity centers.[15]

[15] Becker, Michael. "5 Benefits of Outdoor Education." *Edutopia*, April 2016, https://www.edutopia.org/blog/5-benefits-of-outdoor-education-michael-becker

[16] Peacock, Jessica, April Bowling, Kevin Finn, and Kyle McInnis. "Use of Outdoor Education to Increase Physical Activity and Science Learning among Low-Income Children from Urban Schools." *American Journal of Health Education*, 2021, https://www.tandfonline.com/doi/abs/10.1080/19325037.2021.1877222?journalCode=ujhe20&

[17] "Wilderness Adventure Therapy for Court-Involved Youth." *Washington State Institute for Public Policy*, 2019, https://www.wsipp.wa.gov/BenefitCost/Program/566

Teachers and Schools

For schools, traditional outdoor education programs have their own trained staff and do not task K-12 teachers with developing and delivering outdoor education material that is outside of their training.[18] In addition, empirical evidence shows academic achievements in all subjects, critical thinking skills, GPAs, graduation rates, engagement, and motivation increase as a result of outdoor education.[19] This gives teachers a better classroom experience and helps schools achieve their goals of helping students learn, grow, and be successful.

Outdoor Education Staff

Outdoor education staff should be trained in environmental literacy, basic ecological principles, and a working knowledge of environmental issues. Staff can be trained through organizations such as North American Association for Environmental Education (NAAEE), National Association for Interpretation (NAI), Association for Challenge Course Technology, National Recreation and Park Association (NRPA), and other programs.[14] Educators can also find their own niche within an outdoor education program. Organizations can staff educators to create cohesive programs that specialize in local environmental flora and fauna, geology, and environmental phenomena, that are relevant to visiting schools.[17] Students learn with a variety of senses in outdoor education, and benefits reaped by the educators include teaching in their preferred methods that are not limited to a classroom. "Environmental and out-door educators primarily advocate experiential (hands-on) learning strategies," with "the importance of contextual, direct, and unmediated experiences."[16] As discussed in CEBRs survey of outdoor education programs, other benefits include career development, teaching experience, teaching outdoors, and opportunities to use their subject matter knowledge.

Communities

Outdoor education curriculum can include Indigenous perspectives and culture, local history, and local industry (i.e. agriculture, logging, etc.), which benefits both students and the surrounding community. In addition, outdoor education provides stable jobs and secondary economic impacts within the community, as discussed later within this report. In the future, outdoor school could spur greater involvement in outdoor recreation by traditionally underrepresented communities, thus leading to better community health impacts, improved equity, and greater economic impacts.

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[18] Atencio, Matthew, et al. "The Place and Approach of Outdoor Learning Within a Holistic Curricular Agenda." *Journal of Adventure Education and Outdoor Learning*, 2015, https://www.tandfonline.com/doi/abs/10.1080/14729679.2014.949807?journalCode=raol20

[19] "Empirical Evidence Supporting Benefits of Outdoor School and Experiential Learning Programs." *Outdoor School For All*, Feb 2015, http://grayff.org/wp-content/uploads/2013/10/Empirical-Evidence-Supporting-Benefits-of-Outdoor-School-and-Experiential-Learning-Programs_March-2015.pdf

Outdoor School in WA: Supply, Demand, and Cost

For this analysis, we consider three models that look at different interactions between supply and demand. For Washington State to fund outdoor school in the 2022-2023 school year, the Center for Economic and Business Research at Western Washington University (CEBR) estimates the total cost to be between $28 million and $52 million. This wide range of possibilities captures uncertainty surrounding participation rates, per-student costs, program type (residential vs. day programs), and program length.

Estimating the available capacity (supply) of outdoor education programs in Washington proves to be more difficult than estimating demand or cost. While there are many factors that cannot be controlled for, it is likely that there is not sufficient capacity among existing outdoor education programs to serve all Washington 5th or 6th grade students. This highlights the need for expansion partners, which will be discussed in more detail later in this report.

Demand and Annual Cost

The total annual cost for Washington State to fund outdoor school during the 2022-2023 school year is estimated to be between $28 million and $52 million. Key assumptions influencing the statewide cost of such a program include:

- Size of the student population
- Per student costs
- Student participation rate
- Outdoor school program type and length

To account for uncertainty, three scenarios were developed with increasing participation rates corresponding to increasing statewide costs. In the years following the approval of such a statewide program, it can be assumed that schools and families will be more comfortable having students participate in outdoor school and they may shift toward wanting to participate in longer, residential programs.

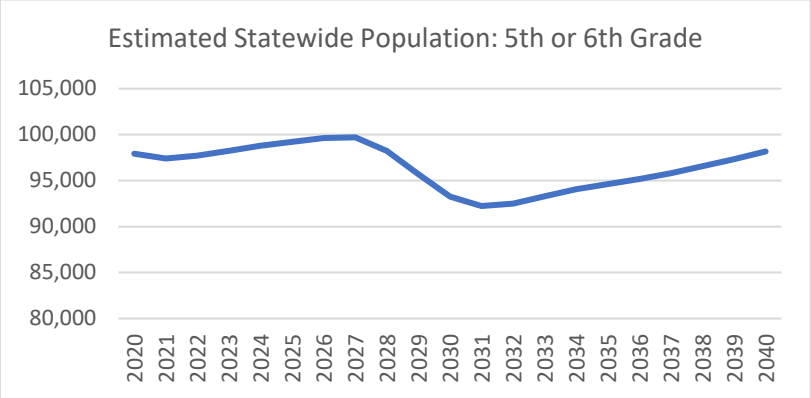
Many assumptions used in this modeling were informed by the expertise of Rita Bauer, Assistant to the Outdoor School Program Leader for Oregon's statewide program. While Washington's experience will likely be different, its neighbor to the south currently provides the best-case study in per-student costs, participation rates, and administrative considerations.

Student Population Size

With respect to Oregon's outdoor school law, Bauer notes that it "does not directly address the funding of private/home schooled students, and, by not addressing them, makes access to outdoor school funds difficult these students." For this modeling, we choose to look at all children in Washington State, rather than limit the scope to only students in public school. Using 2019 public school enrollment, as reported by OSPI, it is estimated that approximately 90-92 percent of 5th and 6th grade students were enrolled in public school prior to the pandemic.

Rather than restricting funding to only 5th or only 6th grade students, we assume a scenario where every student receives state funding to attend outdoor school once – either in 5th or 6th grade. This provides more flexibility for schools and school districts to decide when their students are ready for the experience. It also gives smaller schools to attend outdoor school every other year and to combine their 5th and 6th grade classes. In general, it is assumed that 5th and 6th grade students would not attend outdoor school together

Figure 4: Estimated Statewide Population of 5th OR 6th Grade Students



Washington State's Office of Financial Management (OFM) provides population forecasts by age group (1-year brackets).[20] We assume maximum attendance to be the average of the 10, 11, and 12 age brackets – reflecting the fact that each student receives funding once, either in 5th or 6th grade.

Per Student Costs

To estimate per-student costs, we begin with Oregon's thresholds for outdoor school funding during the 2019-2020, 2020-2021, and 2021-2022 school years.[21] While schools can request more or less funding, these values are estimated by Oregon State University (OSU) Extension Service's Outdoor School team to cover the four main categories of outdoor school expenses – provider fees, stipends/personnel expenses, program costs incurred by the school, and unreimbursed transportation costs – in most cases. Rita Bauer estimates that OSU's annual administrative costs to facilitate the program are approximately 4 percent of total costs and operational expenses average 7

Table 2: Estimated Per Student Cost by Trip Length and Considering Overhead

WA Forecasted (Per Student, Per Trip Cost)				
	2022-2023	**2025-2026**	**2028-2029**	**2031-2032**
3 Day	$175	$203	$226	$243
4 Day	$342	$396	$442	$475
5 Day	$375	$434	$484	$520
3 Day/2 Night	$439	$508	$567	$609
4 Day/3 Night	$498	$577	$643	$691
5 Day/4 Night	$621	$719	$802	$862
WA Forecasted (Per Student, Per Trip Cost + Program Overhead)				
	2022-2023	**2025-2026**	**2028-2029**	**2031-2032**
3 Day	$194	$225	$251	$270
4 Day	$380	$440	$491	$527
5 Day	$416	$482	$537	$577
3 Day/2 Night	$487	$564	$629	$676
4 Day/3 Night	$553	$640	$714	$767
5 Day/4 Night	$690	$798	$890	$957

[20] "State Population Forecast." *Washington State Office of Financial Management*, 2020, https://ofm.wa.gov/washington-data-research/population-demographics/population-forecasts-and-projections/state-population-forecast

[21] "Frequently Asked Questions (FAQs)." *Oregon State University Extension Service: Outdoor School*, https://outdoorschool.oregonstate.edu/district-representatives/frequently-asked-questions-faqs/

percent of total costs. OSU has conducted extensive research into the fully-burdened costs of outdoor school and updates their thresholds annually based on their research and the data collection.

We begin to estimate per-student costs in Washington using OSU's threshold values and increasing costs by 1.6 percent to account for differences in the cost of living.[22] The other factor to consider is annual cost increases. Between the 2020-2021 and 2021-2022 school years, OSU increased threshold costs by approximately 6 percent. Our modeling assumes a similar growth rate for the 2022-2023 school year, with the growth rate declining linearly to 2 percent in 2031-2032. The 2 percent growth rate reflects inflation and assumes that by this point most outdoor education programs understand their fully burdened costs, have expanded sufficiently to meet demand, are operating efficiently, and are able to capitalize on their economies of scale.

While CEBR's surveys of schools and outdoor education programs asked for cost estimates, the resulting data is not usable for this analysis. Some schools and programs report total group costs while others report per-student costs; some report total program costs while others report daily or hourly rates; and others reported that costs vary depending on a variety of factors. As such, no comparisons can be made between the survey data and the threshold values used in this analysis.

Student Participation Rate and Program Type

Pre-pandemic, Bauer estimates that approximately 81 percent of students (an average of 5th and 6th grade) participated in outdoor education and that 95 percent of those who participate were in a residential outdoor education program. For Washington State, we consider 3 scenarios:

- ***Low Participation/Cost***: This scenario may be more representative of the early years of a statewide program, with capacity restrictions and community hesitation leading to low participation and high utilization of day programs. Based on CEBR's survey of schools in Washington, 41 percent of respondents typically offer some form of outdoor education. While there is likely self-selection bias in terms of the schools that chose to participate in the survey, if Washington were to remove the financial barrier and have expansion partners promote outdoor education, reaching 60 percent participation within the first few years appears to be feasible.
    - Participation Rate: 60%
    - Participant Breakdown: 70% residential and 30% day programs

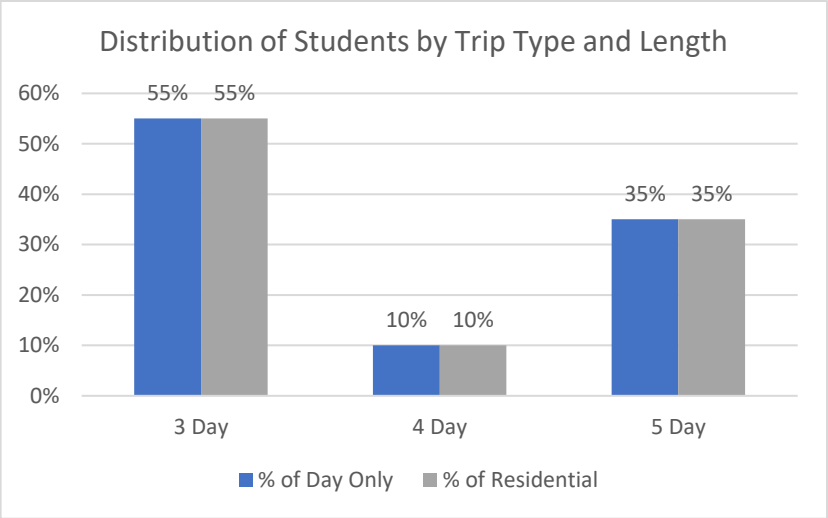
- ***Mid Participation/Cost***: This scenario is loosely modeled after Oregon's pre-pandemic participation rate, as well as our survey of schools and school districts which found that 21% of respondents prefer a non-residential program.
    - Participation Rate: 80%
    - Participant Breakdown: 80% residential and 20% day programs

[22] "Cost of Living Index." *The Council for Community and Economic Research*, 2021, https://www.coli.org

- ***High Participation/Cost***: This scenario assumes full participation and a distribution of residential and non-residential participation similar to Oregon's program.
    - Participation Rate: 100%
    - Participant Breakdown: 90% residential and 10% day programs

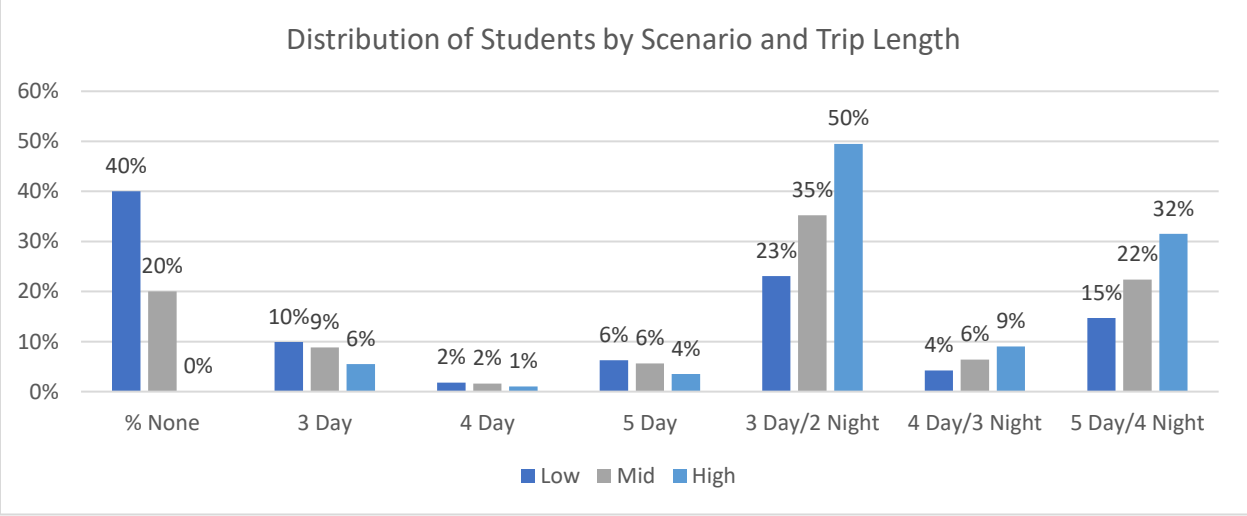
In terms of trip length, it was assumed that many schools would want to start with shorter trips; however, over time Washington may see growing comfort with the program and schools opting for longer trips. From the perspective of a residential outdoor education program, they would be most inclined to offer 3-day, 2-night programs or 5-day, 4-night programs to use their space most efficiently and productively. A 3/2 program allows them to fit two groups (Monday-Wednesday and Wednesday-Friday) per week and a 5/4 program also maximizes weekly "heads-in-beds" revenue.

Figure 5: Participation by Trip Length



Combining the assumptions and scenarios, we find the following distribution of students across program types and lengths. This distribution is then used to calculate an average cost per day that can be used to estimate total statewide costs for each scenario.

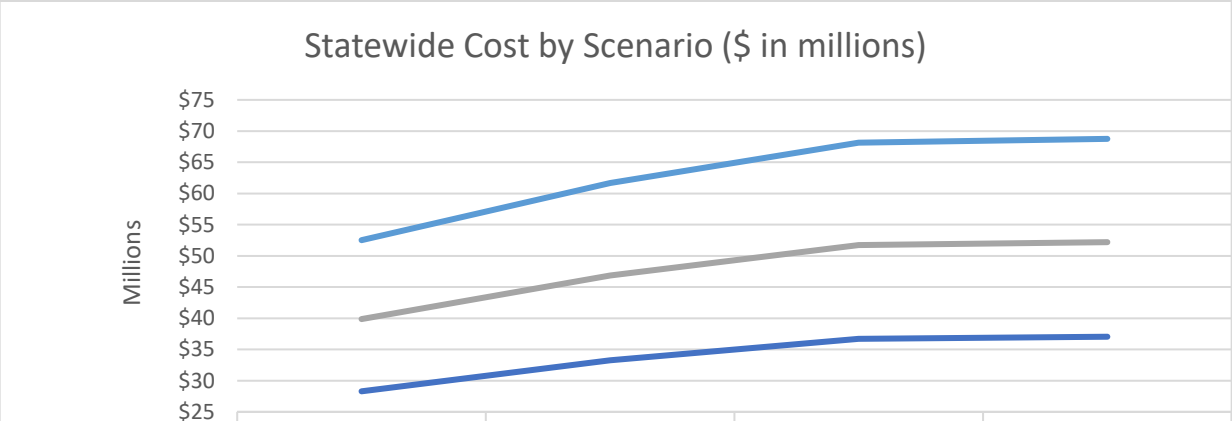
Figure 6: Participation by Trip Length and Scenario



Cost Modeling and Results

The three scenarios show initial costs between $28 million and $52 million, growing annually with the student population and per-student costs. As time goes on, it is likely that Washington would progress from a Low/Mid scenario to a Mid/High scenario as more schools choose to participate and opt for longer, residential programs.

Figure 7: Statewide Cost by Scenario



	2022-2023	2025-2026	2028-2029	2031-2032
Low Scenario	$28,293,629	$33,241,753	$36,710,306	$37,042,368
Mid Scenario	$39,868,550	$46,840,951	$51,728,488	$52,196,396
High Scenario	$52,515,326	$61,699,454	$68,137,377	$68,753,711

Supply: Outdoor School Capacity

To fully understand the outdoor education capacity available statewide would require a variety of datapoints that are not currently available. Instead, we rely on reported capacity within our survey of programs. Factors not accounted for include:

- Existing outdoor education programs that did not respond to the survey or report their maximum capacity
- Facilities including summer only camps, private church camps, and other private facilities that do not currently offer outdoor education, but could easily expand into their shoulder seasons
- Potential expansion through Washington State Parks, Department of Natural Resources, or Department of Fish and Wildlife
- Other users competing for existing capacity
- Class sizes smaller than the reported maximum capacity will lead to underutilization

Estimated New Capacity Needed

(i.e. Number of Beds)

Statewide

643 Beds = 6-10 New Programs

Potential Locations

- Benton-Franklin/Eastern
- Eastern/Spokane
- Seattle-King/Snohomish
- Southwest

Looking only at maximum capacity reported by existing outdoor education programs through CEBR's survey, we find a statewide maximum daily capacity of 6,560. This capacity is distributed throughout 11 of 12 Workforce Development Areas and encompasses both daytime and residential programs of various lengths.

To estimate the ability of this capacity to support all 5th or 6th grade students, the estimated student population is divided by the weighted total capacity. Capacity is weighted by 1.5 to estimate the maximum number of students who could be supported in each week – assuming half will participate in 5-day programs and half will participate in 3-day programs. The fourth column in the table below represents the number of weeks of full capacity needed to serve all 5th or 6th grade students, and the final column represents additional capacity needed (red) by region.

Statewide, Washington is estimated to need an additional 643 slots of capacity. Each slot of capacity can be thought of as a bed at a residential outdoor school program. This extra capacity could be met with 6-10 new outdoor education programs distributed throughout the state. Partners could include:

- Washington State Parks
- Washington Department of Natural Resources (DNR)
- Washington Department of Fish and Wildlife (WDFW)
- Existing overnight facilities (i.e. summer only camps, private church camps, and other private groups with suitable residential facilities)
- Brand new private/nonprofit outdoor education programs

For example, in the Snohomish Workforce Development Area, it is estimated that the average 5th or 6th grade student population in 2022 will be approximately 11,425. Based on survey responses, the maximum daily capacity of existing outdoor education programs in this region is 783 students. Of this capacity, there are 300 slots of reported residential capacity, 73 slots of reported day-program capacity, and 410 slots among programs that offer both day-based and residential programs. If half of students attend 3-day programs and half attend 5-day programs, it would take 10 weeks of full-capacity operations for every 5th or 6th grade student in the Snohomish region to attend outdoor school. An additional capacity of 63 students is needed to serve all students through 9 weeks of maximum-capacity operation.

Due to weather, holidays, testing, competition for space, and class sizes less than the program's maximum capacity, regions in need of 10 weeks or more of maximum capacity operation are flagged in red. The Benton-Franklin (0 capacity), Southwest (93 weeks), Seattle-King (20 weeks), Spokane (13 weeks), and Snohomish (10 weeks) regions may all have insufficient existing capacity. It is also worth noting that the Eastern region is large, and capacity was only reported in Pend Oreille County (the northeast corner of Washington). Residential outdoor education capacity is also limited in many regions.

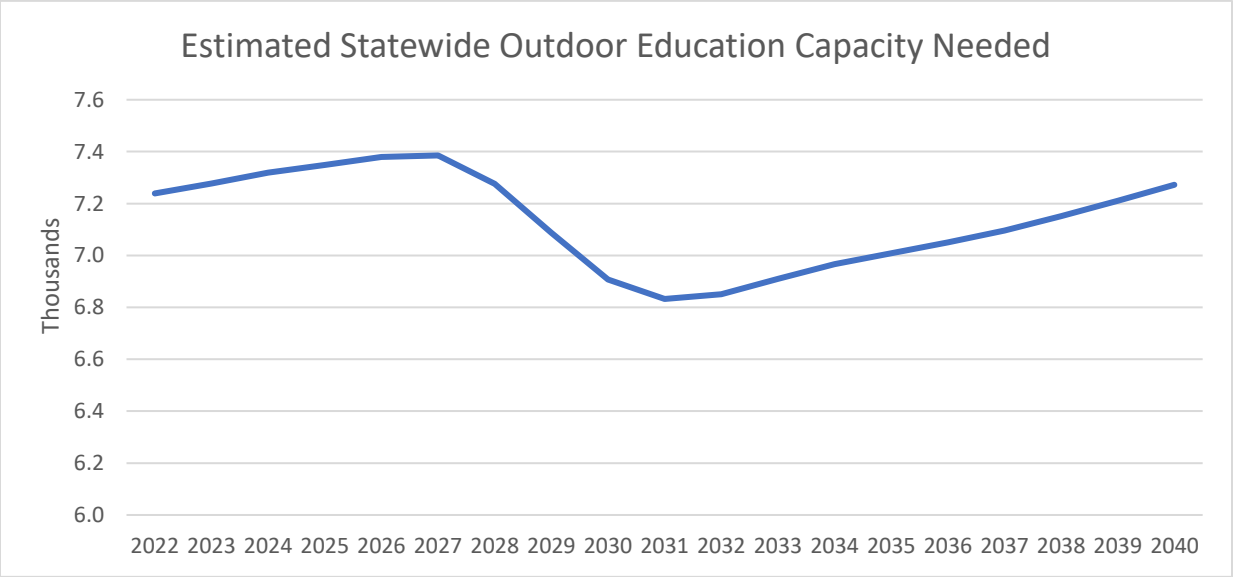
Another factor influencing capacity needs is the seasonal preference of schools and school districts. Among those surveyed, 59 percent of respondents want their students to attend outdoor school in Spring, compared to only 34 percent who would prefer Fall. This has the potential to strain regional capacity in some months and leave beds empty in others. Discussion group feedback suggest both times of year benefit students, with Fall helping to develop year-long relationships and learning and Spring acting as a celebration and means of tying together classroom content from the year.

Table 3: 2022 Estimated Student Population and Estimated Existing Outdoor Education Capacity

2022 Estimated Student Population and Estimated Existing Outdoor Education Capacity				
	Population	**Total Capacity**	**Weeks Needed at Full Capacity**	**Estimated Excess (+) and Needed (-) Capacity**
Benton-Franklin	4,972	0	N//A	-368
Eastern	2,442	420	4	239
North Central	3,849	380	7	95
Northwest	5,476	920	4	514
Olympic	4,284	620	5	303
Pacific Mountain	6,664	520	9	26
Seattle-King	25,092	841	20	-1,018
Snohomish	11,425	783	10	-63
South Central	5,358	598	6	201
Southwest	8,386	60	93	-561
Spokane	6,775	340	13	-162
Tacoma-Pierce	12,519	1,078	8	151
Total	**97,240**	**6,560**	**10**	**-643**

In 2022, Washington State is estimated to need enough outdoor education program capacity to support approximately 7,239 students at a time – assumes all eligible students participate. Capacity needs are expected to vary with the student population. The forecasted population declines in the next decade lead to falling capacity needs through 2031; however, by from 2031 to 2040 the population is expected to grow strongly. Capacity needs in 2040 are estimated at approximately 7,272 students daily.

Figure 8: Estimated Statewide Outdoor Education Capacity Needed



Economic Impacts of Outdoor School

Economic impact analyses are an important tool used to make decisions. However, they are often misused, overestimated, or generally misunderstood. An economic impact analysis measures the ripple effects of an action taken by a government, industry, household, or other entity. The impacts include output (production), employment, labor income, and can also include state, local, and federal taxes. Within each category, impacts can be categorized as:

- Direct – Initial change in demand (spending and jobs supported)
    - Money spent directly on outdoor school, as well as the additional employment that will be needed to meet that demand
- Indirect – Changes in spending throughout the supply chain due to a change in demand
    - Increased demand for food, gear, and supplies by outdoor school programs, which ripples through their suppliers and down the supply chain
- Induced – Changes in spending that result when households see a change in their income
    - If increased demand for outdoor education led to programs hiring more people or promoting them from part-time to full-time positions, induced effects could include the increased spending of the staff on meals at restaurants, as well as other goods and services

Note that economic impact analyses do not consider opportunity costs (the benefits of alternative investment opportunities), environmental costs/benefits, or social costs/benefits. Another commonly ignored issue with economic impact analyses is crowding out. For example, if the city hires an accountant from somewhere else within the region, the economic impact analysis does not consider that the accountant was already employed elsewhere in the region doing another meaningful job. This can lead to overcounting an economic impact.

Economic impact analysis is a helpful tool, but it is important to keep in mind its limitations. The analysis is highly dependent on the data quality and its user. Impact analysis does not account for all possible outcomes and should be considered a maximum of the possible economic benefits to the region.

To estimate the economic impacts of funding outdoor school for all 5th or 6th grade students, we compare analysis from two sources:

- "Economic Analysis of Outdoor Recreation in Washington State" by Johnny Mojica and Angela Fletcher at Earth Economics[23]
- An economic impact analysis of the *Recreational and Vacation Camps (Except Campground)* sector (NAICS 721214) using JobsEQ software

Note that both of these impact analyses look at industries that are somewhat related to outdoor school; however, neither is able to provide a narrow focus on the economic impacts of outdoor education. It is also worth keeping in mind that outdoor school is seasonal and the direct effect of employment likely does not represent new year-round jobs. Rather some programs with robust summer programs may be able to begin employing more of their staff year-round. This means that a direct effect of 1 full-time

[23] Mojica, Johnny, and Angela Fletcher. "Economic Analysis of Outdoor Recreation in Washington State." *Earth Economics*, 2020, https://rco.wa.gov/wp-content/uploads/2020/07/EconomicReportOutdoorRecreation2020.pdf

equivalent (FTE) employee may actually represent 2 full time for half the year and no employment changes in the other half of the year.

The table below shows a range of estimated direct, indirect, induced, and total economic impacts for every $1 million spent on outdoor school. The ranges reflect the findings of the previously mentioned study by Earth Economics, as well as our own analysis using JobsEQ software. Based on this research, an investment of $1 million could translate to a total economic impact on output of $1.7 million to $1.8 million. This investment also has the potential to support between 11.2 and 12.5 FTE of employment – again, note that the direct effect of 8 FTE translates to an approximate of 16 FTE worth of employment for half of the year.

Table 4: Estimated Economic Impacts for Every $1 Million Spent on Outdoor Education/Recreation

Estimated Economic Impacts For Every $1 Million Spent on Outdoor Education				
	Direct	**Indirect**	**Induced**	**Total**
Employment	8 FTE (16 people)	1.7-2.5 FTE	1.5-2.0 FTE	11.2-12.5 FTE
Sales/Output	$1.0m	$340k-$484k	$300k-$353k	$1.65m-$1.84m
Compensation	$253k-$299k	$129k-$155k	$101k-$115k	$523k-$532k

Using JobsEQ, we explored differences in economic impacts by Workforce Development Area. In the table below, bold numbers are above the statewide average total economic impact estimated above (JobsEQ). Higher sales/output impacts and compensation impacts in Seattle-King are likely an outcome of higher cost of living and higher wages. Above average employment impacts were estimated in the Benton-Franklin, North Central, Olympic, Eastern, and Tacoma-Pierce regions.

Table 5: Estimated Total Economic Impact for $1M Spent on Outdoor Education by Region

Estimated Total Economic Impacts for $1M Spent on Outdoor Education by Region			
Total Impact	**Employment**	**Sales/Output**	**Compensation**
Benton-Franklin	13.0	$1,300,000	$455,772
Eastern	11.4	$1,340,000	$470,644
North Central	12.6	$1,310,000	$327,242
Northwest	9.3	$1,280,000	$370,014
Olympic	12.0	$1,300,000	$362,688
Pacific Mountain	8.8	$1,350,000	$281,540
Seattle-King	9.9	$1,670,000	$539,998
Snohomish	10.9	$1,490,000	$498,525
South Central	8.8	$1,400,000	$415,133
Southwest	9.8	$1,500,000	$427,719
Spokane	11.0	$1,510,000	$462,677
Tacoma-Pierce	11.3	$1,440,000	$449,444

The findings on the economic impact of a $1 million investment can be scaled to model other levels of investment. Given the three scenarios discussed previously in the supply and demand model, total economic output associated with statewide outdoor school funding could range from $47 million to $96 million, with between 315 and 629 FTE worth of employment being supported.

Table 6: Estimated Total Economic Impacts by Outdoor School Scenario

Estimated Total Economic Impacts by Outdoor School Scenario				
Scenario (2022-2023)	**State Investment**	**Total Employment Impact**	**Total Sales/ Output Impact**	**Total Compensation Impact**
Low	$28,152,943	315-339 FTE (541-550 people)	$46.5m-$51.7m	$14.7m-$15.0m
Mid	$39,670,308	444-477 FTE (762-775 people)	$65.5m-$72.9m	$20.8m-$21.1m
High	$52,254,199	585-629 FTE (1,003-1,022 people)	$86.2m-$96.0m	$27.4m-$27.8m

In Oregon, the Grays Family Foundation estimated that their statewide outdoor school program would generate more than 600 FTE jobs and 27 million dollars of income on an annual basis.[24] This is similar to the estimated economic impacts associated with the high attendance/cost scenario in Washington State.

[24] Robin Hahnel, REPORT ON THE ECONOMIC IMPACTS OF A STATE WIDE OUTDOOR EDUCATION PROGRAM IN OREGON, https://grayff.org/wp-content/uploads/2018/05/EconomicImpacts_OutdoorEducation.pdf

Expansion Opportunities and Partners

For Washington State to expand outdoor school opportunities to all 5th and/or 6th graders, multiple partners will be needed to expand capacity and promote the program. Potential partners include:

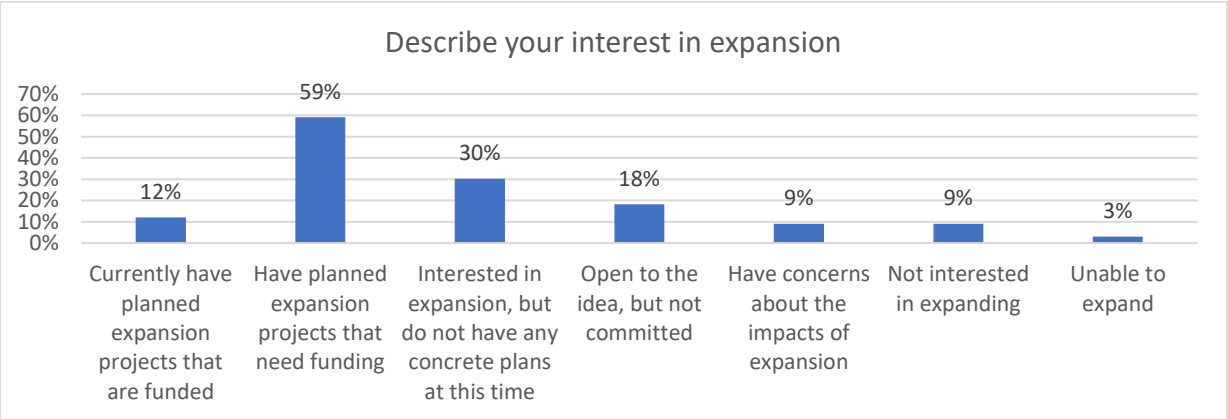
- Current Outdoor Education Programs
- WA State Parks
- WA Department of Natural Resources
- WA Department of Fish and Wildlife
- WA Office of Superintendent of Public Instruction
- Tribal Communities and Enterprises
- Federal Land Managers
- K-12 Educators
- Other State Agencies
- Other Organizations
- Foundations and Other Funding Partners
- New Outdoor Education Programs

Each of these partners addresses a different need in the expansion process. By building coalitions within and between these groups, Washington State can create a successful statewide outdoor school program with high engagement.

Expansion Within Current Providers

A natural place to start when thinking about outdoor school expansion is with the outdoor schools themselves. Based on our survey of self-identified outdoor education programs (both day-use and residential), nearly 60 percent have a planned expansion project that needs funding. Relatively few programs reported being uninterested in expansion or unable to expand. Note that programs could select multiple responses, thus percentages represent the portion of total respondents who agreed with the statement.

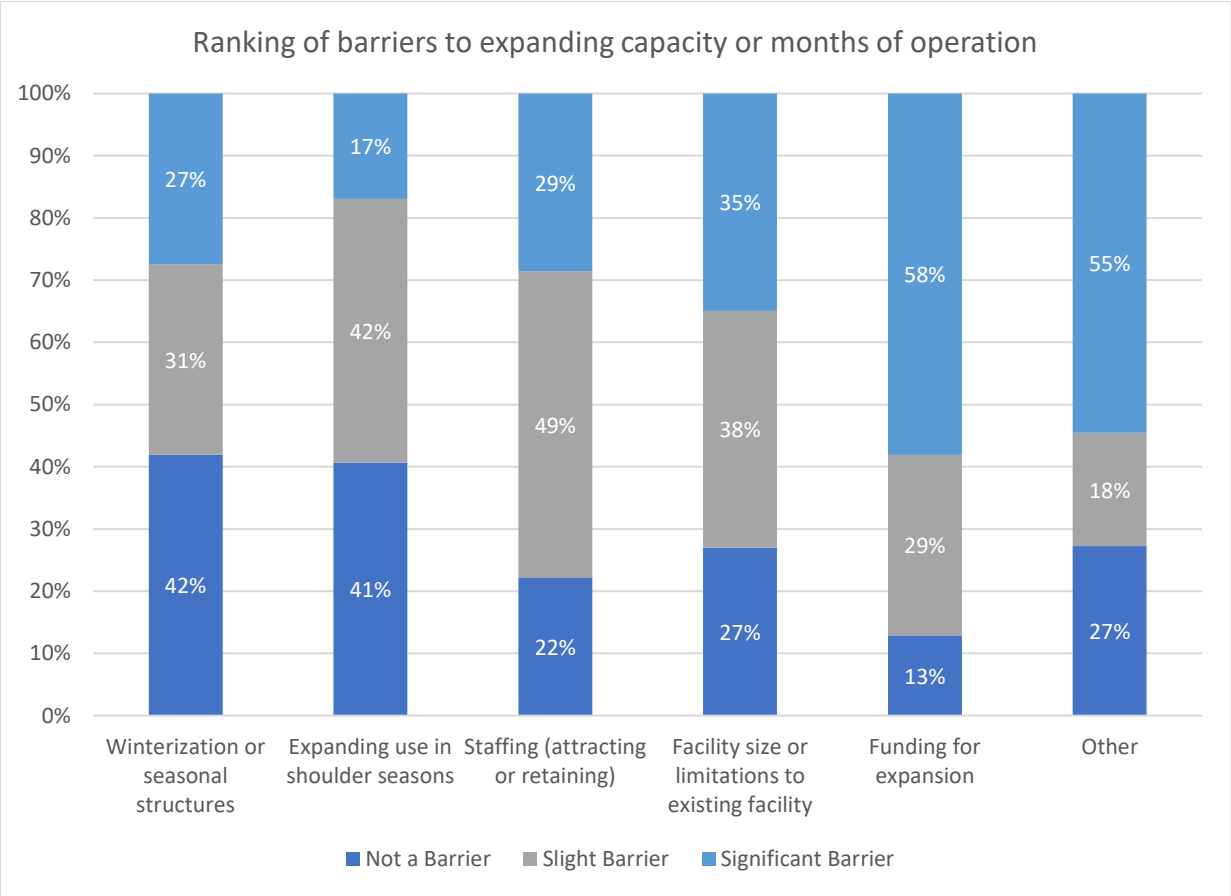
Figure 9: Interest in Expansion



Current outdoor education providers were also asked about the greatest barriers to expanding their capacity or months of operation. Overall, 87 percent of respondents indicated that funding posed a barrier to expansion. Funding was followed by, attracting and retaining staff (78 percent), facility size (73 percent), and other factors (73 percent).

Ultimately, the data suggests that there is a strong willingness among current outdoor education programs to expand their facilities, capacity, or months of operations. To facilitate this expansion, however, there are significant funding and staffing barriers that will need to be addressed.

Figure 10: Barriers to Expanding Capacity or Months of Operation



Expansion Using State Parks and Other Facilities

Another option for outdoor education expansion is to fund programs through the Washington State Parks Department (Parks), Department of Natural Resources (DNR), and Department of Fish and Wildlife (WDFW). All three of these departments are looking for opportunities to offer more educational opportunities for students; however, they lack the funding to start and sustain an outdoor education program. While DNR and WDFW are best suited to day programs, Parks has the potential to also offer residential outdoor education.

State Parks

To learn about the current outdoor education offerings by the Washington State Parks Department (Parks), as well as the potential for expansion, we interviewed Ryan Karlson (Interpretive Program Manager) and Owen Rowe (Policy and Governmental Affairs Director). As shown below, Parks has a long history of providing outdoor education for K-12 students. However, since the 1950's and 1960's these programs have been scaled back significantly.

To build a robust residential program in the future, Parks will need funding to improve their overnight accommodations and for staff capacity to organize and run the programs. Parks could support both residential and day programs as they have in the past depending on site availability and public school needs. Under current capacity, these programs would be best suited to off-peak months (October through March) when there is greater availability of overnight options. The locations of Parks facilities lend themselves to supporting students in more rural communities, although there are opportunities in more urbanized areas as well.

Current Utilization and Offerings

Currently, State Parks does not have a robust K-12 outdoor education program. However, they do have suitable overnight accommodations, educational facilities, and expertise to host a variety of programs as needed:

- Day programs with interpretive staff at Environmental Learning Centers and Interpretive Centers
- Teachers providing education with some facilitation by park rangers for a day
- School use without Parks staff (day-use and overnight-use) including at urban parks
- Junior Ranger and Youth Programs[25]
- An outdoor preschool facilitated by another organization

[25] Washington State Parks. "Junior Ranger and Youth Programs." *Washington State Parks*, https://parks.state.wa.us/917/Junior-Ranger-Program.

- The Fort Worden Lifelong Learning Center[26]
- Cama Beach State Park cabins
- Online educational programming

Expanding Outdoor Education

When thinking about expansion, a few factors must be considered including funding, staff, geography, facilities, and availability. Within the department, K-12 outreach and education is a State Parks and Recreation Commission goal.

In terms of funding, both Karlson and Rowe highlighted the importance of sustainability, stability, and focus. They highlighted the role of Discover Pass Program in providing Parks with steady and predictable revenue when allocations from the state fluctuate. In contrast, No Child Left Inside grants have provided funding for individual outdoor education experiences – which often involve visits to state parks – but not the stable funding needed to make infrastructural improvements, maintain dedicated staff capacity, or develop a Parks-run outdoor education program.

Parks currently has an interpretive staff of 20 FTE that are dispersed across the state, as well as park rangers who may be able to facilitate more limited outdoor education programs and interpretation. To support more a dedicated outdoor education program – especially a residential program or programs with minimal school-led instruction – would require an increase in dedicated staff capacity. Coordination with the Office of Superintendent of Public Instruction (OSPI) would likely be necessary to help develop relevant curriculum and to assist Parks in developing relationships with public schools.

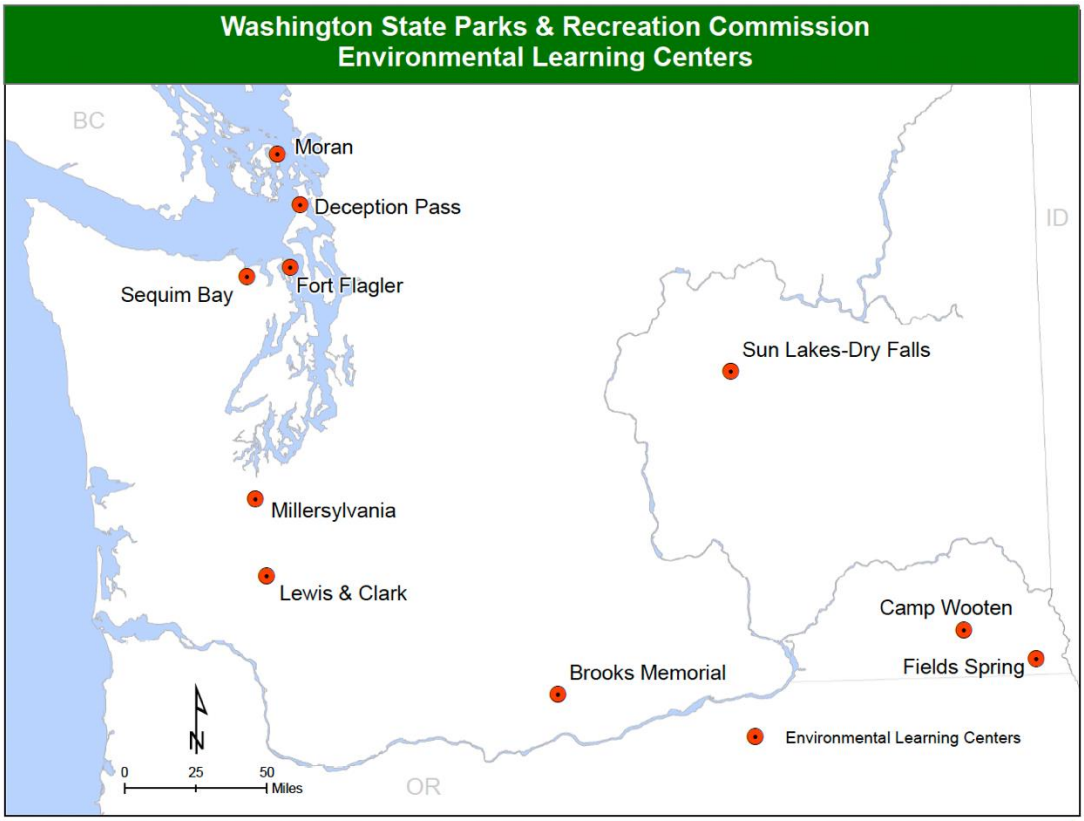
The geographic distribution of Parks facilities also must be taken into consideration, especially those with Interpretive Centers, Environmental Learning Centers (ELCs), and overnight options. While this may make Parks programs less accessible to some students, they may be a good option for students in more rural communities. However, there are also opportunities in more urbanized areas including Dash Point, Lake Sammamish, Saltwater, Millersylvania, and Riverside State Parks

Looking at the overnight facilities, Parks has everything from campsites to yurts, cabins, and barracks. Most sites have flushing toilets, and some have kitchens and indoor eating areas. Some locations need investments to prepare them for visitors or make them usable in all seasons. For school groups, staying at one of these locations can be very cost-effective with Retreat Centers costing $13-$15 per person per day. Depending on the location, the Retreat Centers can accommodate 12-269 people.

Availability is also a major consideration. State Parks are very busy during the late spring and summer, with reservations filling up 9 months or more in advance. To avoid this concern, residential outdoor education programs are currently better suited to the off-peak season – October to March – considering limitations of individual facilities and reservation policies. Karlson acknowledges that April and May have the potential to be critical months for outdoor education, which may mean that Parks would "need to look at reservation policy options to accommodate an outdoor youth education focus."

[26] Fort Worden Foundation. "The Lifelong Learning Center." *Fort Worden Foundation*, https://fortwordenfoundation.org/the-lifelong-learning-center/.

Figure 11: State Park ELCs and Interpretive Centers



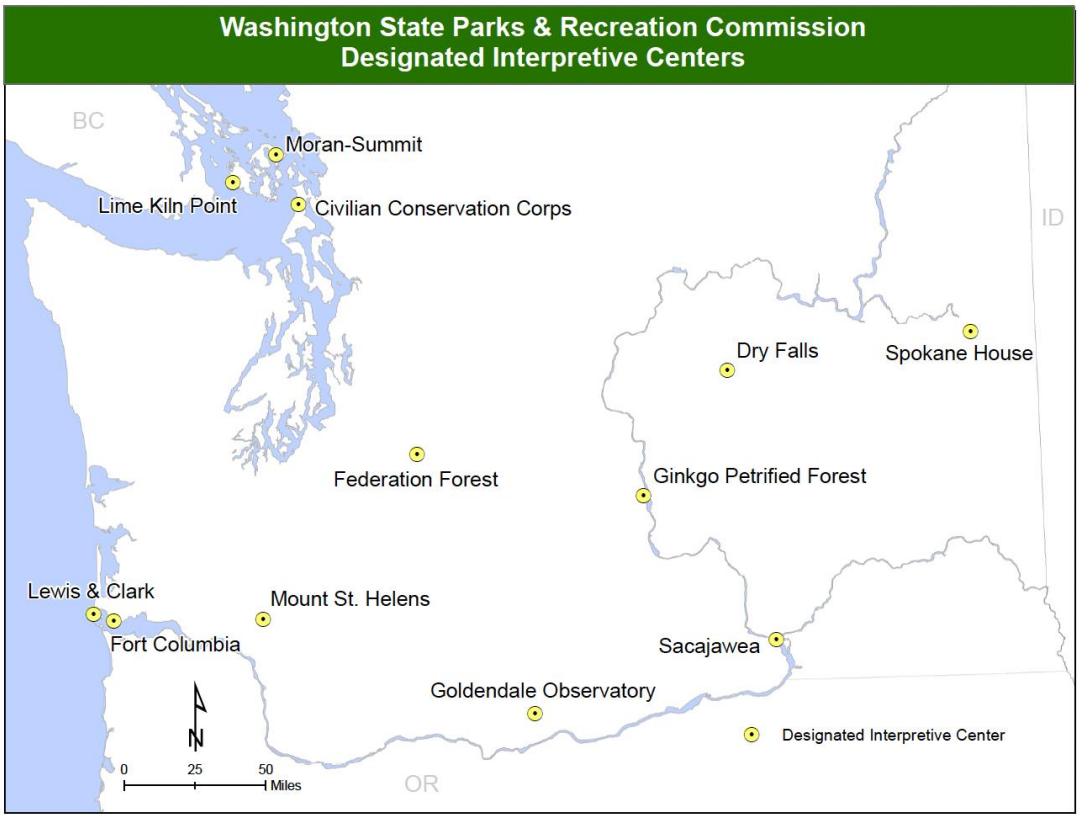
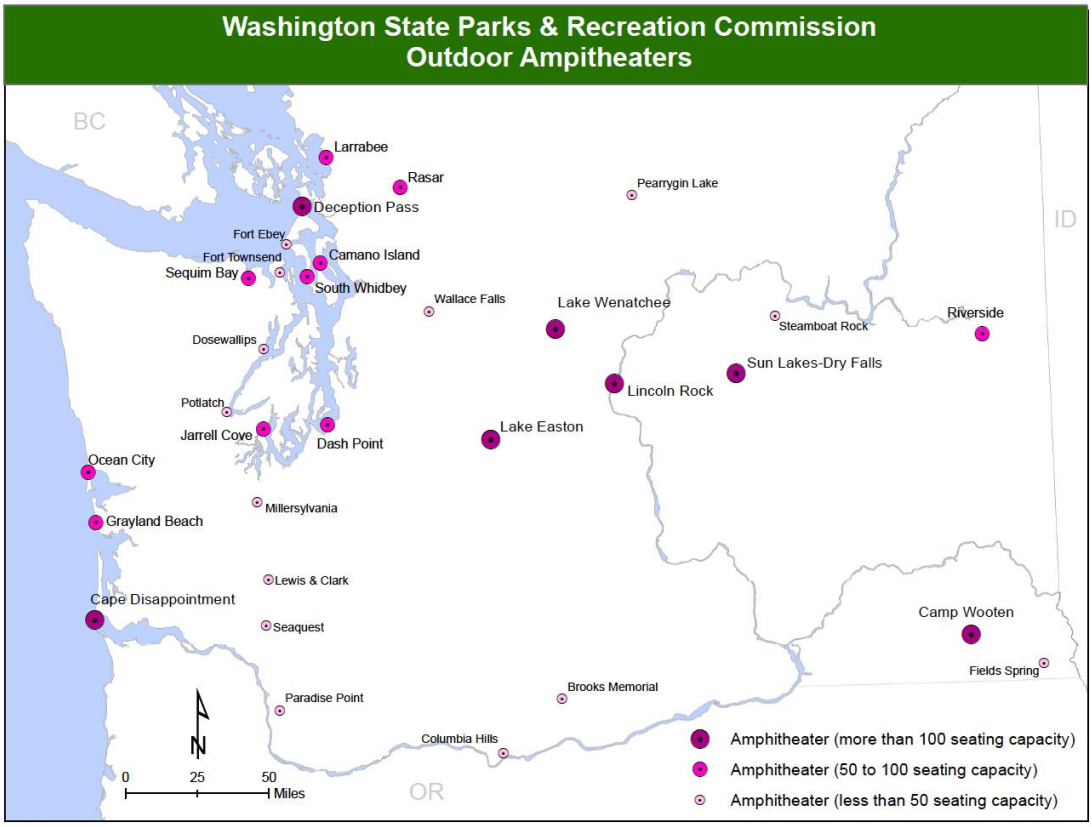
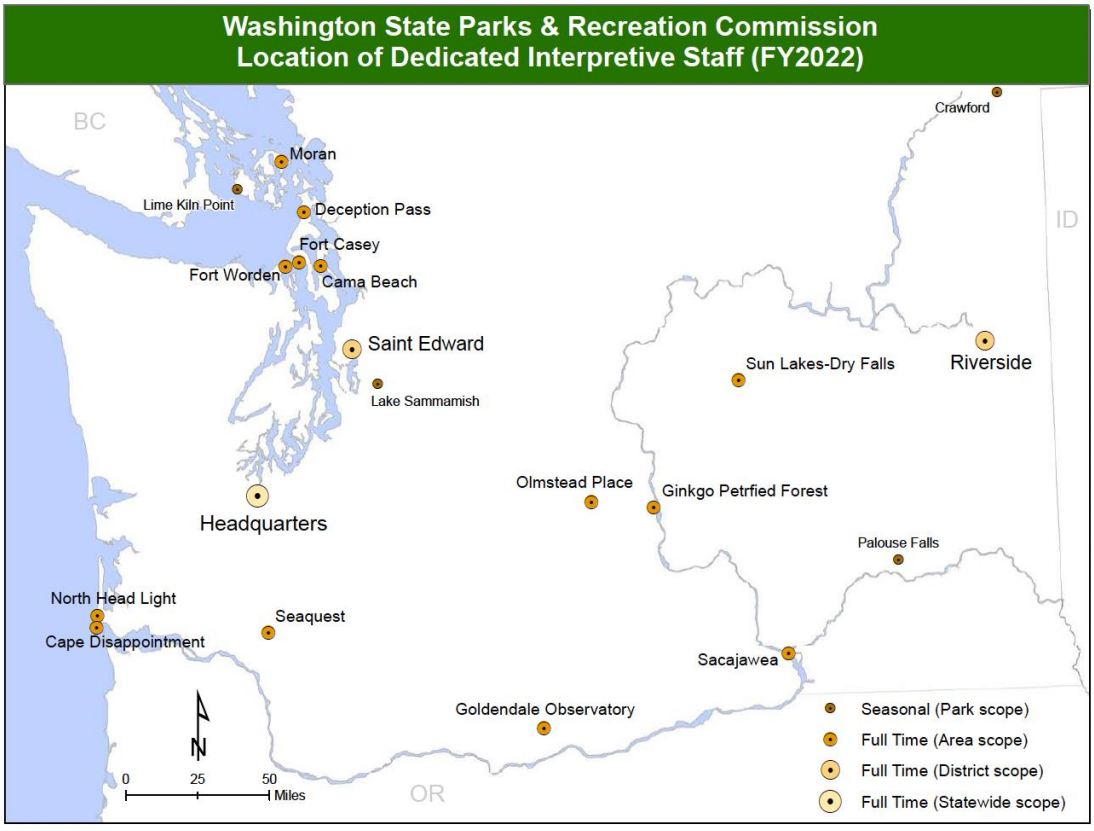


Figure 12: State Park Outdoor Amphitheater and Staff Capacity





Department of Natural Resources

The following information comes from an interview with Doug Kennedy, a Strategic Advisor with the Washington State Department of Natural Resources (DNR). While DNR does not currently have staff dedicated to outdoor education, many employees are passionate about their field of study and have helped with past outdoor education offerings. The biggest barrier to offering more outdoor education is a lack of funding for staff to design and administer these programs.

To begin offering outdoor education, Kennedy suggests funding 1-2 full-time staff positions and one half-time position to pay other staff who want to help develop a curriculum or lead a program. This plan would cost between $240,000 and $420,000 per year. Because DNR's campsites are not reservable, schools would need to find lodging elsewhere. DNR would not charge education providers for participating in agency-organized outdoor education program.

Current Utilization and Offerings

Although DNR does not traditionally offer outdoor education, agency staff have collaborated with various education providers on an ad hoc basis. Two examples include:

- DNR geologists working with the Olympia School District to deliver lessons to middle school science classes.
- Hosting 12 high school students from the Highline School District for one day as part of a 6-week outdoor education program. Highline School District, the Pacific Education Institute and the Mountains to Sound Greenway organized and paid for the program. For the first five weeks, students lived at home. In the final week, students stayed at Camp Waskowitz. During their time at the Raging River State Forest, DNR staff taught the students about trail maintenance and outdoor career opportunities.

Expanding Outdoor Education

DNR has access to approximately 3 million acres of land that varies in accessibility, proximity to populated areas, and land purpose. These sites can accommodate a variety of group sizes, depending on the location. However, DNR does not currently have staff resources to organize, prioritize, and help deliver outdoor education content. DNR also does not traditionally allow reservations in advance for its campsites. Many campsites have bathrooms and other facilities. Camping on DNR lands would require participants to bring their own tent and gear.

While some of these barriers, including overnight accommodations, cannot be mitigated, Kennedy is currently in the process of seeking funding for 1.5 FTE staff to be dedicated to outdoor education programming. This would include one full-time staff person to oversee the program and half-time funding to pay other staff for time spent contributing to the program. Funding 1.5 FTE staff is anticipated to cost approximately $240,000 per year; however, to create a more robust program with 2.5 FTE staff the annual cost would be approximately $420,000.

Department of Fish and Wildlife

To learn more about outdoor education opportunities with the Washington Department of Fish and Wildlife (WDFW), we interviewed Rachel Blomker (Communications Manager), Leia Althauser (Environmental Education Coordinator), and Matthew Trenda (Lands Data and Outreach Specialist) from WDFW. This team has been closely involved in the implementation of WDFW's strategic plan, which has a near-term goal to "create and promote education opportunities in WDFW wildlife areas, in urban centers, and on school grounds."[27]

Going forward, WDFW is best suited to day-use for outdoor education due to the nature of their camping areas. Depending on available funding for additional staff, WDFW has the potential to develop in-person day programs for K-12 students. Currently, WDFW is focusing on providing online lesson plans and field trip kits for teachers.

Current Utilization and Offerings

While WDFW does not currently have formal, in-person outdoor education opportunities for K-12 students, WDFW staff have created online resources and occasionally work with schools to create day programs. Examples include:

- Wild Washington: Provides "wildlife-themed curriculum for elementary, middle school, and high school students."[28] These lesson plans are designed to be used in the classroom and are adaptable for distance learning.
- Career Connections: WDFW staff host video-based Q&A sessions with students to highlight career paths in the natural resources field.
- In April 2021, the North Central Educational Service District worked with WDFW to create a one-day outdoor education program for 60 fifth-grade students.[29] Funding for this program was provided by the ClimeTime Provisio.

Expanding Outdoor Education

WDFW currently has multiple outdoor education efforts in progress to align with the department's strategic plan. Outdoor education efforts range from multi-agency dataset coordination to developing field trip kits for wildlife areas and hatcheries. WDFW's land is likely better suited to day programs; however, if students live nearby, they could use the land for multiple days in a row.

The biggest hurdle for WDFW when expanding outdoor education offerings is staffing. For additional online resources, programming, and field trip kits, would only need 1-2 new positions. However, if WDFW were to offer more in-person programming, they would need a significantly larger staff. The only expected costs for students in these programs would be transportation and supplies.

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[27] "WDFW 25-Year Strategic Plan." *Washington Department of Fish and Wildlife*, November 2020, https://wdfw.wa.gov/publications/02149

[28] "Wild Washington Program." *Washington Department of Fish and Wildlife,* https://wdfw.wa.gov/get-involved/environmental-education-curriculum

[29] "Connecting Kids to Nature through Hands-On Learning." *Washington Department of Fish and Wildlife, 29 June 2021, https://wdfw.medium.com/connecting-kids-to-nature-through-hands-on-learning-757ce9296b3e*

Office of Superintendent of Public Instruction

Given the proposed role of outdoor school in K-12 curriculum, it is important to gather input from OSPI regarding their role in outdoor education expansion. For this, we reached out to:

- Jenny Plaja (Assistant Director, Government Relations)
- Ellen Ebert (Assistant Director, Secondary Education and Pathway Preparation)
- Shelly Milne (Director, Elementary Education and Early Learning)
- Elizabeth Schmitz (Program Supervisor, Environment and Sustainability Education)
- Kimberley Astle (Associate Director, Elementary Science Content)
- Ken Turner (Program Supervisor, Health and Physical Education)
- Gretchen Stahr-Breunig (Kindergarten Transitions Specialist)

Looking toward outdoor school expansion, OSPI has the potential to add value in a variety of capacities. From a curriculum perspective, OSPI can assist outdoor school programs in developing curriculum that meets state learning standards and outcomes. OSPI is also well positioned to provide outreach, encouragement, and information on the benefits of outdoor education to school districts, schools, and teachers. Additionally, OSPI may be able to work collaboratively with the Recreation and Conservation Office (RCO) to distribute potential outdoor school funding.

Current Offerings

OSPI has a long history of involvement in supporting environmental, sustainability, and science-based learning for K-12 students. Key roles include:

- Supporting the development of content integration through the lens of environment and sustainability, as well as providing professional development to educators in formal, informal, and nonformal education fields
    - Updating the Washington Environmental and Sustainability Literacy Plan (Fall 2021)[30]
    - Providing funding for development of outdoor learning spaces and/or green play spaces
    - FieldSTEM© Contract Management:
        - Career connected learning with a focus on natural resources, environmental, and agricultural fields
    - Bilingual Environmental Education Contract Management:
        - Supporting culturally relevant, community connected science learning designed to support migrant and bilingual students
- Managing the ClimeTime proviso – several grantees provide outdoor learning technical support
- Contracting with WSPEF to support counseling in outdoor school
- Advertising unique physical education (PE) and health programs at schools

[30] "Environmental and Sustainability Literacy Plan." *WA Office of Superintendent of Public Instruction*, https://www.k12.wa.us/student-success/resources-subject-area/environment-sustainability/environmental-and-sustainability-literacy-plan

- Authoring a "Considerations for Outdoor Learning"[31] document to provide guidance and learning outcomes for schools and outdoor education programs
- Promoting awareness of elementary science standards and the importance of equitable access

Short-Term Expansion

If Washington were to expand funding for outdoor school, OSPI can assist in a wide array of promotion, curriculum development, and professional development roles:

- Recruit rural and high Free and Reduced Price Lunch schools to attend outdoor school programs
- Support educational school districts, schools, outdoor school programs, and staff with professional development and development of standards-aligned resources
- Support the development of resources for review and addition to the Washington Open Educational Resources Commons
- Provide resources that demonstrate the benefits of outdoor and nature-based learning
- Assist outdoor school programs and school districts with professional development and development of standards-aligned resources and curricula

Long-Term Expansion and Goals

Over a longer timeframe, OSPI is looking for opportunities to promote equity and career-connected learning, as well as:

- Support and develop more cross content between outdoor education programs and schools
- Develop ESD-level plans to get 5th/6th graders to outdoor school in each region
- Build equity and opportunities for high school and college students to gain entry to career connected learning through outdoor school
- Make connections to Career and Technical Education Learning Pathways and Career Clusters
- Support diversity in outdoor school leadership positions
- Assist in long term planning and development of outdoor school funding and resourcing

[31] Schmitz, Elizabeth, Gretchen Stahr Breunig, and Ken Turner. "Considerations for Outdoor Learning." WA *Office of Superintendent of Public Instruction*, https://www.k12.wa.us/sites/default/files/public/healthfitness/pubdocs/Outdoor%20Learning%20Considerations%20Document_v4-12-17-2020.pdf

Tribal Communities

A number of tribal communities exist throughout Washington State with a wide variety of involvement in outdoor education and capacity to become more involved. To learn more about the role that tribal communities would like to play in outdoor education and curriculum development, we reached out to Hanford McCloud and Nathan Reynolds. McCloud is a member of the Nisqually Tribe's tribal council, as well as an artist and educator. Reynolds recently became the executive director of the Opal Creek Ancient Forest Center, an outdoor school in Oregon. Previously, he served as the Director of Cultural Resources for the Cowlitz Tribe.

From these conversations, there appears to be an interest among many tribes to be involved in outdoor education expansion. While this involvement will likely look different between tribes, it may include standardized curriculum development, collaboration with local outdoor schools, traveling teachers, or the development of their own outdoor schools. Funding and close partnerships will be important.

Current Involvement

Reynolds emphasized the importance of realizing that every tribe is different, both with respect to what cultural or environmental education they currently offer and what they may be willing to expand to in the future. He notes that there is significant support for outdoor education with the Cowlitz Tribe, as evidenced by their significant donations to Outdoor School for All.

Turning to the Nisqually Tribe, McCloud discussed a variety of outdoor education involvement including:

- Multigenerational trips for tribe members to Cispus to learn about the area and history
- Presentations at local schools focusing on Nisqually culture and art
- Day programs for local schools at their Culture Center focus on Nisqually history, culture, and art

Potential Expansion

Reynolds noted that participation in outdoor education expansion will look different depending on the tribe. Some may choose not to participate, others may focus their efforts on members of their tribe, and others may be willing to develop their own outdoor school programs or assist existing programs. In Oregon, he notes that the state provides funding for tribes to develop curriculum to be used in K-12 education (see SB13). Similar funding in Washington could compensate tribes for their contributions, as well as provide locally relevant curriculum to schools and outdoor education programs. For programs looking to incorporate more indigenous culture, history, and knowledge into their outdoor school, Reynolds suggests building strong, ongoing, and mutually beneficial relationships with their local tribe.

McCloud explained that the Nisqually Tribe is interested in being involved in the expansion of outdoor education opportunities and has funds for outdoor education opportunities within the tribe. Looking toward the future, he would like to see more place-based learning and involvement from tribes. One model he proposed is to have representatives from tribes act as traveling teachers who could facilitate lessons at different outdoor school programs within their historical lands. He is also interested in offering overnight outdoor education at the Culture Center and would like to see all tribes develop their own day programs or multi-day programs for outdoor and cultural education.

Other Expansion Partners

Looking beyond existing outdoor educators, there are many resources within the state that could aid in a successful expansion plan. From additional capacity, to promotion, accessibility, networking, and staff training, each group has an important role to play.

K-12 Educators

Throughout the discussion groups with schools and outdoor education programs, there was a common theme: students only go to outdoor school when educators see the value in the experience and are passionate about making it happen. Even with statewide funding, it will be crucial to engage staff in all areas of the K-12 education system.

- Educational Service Districts (ESDs)
    - Outreach and promotion of outdoor education opportunities
    - Provide information on funding and the benefits of outdoor education
    - Maintain a list of all outdoor school providers within their region
    - There is some precedent of a regional government building a residential camp and then outsourcing operations to a different organization[32] or potentially operating it through an ESD or large school district[33]
- School Districts
    - Outreach and promotion of outdoor education opportunities
    - Provide information on funding and the benefits of outdoor education
- Schools and Teachers
    - Building support for outdoor school among staff, parents, and students
    - Offering outdoor education opportunities
- Other K-12 Organizations
    - Promoting the benefits of outdoor education and connecting schools who have not offered outdoor education before with more experienced schools
        - Association of Washington School Principals (AWSP)
            - Washington School Principals' Education Foundation (WSPEF) is currently administering $10 million from Washington State to expand access to outdoor education
        - Washington Association of School Administrators (WASA)
        - Washington Science Teachers Association (WSTA)
        - Washington State Parent Teacher Association (WSPTA)

[32] "Our Story." *YMCA Collin County Adventure Camp*, http://collincountyadventurecamp.org/our-story/
[33] "Camp Waskowitz History." *Highline Public Schools*, https://www.highlineschools.org/academic-programs/waskowitz-outdoor-education/history

State Agencies

In addition to Parks, DNR, and WDFW, other state agencies are well positioned to assist in expanding outdoor education access. Potential collaborators include:

- Washington State Recreation and Conservation Office (RCO)
  - Potential to administer funds in partnership with OSPI, similar to their work with the No Child Left Inside grant[34]
- Washington State Department of Commerce
  - Provide funding to support business planning services for outdoor education programs
- Washington State Office of the Attorney General
  - Assisting schools and school districts in understanding how to approach risk management and liability concerns in outdoor education

Western Washington University (WWU)

In conducting this research, we have heard multiple needs from both schools and outdoor education providers that have high value but no logical home within either universe. In looking at other states and considering Washington State's landscape, these are areas where Western Washington University could provide extensive value within the Outdoor Education space, if requested by the legislature. Potential offerings are provided here in summary form, with the expectation that a more thorough discussion would define operational specifics and lead to the development of relevant decision packages.

Western Washington University has strong existing connections within both the outdoor education and public education spaces through programs and efforts by multiple colleges and initiatives. For example, an overwhelming number of outdoor education providers report that much of their curriculum has been developed by Western students either acting as staff or interns.

Potential outdoor education expansion programming and support through Western Washington University could include:

- May be able to host an annual conference for outdoor education programs and schools to network and discuss curriculum, best practices, and expansion
- Create and maintain a central communications platform for outdoor educators to share information, best practices, and other related information
- Create and maintain a state-wide university student experiential education program that provides trained students for 1-week immersive experiences as naturalists to programs to assist with staffing needs
- Planning to develop a website with an interactive map of all outdoor education programs in Washington State
- Can offer business planning services for outdoor education programs
- Potential for outdoor school programs or the state to use WWU's Woodring College of Education and Huxley College of the Environment as consultants for outdoor education

[34] "No Child Left Inside." *Washington State Recreation and Conservation Office*, https://rco.wa.gov/grant/no-child-left-inside/

curriculum development. The goal would be to tie the lesson plans to statewide learning outcomes and Next Generation Science Standards (NGSS)

- WWU may also be able to explore the feasibility of a mobile outdoor school program that could be brought to schools with limited access to established outdoor schools that have trained naturalists or outdoor education teachers.
- Potential to design and implement a statewide outcomes study for students who participate in outdoor education
- Develop a masters degree in Recreation Management and Leadership for the preparation of master outdoor educators, program planners, and program managers. The emerging outdoor education workforce in Washington State will require the sustained development of these professionals

Other Organizations

While by no means an exhaustive list of all organizations that can act as expansion partners, the following groups are representative of different services that will be needed to support a statewide outdoor school initiative.

First, one common barrier to expansion is attracting and retaining qualified staff. The following two groups are actively working to train teachers within K-12 schools and outdoor schools:

- Pacific Education Institute (PEI)[35]
    - An organization in Washington State working with K-12 teachers to help them incorporate outdoor education into their curriculum
    - Aligned with WA educational goals, Common Core State Standards (CCSS), and Next Generation Science Standards (NGSS)
    - Could help teachers include short outdoor education lessons in more grades and throughout the year
    - Would prepare teachers to lead lessons in a multi-day, offsite outdoor education program for 5th/6th graders at a state park or camp facility
    - Outdoor education programs could also work with PEI to train staff and develop lesson plans
- BEETLES[36]
    - Provides a variety of training opportunities, lesson plans, and activities for outdoor education
    - Geared toward training environmental educators at residential programs, but also suitable for K-12 teachers looking to incorporate outdoor education into their curriculum throughout the year

[35] "Our Story." *Pacific Education Institute*, https://pacificeducationinstitute.org/story/
[36] "About Us." *BEETLES*, http://beetlesproject.org/about/

The next expansion topic to consider is accessibility. Currently, many outdoor education facilities are not able to support the needs of students with physical disabilities. If Washington State wants to offer outdoor school to all students, the expansion effort will have to consider accessibility:

- Outdoors for All[37]
    - Outdoors for All has over 850 volunteers who assist with running outdoor activities – hiking, skiing, rock climbing, kayaking, snowshoeing, etc. – that are able to support individuals with disabilities
    - With funding, Outdoors for All could act as consultants and perform accessibility audits of outdoor school programs
        - Focusing on making the whole experience more accessible rather than just one building
    - Many outdoor school programs may not have the funds or demand needed to purchase specialized equipment, giving Outdoors for All the opportunity to rent out equipment as needed or provide staff/volunteers trained to meet the student's needs (i.e. ASL or behavioral support)

Coordination and collaboration between programs and schools will also be crucial to a successful expansion of outdoor school. A few key organizations include:

- Oregon State University (OSU) Extension Service: Outdoor School[38]
    - Provides a wide array of research and tools for schools and outdoor education programs
    - Many outdoor education programs may not understand their fully burdened costs which can lead to financial distress. OSU created a report[39] and customizable financial model[40] to help programs better understand their costs
- American Camp Association (ACA)[41]
    - Provides networking opportunities, best practices, safety guidelines, and accreditation for youth camps
    - May be able to connect WA camps interested into expanding their shoulder-season offerings to include outdoor education programs
- North American Association for Environmental Education (NAAEE)[42]
    - A professional organization for environmental educators across a variety of sectors including K-12 teachers and outdoor education staff
    - They offer an annual conference, promote best practices, offer professional development opportunities, and advocate for environmental education

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[37] "Who We Are." *Outdoors for All*, https://outdoorsforall.org/about-us/who-we-are/
[38] *Oregon State University Extension Service: Outdoor School*, https://outdoorschool.oregonstate.edu
[39] Lindberg, Andy. "Outdoor School Cost Model Report." *Oregon State University Extension Service: Outdoor School*, https://oregonstate.app.box.com/s/aygkq86lk3g1gns9xbke33bw89udogxv
[40] Lindberg, Andy. "Outdoor School Cost Model Report Worksheet." *Oregon State University Extension Service: Outdoor School*, https://oregonstate.app.box.com/s/f6zmmv1e3j4ro4aku2p3k5s2vcdt64x9
[41] "Who We Are." *American Camp Association*, https://www.acacamps.org/about
[42] "About Us." *North American Association for Environmental Education*, https://naaee.org/about-us

    - Washington Educators for Environment, Equity, and Economy (also known as E3 Washington) is the local branch of NAAEE and provides similar opportunities throughout the state[43]
- Association of Nature Center Administrators (ANCA)[44]
    - Brings together leadership from nature and environmental learning centers throughout the United States to network and share insights into management within the field
    - Residential Environmental Learning Centers (RELC) Summit: biennial summit for leaders of RELC programs[45]
- Outdoor Schools Washington
    - Works with the Washington Outdoor School Consortium (WOSC)[46]
    - Act as a statewide advocate for outdoor school, similar to Friends of Outdoor School in Oregon
- Other Organizations
    - Trust for Public Land
    - Nature Conservancy
    - Washington Environmental Council

Another need identified through this research is partnership with communities and aligned organizations in Washington State, including:

- Communities of Color
- Migrant Communities
- Rural Communities

Foundations and Other Funding Partners

In Oregon, the state's outdoor school funding partially comes from donations. Washington may also benefit from donations to a statewide program; however, donations may be more impactful at individual outdoor schools. For instance, outdoor education programs surveyed in this research indicated that funding was a significant barrier to expansion.

Foundations and other potential funding partners could engage with existing outdoor education programs for targeted expansion efforts that increase capacity. There should be a specific focus on targeting those expansion efforts that offer the highest return on investment in terms of total additional program enrollment space or additional program space for underserved geographies or students (including students with disabilities).

- Russell Family Foundation
- Soil and Water Conservation Districts
- Local Businesses
- Hunting/Fishing Organizations
- Seattle Community Foundation
- Utilities
- Other Foundations
- Agriculture or Timber Groups

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[43] "Who We Are." *E3 Washington*, http://www.e3washington.org/who-we-are ("Who We Are ("Who We Are
[44] "About ANCA." *Association of Nature Center Administrators*, https://www.natctr.org/about
[45] "Residential Environmental Learning Center Summit." *Association of Nature Center Administrators*, https://natctr.org/events/relc
[46] "Consortium." *Outdoor School For All*, https://outdoorschoolforall.com/consortium

New Outdoor Education Programs

To have sufficient outdoor school capacity for all 5th and/or 6th graders in Washington will likely require new programs starting in the coming years. This growth can come from two places:

- Facilities with residential capacity but no outdoor education program
    - Some summer only camps, private church camps, and other private facilities could support outdoor school; however, they are not currently offering outdoor education
    - These groups could develop their own outdoor education program or rent out their facilities to other programs or schools
    - Barriers include funding, staff, curriculum development, and winterization
- Brand new programs
    - An increase in demand would encourage new entrants into the Washington outdoor school field
    - These new programs may use public land for day programs
    - To create new residential outdoor education programs would require significant start-up costs for both capital and staff

Policy and Funding Options

This section will show different variations of outdoor schools along with recommendations on policy design that would be beneficial in starting a state-wide program. The section will also give evidence on the connection between outdoor education and career focused learning. Lastly, the section will share possible funding options to start a statewide program in Washington state. Note that funding for schools would likely be accessed through an allocation process rather than a competitive grant writing process.

Possible Outdoor Education Variations

There are thousands of different outdoor schools throughout the United States. These programs operate in different locations, have different trip lengths, and practice different learning techniques – thus there is no universal definition of what outdoor school should look like. Outdoor schools can be operated in woodlands, wetlands, zoos, farms, parks, or other outdoor areas. They also can be tailored to specific age groups or all age groups, and the programs can be run for multiple days with sleeping arrangements or just as a day program. The curriculum is also different between outdoor schools. Below are a few examples of outdoor school structures that are available through different outdoor schools.

Oregon's Statewide Program provides funding for every fifth or sixth grader to attend outdoor school for one week, four nights (Mon-Fri school days). However, some schools in Oregon choose to send their students for a shorter amount of time. Other outdoor school programs last for three days, two nights. Using the cost analysis above, the three-day option is clearly less expensive to fund since the costs are on a per student basis.

There are some outdoor schools in Washington that offer overnight accommodations for the students and some that act as a day camp where the students stay for most of the day, leave, and come back the next morning. There are also many outdoor schools that have religious affiliations; however, many of these locations can offer their facilities and programming without religious content.

This leads into the next topic of how the teachers and counselors are managed. Some outdoor schools employ their own teachers and counselors, and some require teachers from the elementary/middle school to teach and watch over the students. If the fifth and sixth graders stay the night, some outdoor schools have high school camp counselors to stay with the fifth and sixth graders to maintain safety.

There are many different variations of how outdoor schools can be organized. To start a state-wide program, it is important to acknowledge that not every outdoor school experience will look the same. One option would be to delegate certain outdoor school organizations to the different counties in Washington and allow the schools to choose from a list of outdoor school options within the county list. A more flexible option would be to provide the funding and allow the schools to choose any outdoor school experience that meets certain minimum educational and programmatical criteria.

Policy Design Considerations: Lessons from Oregon

Given Oregon's long history with outdoor school, robust program, and proximity to Washington, there is much to be learned. For this, we reached out to Rita Bauer, Assistant to Outdoor School Program Leader. Bauer works with Oregon State University's Extension Service to administer funds to school districts participating in outdoor school. Through this process, she has seen first-hand what has worked well with the law and what other states could improve upon.

Thinking about the design of Oregon's outdoor school law, what has worked well?

"Our law was written to allow the decisions/planning of curricula, program length, and program location at a school/district level. This allows for the best experience based on student need. By using the phrase 'all students', the law requires us to focus time and attention on the inclusion aspect of Outdoor School. Our funds provide for an Outreach and Inclusion Coordinator who continues to look at what obstacles could prevent a safe and fulfilling experience for every student. Our funds permit us to support improvements to Equity, Diversity, Inclusion (EDI) in outdoor school, which could include purchasing a beach wheelchair, ensuring a gender-neutral bathroom is available, and training staff in EDI. The law was also well written in that, combined with Measure 99 (the voter ballot initiative that funds outdoor school with lottery dollars) it provides adequate funding for our statewide program. It tends to be less subject to cuts and reallocations that often impact programs funded by the state's general fund."

What snags have you come across?

- "Our law does not directly address the funding of private/home schooled students, and, by not addressing them, makes access to outdoor school funds difficult these students."
- "The broadness of providing funding for both 5th or 6th grade prevents accurate calculations of participation and tracking of participation. In some districts, 5th and 6th graders are in the same school but in other districts they are divided between Elementary and Middle Schools."
- "There is no stated requirement for how to prioritize funding with our program. So, if in a given year, our requests for funding exceed our budgeted funds, we ask out Advisory Committee to recommend how we might manage this/what we might fund."
- "We are also looking at the 'consecutive' program length/format requirement. Currently, a standard outdoor school program must be at least 3 consecutive days (minimum, non-residential) and up to 6-days, 5-nights. We're reviewing this to determine, long-term, what program lengths/formats can be funded as participation increases and more districts move toward longer (more costly) outdoor school programs."
- "There is still hesitancy by some districts to allow high school junior leaders to participate. In many programs, these youth are essential to the success of the program, and we have early data that show these students benefit tremendously from this experience. Some administrators see the service of high school students at outdoor school as an absence from school, rather than as a beneficial/alternative school experience."

For a state trying to create a similar program, what words of wisdom do you have in terms of policy design?

"We have found it essential to have a strong coalition of support, in our case, two non-profits that help us advocate for the program (Friends of Outdoor School and The Gray Family Foundation). Together they fund statewide advocacy efforts and provide a full-time lobbying firm to help ensure continuous funding and support by elected officials. This has been monumental to our success, even in times of budget cuts, we have maintained full funding. I would also say it is beneficial to have the program home outside of the department of education. In our case, we were able to leverage the reach and expertise of the Oregon State University Extension Service while operating with the full support the University provides. This allowed us to be nimble and quick but exist within a working ecosystem."

Career-Connected Learning

There are many literary examples of how outdoor education is closely connected with career focused learning. Both the physical and mental experience of outdoor education opens the youth's minds to educational areas such as science and environmental studies that exceeds what could be gained through textbook learning. These educational areas pave a path to new career opportunities as well as a variety of paths to continue education beyond elementary and high school. Below are examples found in literacy research showing the correlation between outdoor education and career focused learning.

The Outdoor School For All 2019 evaluation report done by Oregon State University shows empirical evidence of the connection between academic performance and outdoor school experiences.[47] Teacher responses from 113 different public and independent schools shows that outdoor school has a positive influence on students' academic performance in STEM, natural history, sustainability, and environmental education. Below are two charts showing the degree of improvement in academic performance teachers saw in their students after their outdoor school experience.

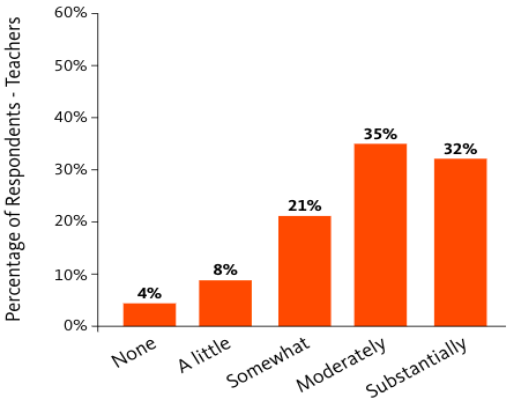
The same study done by Oregon State University also reports that outdoor school develops critical, creative thinking and strategic thinking skills as well as teamwork and leadership skills that can be used throughout their future career.[48]Below are the charts showing how much outdoor school helps students develop these skills. 80% of teachers saw moderate or substantial improvement to their students' teamwork skills and 70% of teachers saw moderate or substantial improvement to their students critical thinking skills.

[47] Braun, Steven. "Outdoor School for All! Diverse Programming and Outcomes in Oregon: 2019 Evaluation Report." *Oregon State University*, 2019, https://oregonstate.app.box.com/s/7j7epv3e8i1e5e53u9apxrdstxq9p3bx

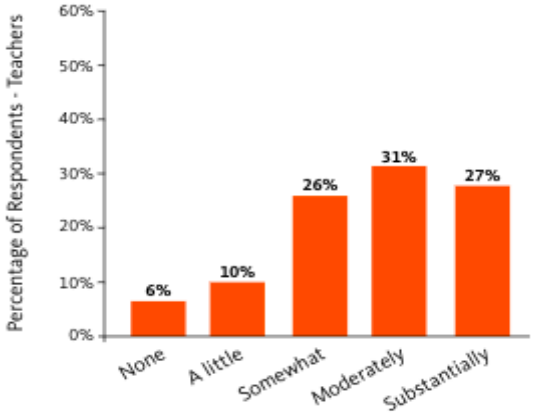
[48] 2019 Evaluation Report, Outdoor School for All-Oregon State University, 2018-2019, https://oregonstate.app.box.com/s/7j7epv3e8i1e5e53u9apxrdstxq9p3bx

Figure 13: Impact of Outdoor Education on Academics and SEL

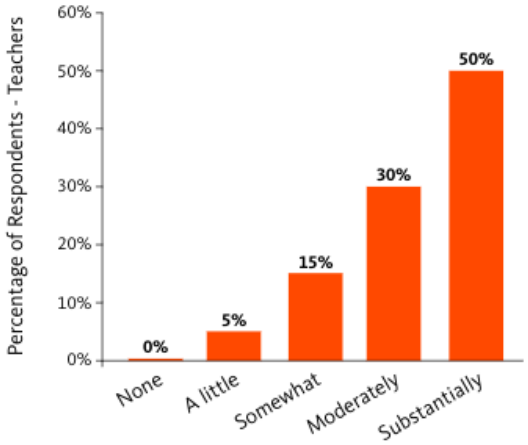
Science, STEM, & Natural History



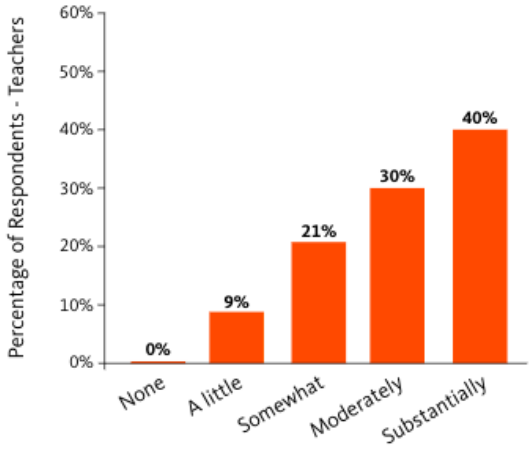
Sustainability/Environmental



Teamwork Skills



Critical Thinking Skills



Source: Braun, Steven. "Outdoor School for All! Diverse Programming and Outcomes in Oregon: 2019 Evaluation Report." Oregon State University, 2019, https://oregonstate.app.box.com/s/7j7epv3e8i1e5e53u9apxrdstxq9p3bx

A literary review done by Outdoor School For All on the benefits of outdoor school and experiential learning programs states that students who participate in outdoor school gain future employment skills and interest in natural resource careers through outdoor education:

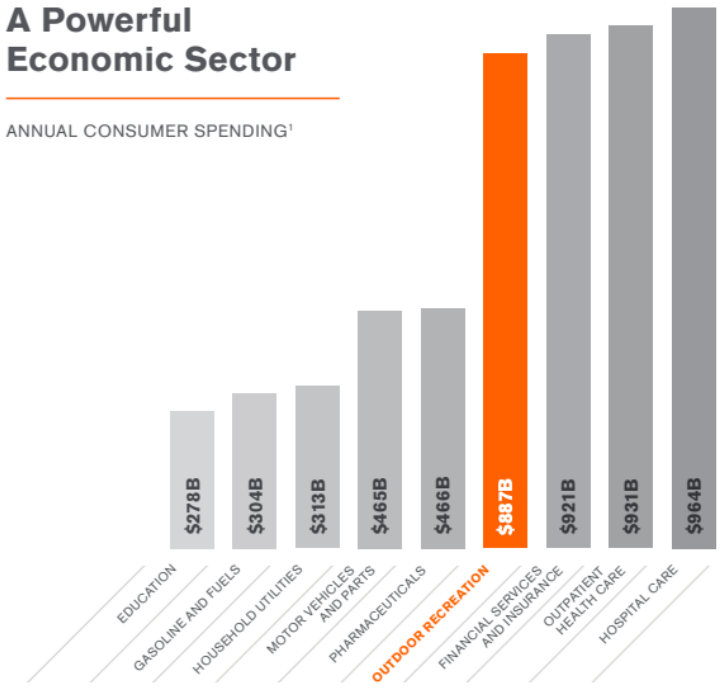
"The National Environmental Education and Training Foundation (NEETF) and North American Association of Environmental Education (NAAEE) (2001) report notes that environmental education programs allow students to gain skills and abilities needed to be successful in the job market. While undertaking different projects in their communities, students learn problem-solving, communication and decision-making skills, and also develop the ability to work in groups." [49]

[49] Empirical Evidence Supporting Benefits of Outdoor School and Experiential Learning Programs, Outdoor School for All, February 2015, http://grayff.org/wp-content/uploads/2013/10/Empirical-Evidence-Supporting-Benefits-of-Outdoor-School-and-Experiential-Learning-Programs_March-2015.pdf

Outdoor education allows fifth and six graders to gain interest in different scientific career paths. An outdoor education research project done on Nowlin Environmental Science Magnet Middle School in Missouri found that about 45 percent of students reported that they learned about career opportunities in the field of environmental science through participation in the program. Furthermore, 23 to 30 percent of students in grades 6- 8 said that they are thinking about a career in an environmental field. [50]

Another factor to consider when looking at the connection between outdoor education and career focused learning is the growth in the outdoor recreation economy. The Outdoor Recreation Economy report done by the Outdoor Industry Association shows that there are 7.6 million American jobs in outdoor recreation.[51] There is also $887 billion in consumer spending in America in the outdoor recreation sector. To give some perspective, below is a graph of different economic sectors compared to the outdoor recreation industry. Outdoor Education provides an opportunity to introduce students to potential career paths within this large and growing industry.

Figure 14: Annual Spending on Outdoor Recreation Nationally



Source: The Outdoor Recreation Economy, Outdoor Industry Association, 2017, https://outdoorindustry.org/wp-content/uploads/2017/04/OIA_RecEconomy_FINAL_Single.pdf

[50] Empirical Evidence Supporting Benefits of Outdoor School and Experiential Learning Programs, Outdoor School for All, February 2015, http://grayff.org/wp-content/uploads/2013/10/Empirical-Evidence-Supporting-Benefits-of-Outdoor-School-and-Experiential-Learning-Programs_March-2015.pdf

[51] The Outdoor Recreation Economy, Outdoor Industry Association, 2017, https://outdoorindustry.org/wp-content/uploads/2017/04/OIA_RecEconomy_FINAL_Single.pdf

Funding Strategies

The next step is to consider how to fund a statewide outdoor education program. Turning to the literature, there are multiple examples of how outdoor education programs are funded including: Oregon's statewide outdoor school program, Washington's No Child Left Inside Grant, Hawaii's No Child Left Inside Grant, and New Mexico's Outdoor Equity Fund. Based on this review, common funding options include:

- Appropriations from state general funds
- Grants from various companies and nonprofits
- Appropriations from state lottery funds
- Donations (individual, foundations, associations)
- Interest on moneys in the fund

Again, it is important to note that statewide outdoor school funding in Washington would likely be allocation based rather than competitive. In other words, any school or school district that requests outdoor school funding would be given the requested funds – within certain parameters set by the state. This eliminates any barriers associated with the competitive grant writing process and ensures equitable access to outdoor school.

Oregon Outdoor Education System

According to Friends of Outdoor School, "On November 8, 2016, Oregon voters passed Ballot Measure 99, authorizing funds from the state lottery to provide all fifth- or sixth-grade students in Oregon access to a week of Outdoor School." [52] Measure 99 paved the way for the funding of the Outdoor School Law, which was passed by the Oregon Legislature in 2015. Measure 99 created the Outdoor School Education Fund which is housed within the State Treasury and is separate from the State of Oregon's General Fund. [53]Moneys in the fund consist of donations, moneys transferred from the Oregon State Lottery, investment earnings on received moneys, and other amounts deposited from any other source.

"Each fiscal quarter of the biennium, funds are allocated from the Administrative Services Economic Development Fund to the Outdoor School Education Fund of an amount equal or less than four percent of the moneys transferred from the Oregon State Lottery Fund in the fiscal quarter or $5.5 million annually, but not to exceed $22 million annually, adjusted annually pursuant to the Consumer Price Index."[53] moneys in the fund are appropriated to Oregon States University Extension Service to support, administer, and fund any outdoor educational programs for Oregon K-12 children. Any money remaining in the fund after providing the fifth and six grade students an outdoor education experience may be used by Oregon State University Extension Service to develop additional outdoor education programs.[53]

In 2016, the average cost of a week-long outdoor school program per student was $278 according to research done the Gray Family Foundation. Also in 2016, Oregon had 43,782 students enrolled in sixth grade. Providing every sixth-grade student with outdoor school in the state costs roughly $12.2 million,

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[52]Statewide Outdoor School Program, Friends of Outdoor School, 2018, https://www.friendsofoutdoorschool.org/statewide-ods

[53] Act to Create the Outdoor School Education Fund, October 2015, http://oregonvotes.org/irr/2016/067text.pdf

which falls between the $5.5 million - $22 million provided by the Oregon State Lottery.[54] According to the Oregon State University Extension Service Outdoor School Annual Report for 2019-2020, the total amount spent for in person outdoor school was $4.3 million and the total amount spent to provide alternate programs was $3.7 million, totaling to roughly $8 million.

Washington State, No Child Left Inside

According to Washington State Parks and Recreation Commission, "In 2007 the Washington State Legislature HB 1677 directed the Washington State Parks and Recreation Commission (Commission) to establish an outdoor education and recreation grant program to provide a large number of under-served students with quality opportunities to directly experience the natural world."[55] "The budget provided $1.5 million in funds to implement No Child Left Inside. In 2008, using criteria agreed upon by a 23-member advisory committee, the Commission awarded $1.36 million in grant funds to 26 grant recipients ("grantees") whose programs brought under-served, at-risk students to the outdoors for education and recreation experiences."[55]

The funding for the Outdoor Education and Recreation Grant program comes from general tax dollars from Washington State's general fund. [56] There are three funding categories for the grant program ranging from $5,000 to $150,000.[56] In May of 2021, Washington State Governor, Jay Inslee announced that $4.5 million will be awarded to the Washington State Parks and Recreation Commission to fund No Child Left Inside (NCLI) grants. [57]

One option to start a state-wide outdoor education system for all 5th or 6th grade students in Washington is to combine the funding with NCLI. Another option would be to keep the two programs separate but have the Recreation and Conservation Office (RCO) administer both grant programs given its experience with NCLI.

OSPI and AWSP will also likely play a role in the flow of outdoor school funds. Grants are expected to follow an allocation process as opposed to a competitive application process. Both OSPI and AWSP are well positioned to encourage schools and districts to participate, as well as to assist in the distribution of outdoor school funding.

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[54] CITIZEN INITIATIVE TO FUND STATEWIDE OUTDOOR SCHOOL PROGRAM, West Multnomah Soil & Water Conservation District, August 2016, https://wmswcd.org/wp-content/uploads/2016/09/WMSWCD-Outdoor-School-Discussion-Paper.pdf

[55] No Child Left Inside Outdoor Education and Recreation Grant Program, Washington State Parks & Recreation Commission, https://parks.state.wa.us/DocumentCenter/View/6008/NCLI-Final-Report-2009-10-02

[56] No Child Left Inside, Washington State Recreation and Conservation Office, 2021, https://rco.wa.gov/grant/no-child-left-inside/

[57] Governor Announces $4.5 Million in Grants to Get Kids Outside, Washington State Recreation and Conservation Office, May 25,2021, https://rco.wa.gov/2021/05/25/inslee-announces-4-5-million-in-grants-to-get-kids-outside/

Other Examples

Like Washington, the State of Hawaii has a No Child Left Inside Grant to "provide resources and support to public agencies, private organizations, and individuals in establishing and maintaining outdoor education and recreation programs for children"[58] The grants are established within the treasury of the State's special fund. The funding for the No Child Left Inside special fund comes from gifts/donations and moneys appropriated from general revenues of the State of Hawaii.

In 2019, New Mexico created the Outdoor Equity Fund to provide youth in New Mexico with outdoor education grants. The money in the fund is managed and delegated by New Mexico's Outdoor Recreation Division. $1.5 million is appropriated from the State's general fund to the economic development department for expenditure in the fiscal year for the operation of the New Mexico Outdoor Recreation Division.[59] Similar to Hawaii and Washington's programs, donations and grants from outside sources are also sources of funding.

[58] S.B. NO. 507, The Senate Thirty-First Legislature State of Hawaii, Jan 22, 2021, https://www.capitol.hawaii.gov/session2021/bills/SB507_.PDF

[59] 54TH LEGISLATURE - STATE OF NEW MEXICO - FIRST SESSION, 2019 https://www.nmlegis.gov/Sessions/19%20Regular/bills/senate/SB0462COS.pdf

Recommendations

1. Curriculum and camp environments should be designed to allow children from all backgrounds and of all abilities to feel like they belong and to facilitate equitable learning
2. Flexibility of funding is important, as transportation costs for outdoor education can often be a significant barrier for schools
3. Fund at least one outdoor school program at a Washington State Parks and Recreation (Parks), Department of Natural Resources (DNR), or Department of Fish and Wildlife (WDFW) facility in each Educational Service District (ESD)
    a. This ensures equitable access for students in all geographic regions and offers high levels of accessibility for students with disabilities
    b. Initially, Parks may just provide facilities while the school or school district provides instruction, activities, and supervision; however, in the long term the goal would be to have Parks staff involved in curriculum design and implementation
4. Allow both residential and day programs ranging in length from 3-5 days to be eligible for outdoor school funding
5. Create a list of standard learning outcomes for outdoor school and require that programs meet at least a certain number of outcomes to be eligible for funding
6. A key factor for the long-term success of a statewide outdoor school law is sustainable and reliable funding. As such, appropriations from the general fund may not be ideal because they are subject to fluctuations due to economic conditions.
7. Washington State's Recreation and Conservation Office (RCO), in partnership with the Office of the Superintendent of Public Instruction (OSPI), may be well positioned to administer funds for a statewide outdoor school grant given its experience administering grants through the No Child Left Inside program. It is also recommended to involve the Association of Washington School Principals within this process.

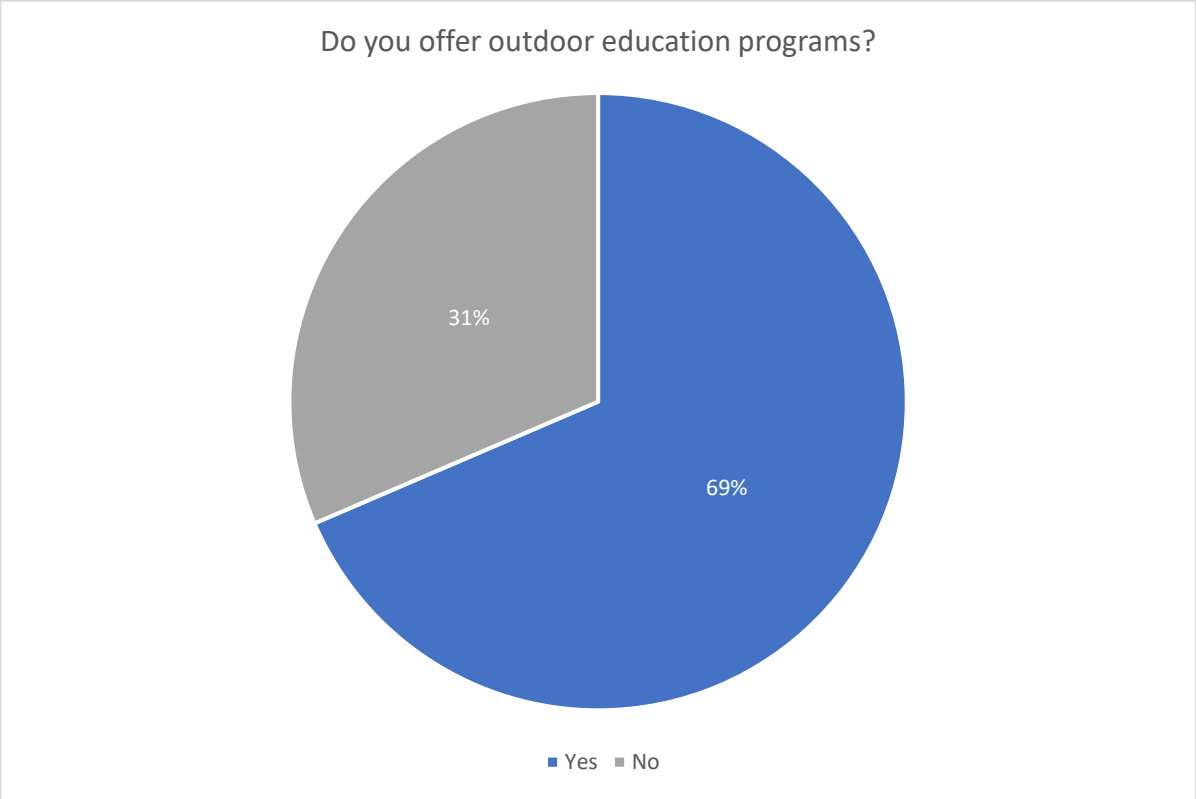
Appendix A – Outdoor School Program Survey Results

Program Attributes

Do you offer outdoor education programs? (n=124)

Out of the 124 programs that responded to the survey, 86 currently offer some form of outdoor education. Respondents who do not offer outdoor education were directed to the end of the survey and did not answer any additional questions. A high negative response to this question was expected because of the methodological design to seek organizations that might self-identify outdoor education alignments.

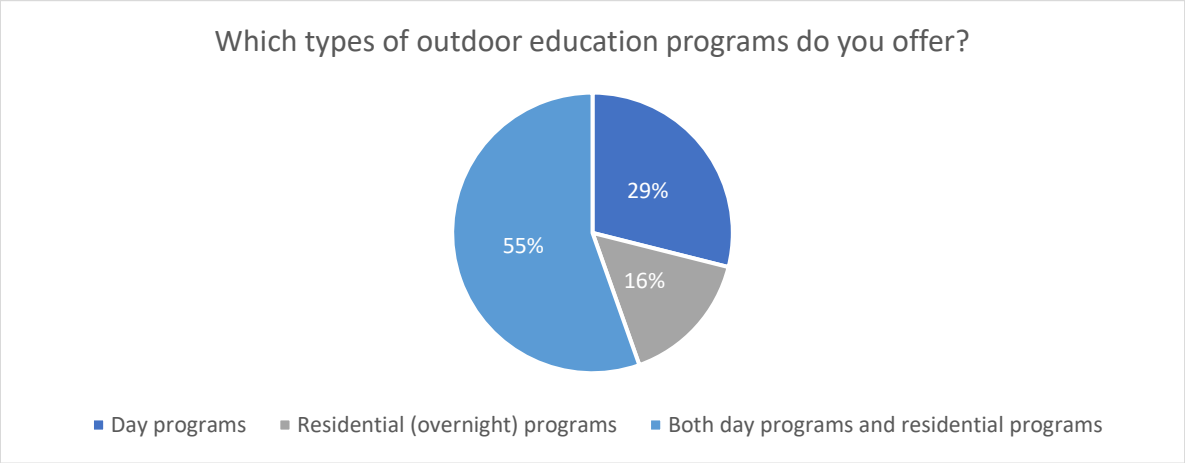
Figure 15: Survey Respondents Offering vs. Not Offering Outdoor Education



Which types of outdoor education programs do you offer? (n=83)

Most respondents (55 percent) offer both day and residential programs. Daytime-only programs were also common (29 percent), while residential-only programs were the least prevalent (16 percent).

Figure 16: Types of Outdoor Education Program Offered (Day vs. Overnight)



Every region had at least one outdoor education provider respond to the survey; however, most responses were concentrated in the Seattle-King (16), Snohomish (12), and Northwest (10) regions. This density cluster is not unexpected given the general population distribution of the state.

Table 7: Outdoor Education Type (Day vs. Overnight) by Region

	Day programs	Residential (overnight) programs	Both day programs and residential programs	Total
Benton-Franklin	1	0	0	1
Eastern	0	0	2	2
North Central	1	1	3	5
Northwest	4	3	3	10
Olympic	1	3	2	6
Pacific Mountain	0	1	2	3
Seattle-King	6	0	10	16
Snohomish	3	2	7	12
South Central	3	2	2	7
Southwest	0	0	1	1
Spokane	2	0	1	3
Tacoma-Pierce	1	1	6	8
Total	22	13	40	75

In thinking about where you offer your outdoor education program, please select which county your outdoor education program is located in. (n=75)

While the survey did reach outdoor education programs in all 12 workforce development areas, many counties were not represented. This is especially notable in Eastern Washington and likely suggests a lack of established outdoor education programs rather than simply a lack of survey respondents. In the Benton-Franklin Workforce Development Area, only one program responded to the survey, and they did not respond to most questions.

Figure 17: Number of Responses by County

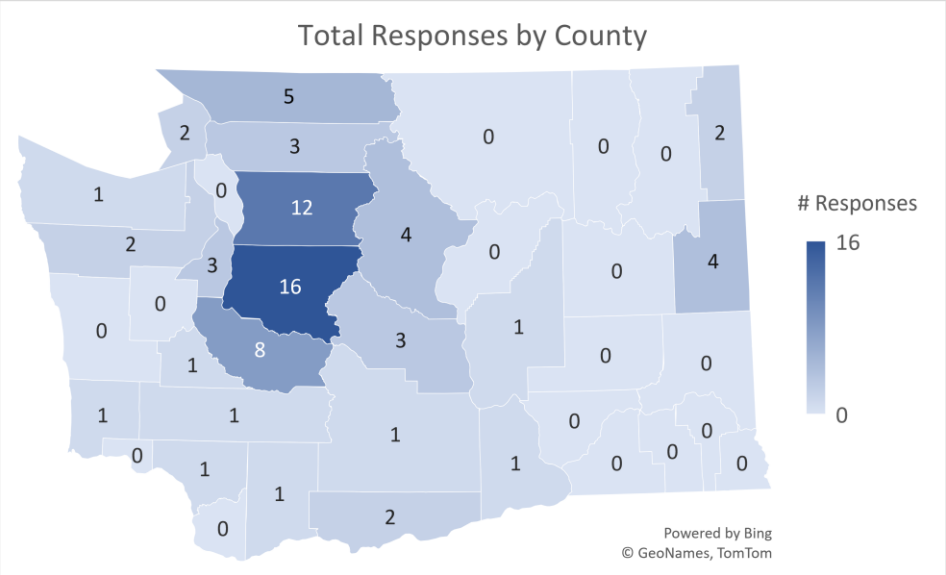
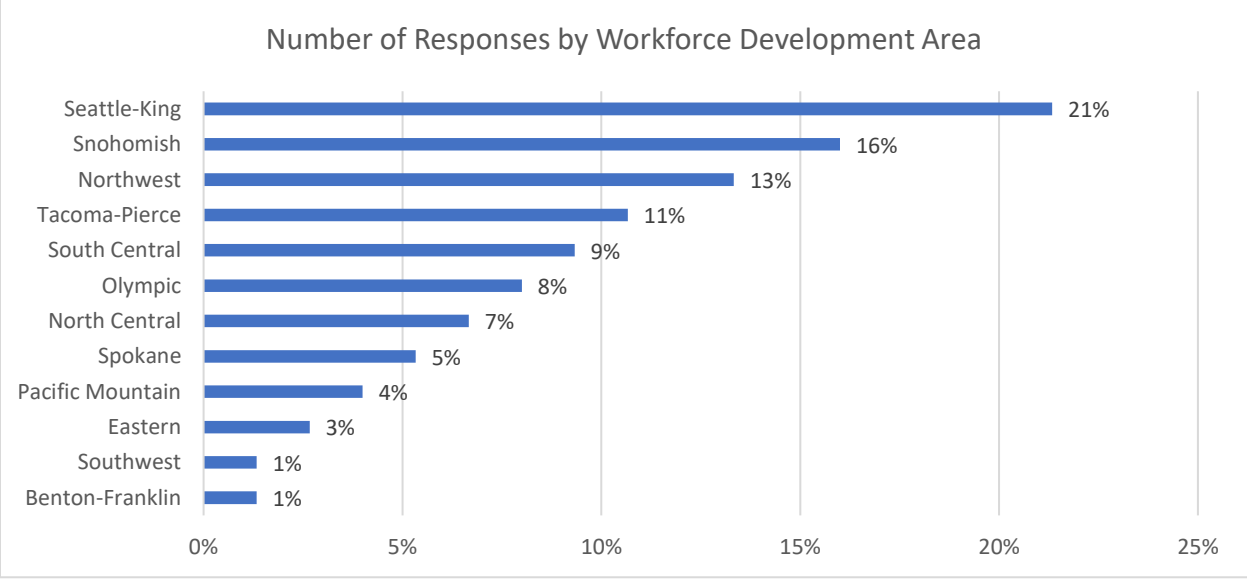


Figure 18: Distribution of Responses by Workforce Development Area



Please tell us more about the size of your educational facilities that your program offers for instructional programs (n=59)

Note that for this question "groups" do not necessarily represent different schools, but rather the potential division of students from a single school into learning groups of different sizes. For programs that offer small-group activities, they reported being able to support an average of 9 groups at a time; however, this could range from 1 to 40 groups depending on the program. As group size increases, facilities can support fewer groups at a time. The average program that offers mid-size group education can serve 5 groups at a time, and for large groups the average drops to 3.

It is important to note that while a program may be able to support 9 small groups, 5 mid-size groups, and 3 large groups, the numbers should not be added. This program likely could not support 17 groups of varying sizes at once, rather it would reach its maximum capacity at *either* 9 small groups, 5 mid-size groups, *or* 3 large groups.

Table 8: Number of Groups Supported by Group Size

	Smallest # Groups	Largest # Groups	Average # Groups
Small Groups (<15)	1	40	9
Mid-Size Groups (15-40)	1	30	5
Large Groups (>40)	1	20	3

The following table shows the maximum number of groups that can be accommodated by region and group size. Again, it is important not to sum across columns but rather to consider them individually. Also note that not all programs offer instruction for all group sizes.

Table 9: Number of Groups Supported by Region and Group Size

	Total Small Groups (<15)	Total Mid-Size Groups (15-40)	Total Large Groups (>40)
Benton-Franklin	0	0	0
Eastern	42	31	21
North Central	7	3	3
Northwest	49	33	10
Olympic	48	31	19
Pacific Mountain	15	8	4
Seattle-King	50	13	8
Snohomish	88	42	21
South Central	45	28	7
Southwest	4	2	1
Spokane	22	4	4
Tacoma-Pierce	67	36	21
Total	**437**	**231**	**119**

Does your program offer designated learning lab space(s) for outdoor education groups? (n=73)

Responses to this question are relatively evenly distributed between answer choices. This may in part be due to some confusion with the wording of the question. Respondents who selected *No* or *N/A* may not have lab activities or may not have a set location or group of locations where they run lab activities.

Figure 19: Prevalence of Dedicated Learning Lab Space

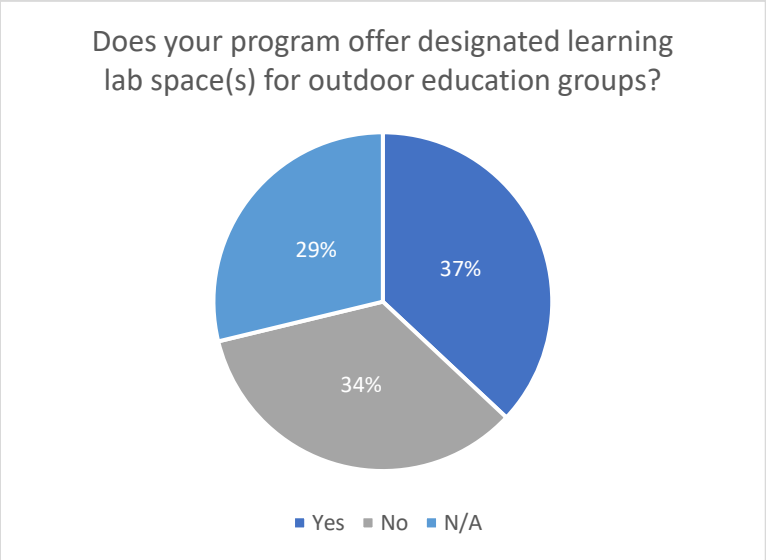


Table 10: Prevalence of Dedicated Learning Lab Space by Region

	Yes	No	N/A
Benton-Franklin	0	0	0
Eastern	2	0	0
North Central	0	2	3
Northwest	5	3	2
Olympic	2	2	1
Pacific Mountain	2	0	1
Seattle-King	4	5	5
Snohomish	3	5	4
South Central	2	1	4
Southwest	0	1	0
Spokane	1	3	0
Tacoma-Pierce	5	2	1
Total	**26**	**24**	**21**

Is your learning lab space indoors or outdoors? (n=26)

For those who answered *Yes* to the previous question, the majority (65 percent) had designated learning lab space both indoors and outdoors. A significant portion of respondents (31 percent) only have outdoor learning labs. Tacoma-Pierce was the only region to have a program report indoor-only learning labs. Additionally, 5 regions had programs with designated outdoor-only learning labs and 7 regions had programs with both indoor and outdoor learning labs.

Figure 20: Designated Learning Lab Space by Type

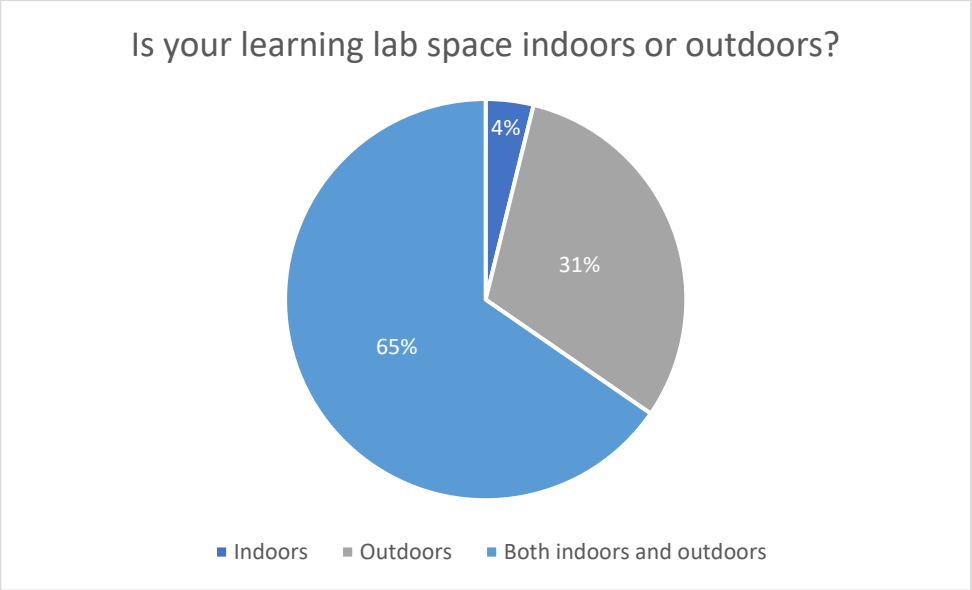


Table 11: Designated Learning Lab Space by Type and Region

	Indoors	Outdoors	Both indoors and outdoors
Benton-Franklin	0	0	0
Eastern	0	2	0
North Central	0	0	0
Northwest	0	2	3
Olympic	0	2	0
Pacific Mountain	0	0	2
Seattle-King	0	1	3
Snohomish	0	1	1
South Central	0	0	2
Southwest	0	0	0
Spokane	0	0	1
Tacoma-Pierce	1	0	4
Total	**1**	**8**	**16**

Do you provide outdoor education curriculum? (n=71)

Most outdoor education programs (73 percent) provide their own curriculum either independently or in collaboration with the school attending their program. Only 7 percent require the school or district to provide all outdoor education curriculum. The remaining 20 percent chose *Other* and elaborated on how they offer curriculum alone or in partnership with schools.

Figure 21: Curriculum Provision by Program vs. Schools

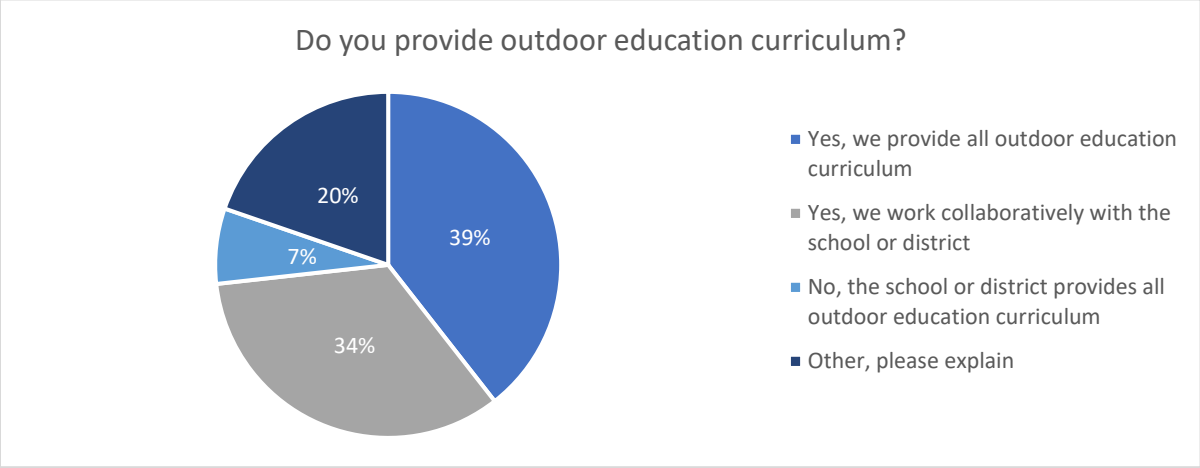


Table 12: Curriculum Provision by Region and Program vs. Schools

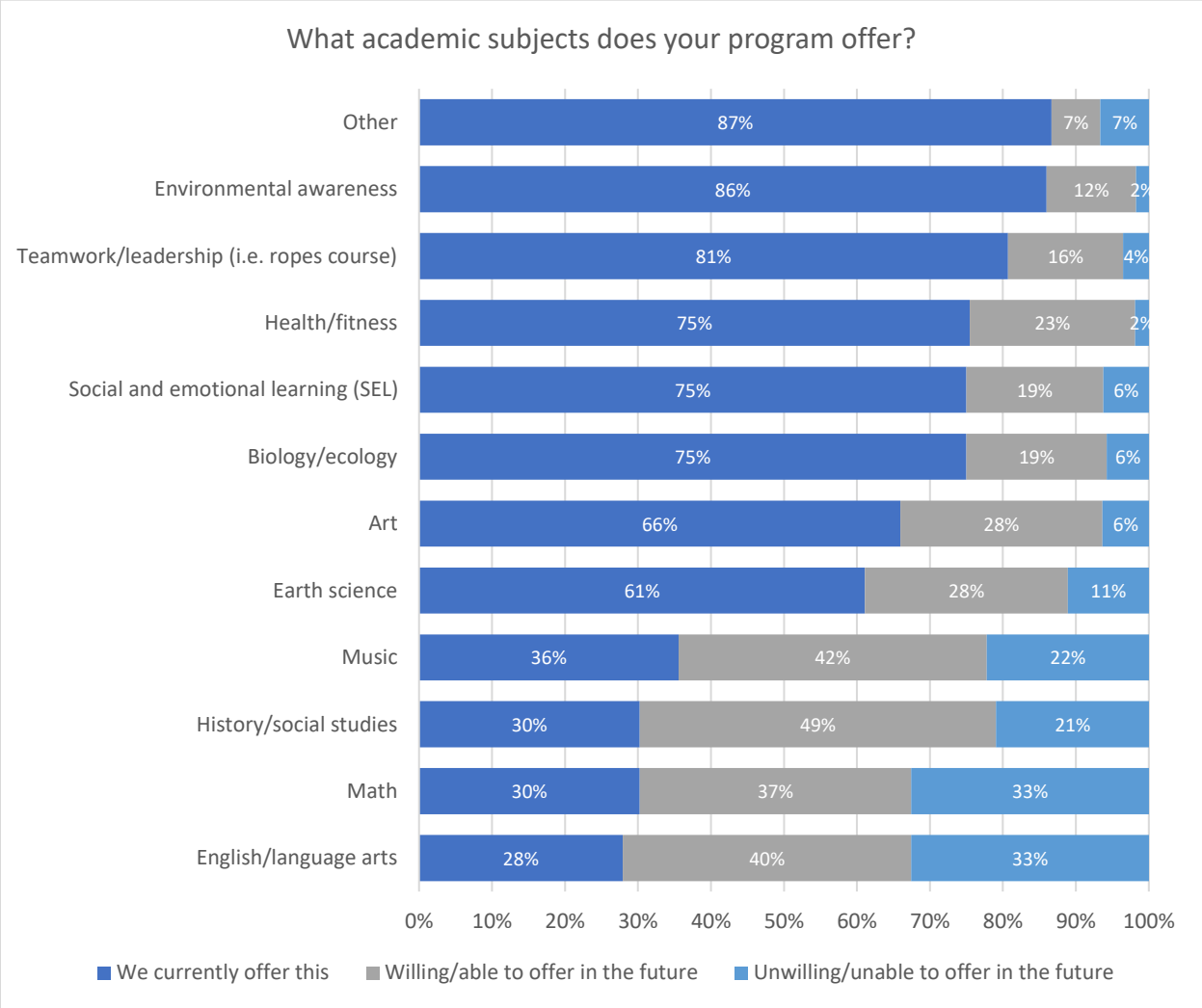
	Yes, we provide all outdoor education curriculum	Yes, we work collaboratively with the school or district	No, the school or district provides all outdoor education curriculum	Other, please explain
Benton-Franklin	0	0	0	0
Eastern	1	1	0	0
North Central	0	2	1	2
Northwest	3	4	0	3
Olympic	3	1	0	1
Pacific Mountain	1	2	0	0
Seattle-King	5	3	2	3
Snohomish	6	3	0	2
South Central	2	3	1	1
Southwest	1	0	0	0
Spokane	2	0	1	1
Tacoma-Pierce	4	3	0	1
Total	**28**	**22**	**5**	**14**

Please tell us more about the academic programs you provide or can support:

What academic subjects does your program offer? (n=57)

The most commonly offered academic subjects are environmental awareness (86 percent), teamwork/leadership (81 percent), health/fitness (75 percent), social and emotional learning (75 percent), and biology/ecology (75 percent). While math, history/social studies, music, and English/language arts were less likely to be currently offered, most programs would be willing to offer the subjects in the future. *Other* responses included life or survival skills, an interdisciplinary curriculum, and other location or program-specific topics.

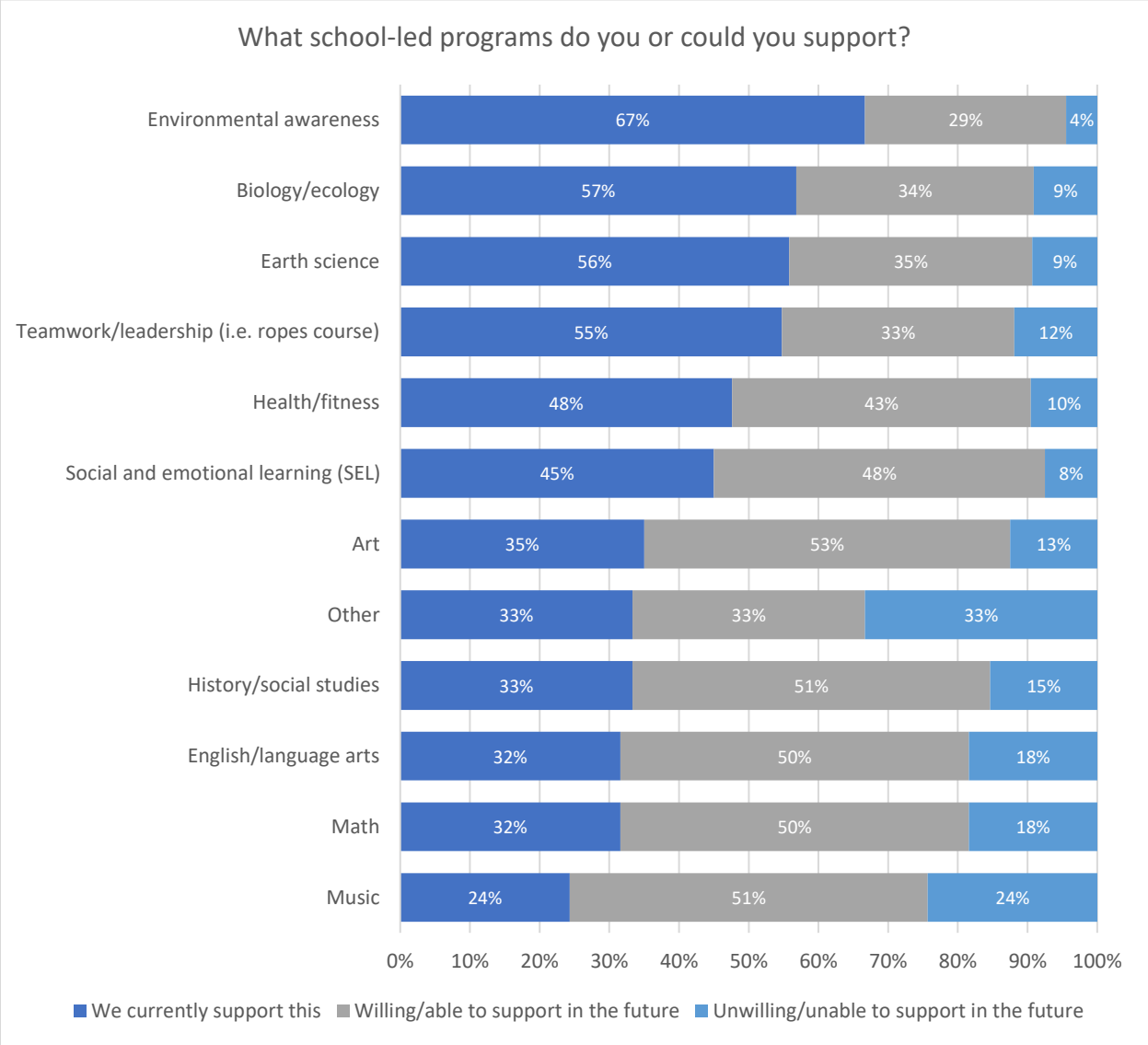
Figure 22: Academic Subjects Currently Offered



What school-led programs do you or could you support? (n=45)

Compared to the previous chart, we see that programs are less likely to currently support school-led academic programming, likely because many programs have their own curriculum and staff to lead lessons. A significant portion of respondents are willing or able to support more school-led programming in the future.

Figure 23: School-Led Programming Support



Which other activities does your program provide? Please select all that apply (n=68)

Over half of respondents include hiking (88 percent), crafts (78 percent), sports/games (65 percent), and archery (56 percent) in their outdoor education programs. Among *Other* responses, survival skills, first aid, and other outdoor recreation activities are common.

Figure 24: Activities Currently Offered

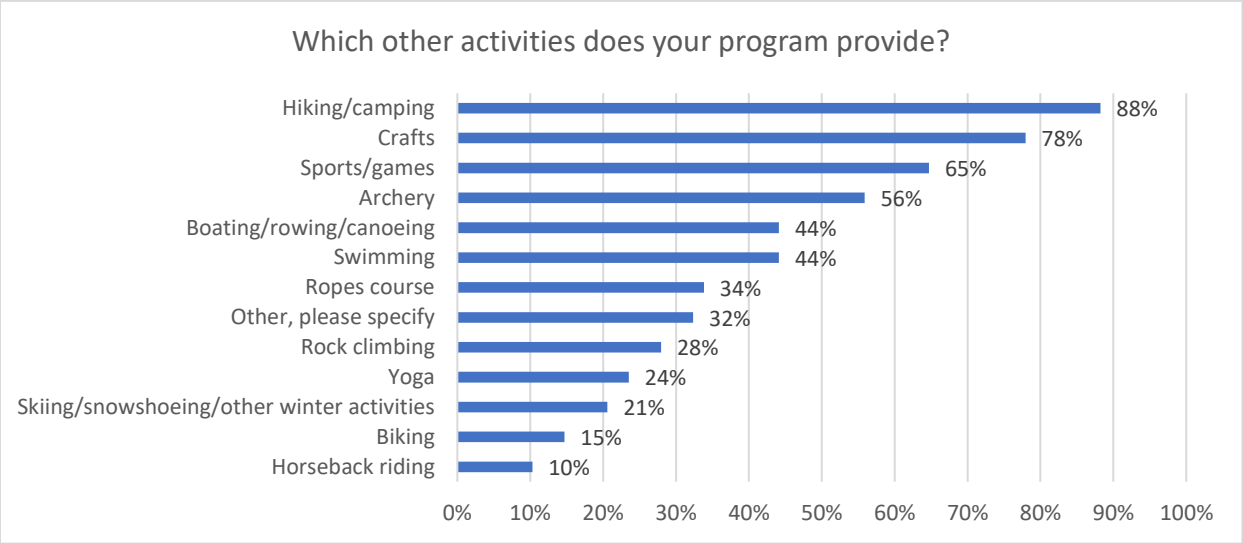
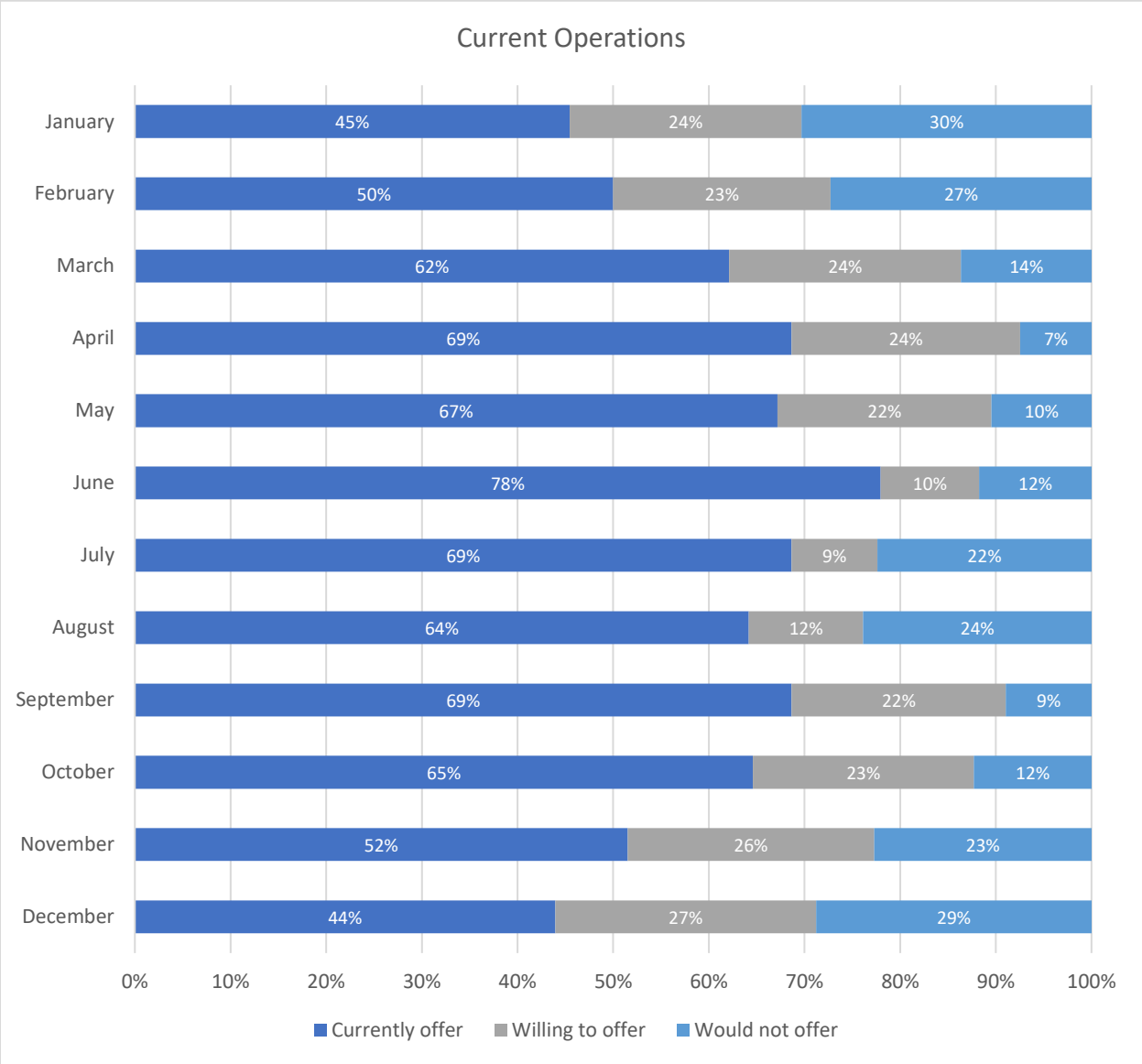


Figure 25: Word cloud of "Other" Responses

We would like to better understand your program's operating schedule for offering outdoor education programs. For each month below, please indicate if you currently offer programs in that month, would be interested in expanding your program to that month, or would be unable/unwilling to offer programs in that month. Programs here could be either residential or day programs (n=68)

The greatest number of programs are operating in the summer months, with over 50 percent of respondents operating in every month but December and January. Even in the winter months, at least 70 percent of respondents have the potential to operate.

Figure 26: Program Operations by Month



Below is a summary of the number of outdoor education programs operating throughout the year in each region. The largest variability in operating programs is seen in Snohomish, which has 10 respondents operating in April, June, and September, but only 4 operating in January. The Eastern and Southwest regions reported constant capacity throughout the year.

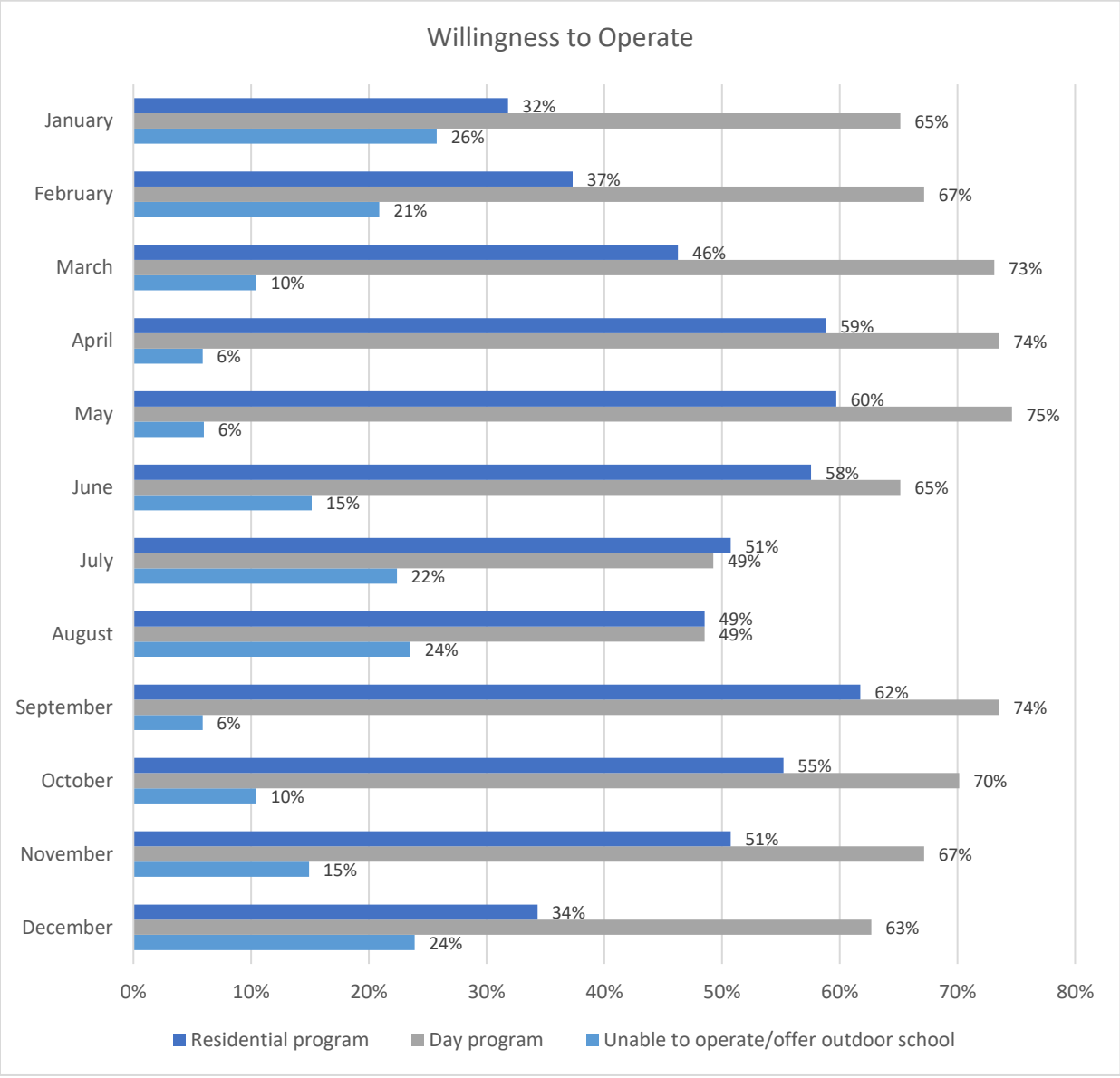
Table 13: Number of Programs Offering Outdoor Education by Month and Region

Number of Providers Currently Offering or Willing to Offer Outdoor Education												
	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Benton-Franklin	0	0	0	0	0	0	0	0	0	0	0	0
Eastern	2	2	2	2	2	2	2	2	2	2	2	2
North Central	4	4	4	4	3	4	4	3	4	4	3	4
Northwest	4	4	6	8	8	8	5	5	8	6	5	5
Olympic	4	4	4	4	4	4	3	3	4	4	4	4
Pacific Mountain	3	3	3	3	3	2	2	2	3	3	3	3
Seattle-King	9	9	11	10	10	11	11	11	9	9	8	10
Snohomish	4	6	9	10	9	10	8	8	10	9	7	5
South Central	4	4	5	7	7	6	6	6	7	7	6	4
Southwest	1	1	1	1	1	1	1	1	1	1	1	1
Spokane	3	3	3	3	3	2	2	2	3	2	3	3
Tacoma-Pierce	7	7	7	8	8	8	6	6	8	8	8	6
Total	**45**	**47**	**55**	**60**	**58**	**58**	**50**	**49**	**59**	**55**	**50**	**47**

In thinking about the previous question, can you tell us if you would be willing to offer a residential or day program in each month? If you could offer either residential or day, please select both (n=68)

Looking at the trend of programs not willing to operate, there is a clear "W" shape. This suggests that the winter months (December through February) are not suitable for over 20 percent of respondents – likely a result of winterization needs, accessibility of roads, and general weather incompatibility. June through August also show a peak in programs being unwilling to offer outdoor education. This is likely a result of many programs running summer camps during this period, which are far more profitable for the program than outdoor school. Across the majority of months, there are more programs willing to offer daytime outdoor education compared to the number willing to offer residential outdoor education.

Figure 27: Willingness to Operate by Month and Program Type



We would like to understand your current fee structure for outdoor education programs. In thinking about student participants, what are your fees per day (including meals) for residential and day programs? If you charge different rates based on the length of the experience, please use an average rate. Do not include scholarships or other discounts. (n=59)

Data reported in the survey was not easily standardized. Some respondents reported multi-day rates and others reported hourly rates, some included food costs and others did not, and some explained that their rate structures are complex and vary depending on a variety of factors. After attempting to standardize the data, the average cost per study, per day is estimated to be $40 for day programs and $95 for residential programs

Table 14: Estimated Per Student, Per Day Costs for Day and Residential Programs

Day Program Cost (per student, per day)			Residential Program Cost (per student, per day)		
Minimum	**Maximum**	**Average**	**Minimum**	**Maximum**	**Average**
$0	$83	$40	$0	$354	$95

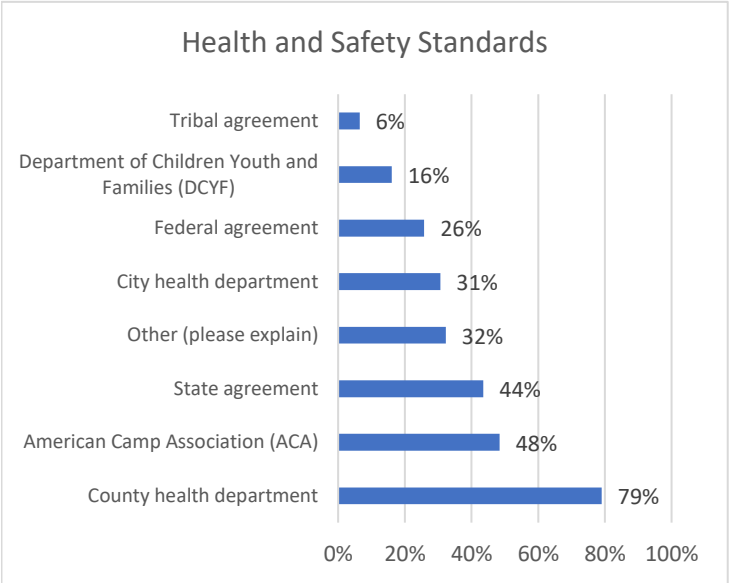
Outdoor education rate structures can be complicated and rely on a variety of factors. If there is anything you want to expand on about the costs associated with you program, we would love to hear more in the comment box below: (n=44)

Programs noted a variety of factors that impact their pricing, including trip length, number of participants, staff needed, and provision of food or supplies.

Programs may be regulated or voluntarily conform to regulations from a variety of agencies and organizations. In thinking about your program, which of the following provide you with health and safety standards? (select all that apply) (n=62)

Nearly 80 percent of programs utilize county health departments for health and safety standards. Other common resources or regulators include the American Camp Association (48 percent) and state agreements (44 percent). *Other* responses include the CDC, Washington State Department of Health, parent organization guidelines (i.e. YMCA, Boy Scouts, a university, etc.), and school district guidelines.

Figure 28: Health and Safety Standards

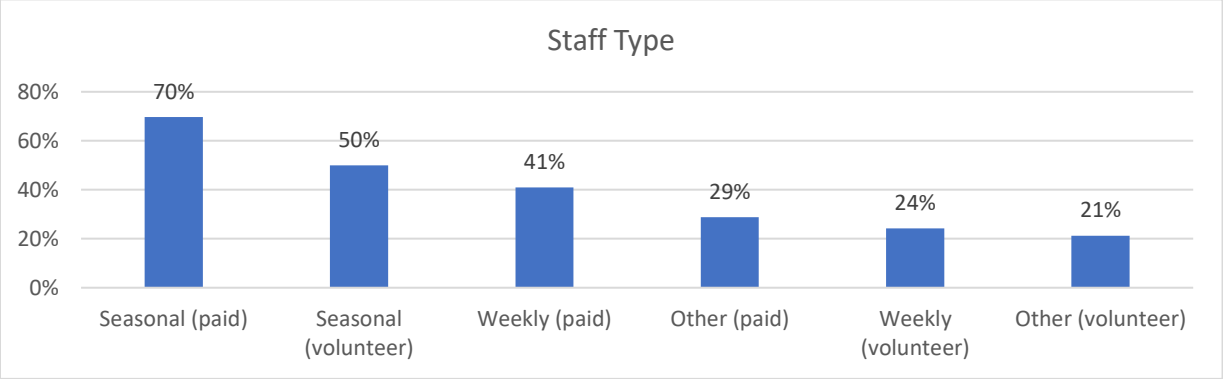


Staff Attributes

In thinking about your outdoor education programs, does your staff work weekly as needed or are they hired for a full season? Do you bring in volunteers, or is everyone on your outdoor education team in a paid position? Feel free to select multiple answer choices to reflect all types of staff involved in your outdoor education programs. (n=66)

Most commonly, programs reported having seasonal paid staff (70 percent); however, seasonal volunteers (50 percent) and weekly paid staff (41 percent) were common. *Other (paid)* positions were most commonly reported to be year-round staff and *Other (volunteer) positions were short-term or provided by outside organization (i.e. AmeriCorps).*

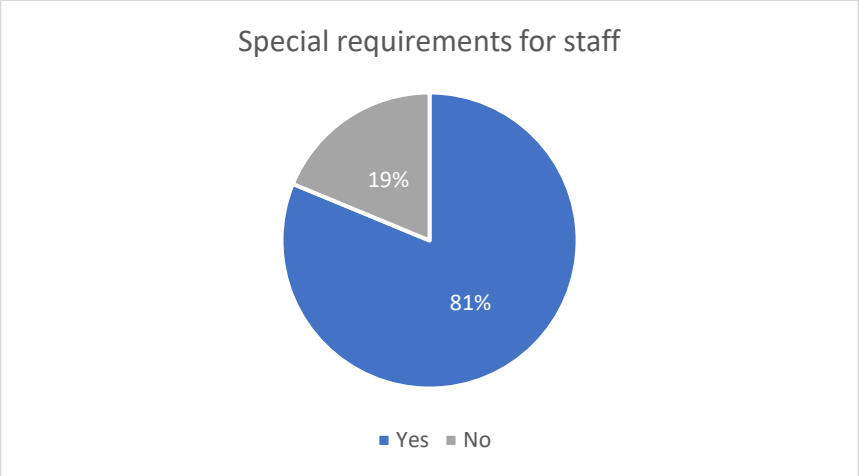
Figure 29: Staffing Structure



When looking for staff, do you have any requirements for certifications, training, or education? (n=64)

Most programs surveyed (81 percent) require their staff to have some form of certification, training, or educational background.

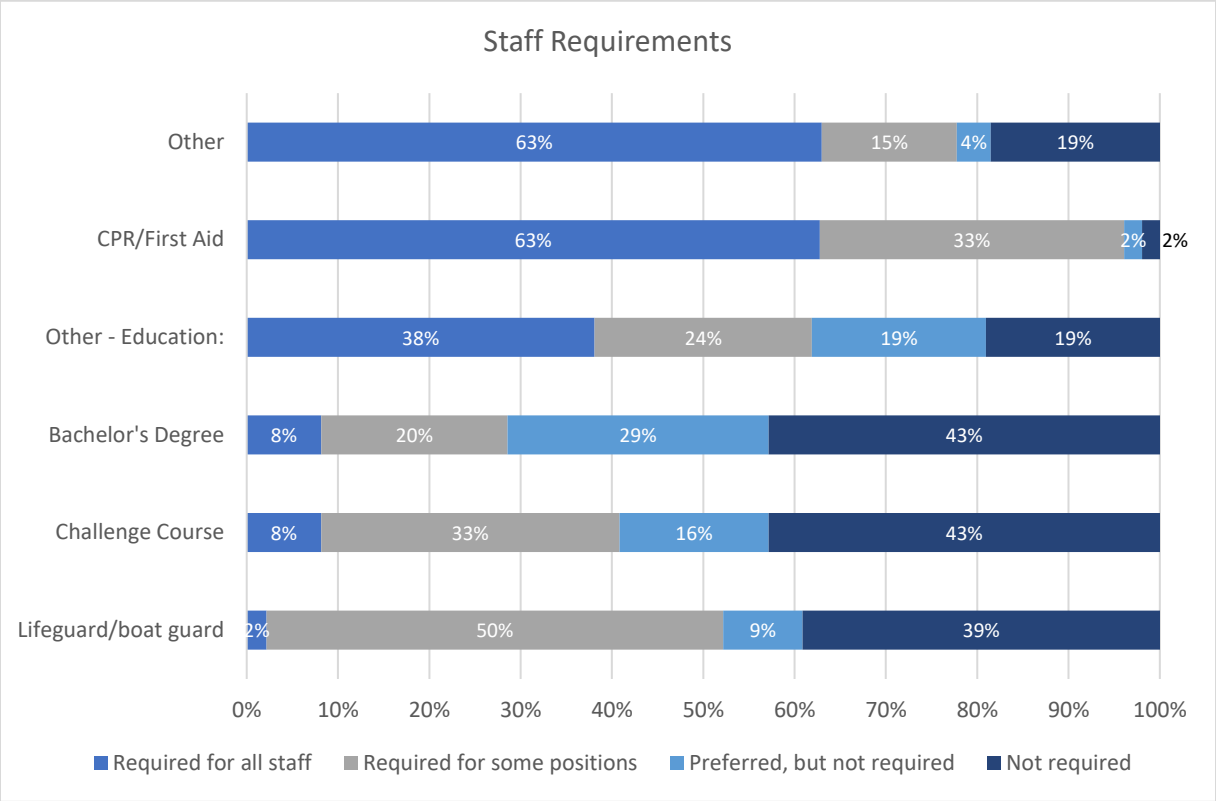
Figure 30: Educational, Training, or Certification Requirements for Staff



Does your program require outdoor education staff to have any specific certifications or training? (select all that apply) (n=51)

Of those who selected *Yes* in the previous question, CPR/First Aid certification was most likely to be required of all staff (63 percent). For those who responded *Other - Education*, common responses included Wilderness First Aid or Wilderness First Responder certification, years of experience in outdoor education or working with children, Mental Health First Aid certification, and masters or PhD requirements for some staff.

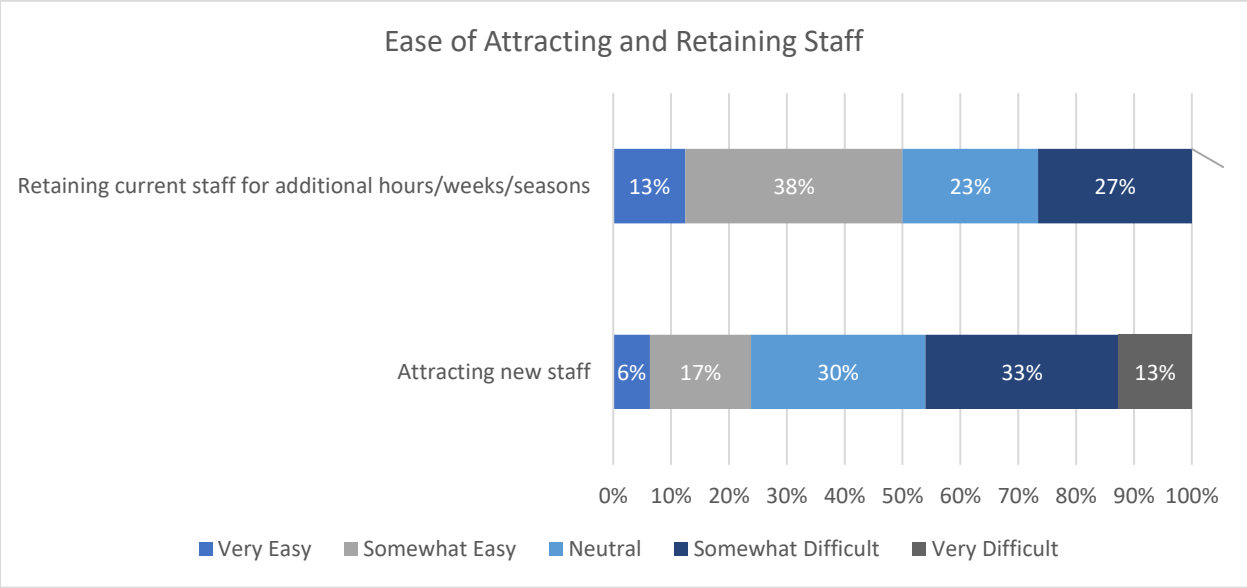
Figure 31: Type of Requirements for Staff



The COVID-19 pandemic has made acquiring and retaining staff unusually difficult. For this question, think about your experiences with staffing pre-pandemic and your expectations post-pandemic. If your program had an increase in schools wanting to attend, how easily could you attract and retain the staff to support these additional participants? (n=64)

Overall, respondents reported finding it easier to retain staff than to attract new staff. Attracting new staff was reported to be somewhat or very difficult for 46 percent of respondents. In comparison, only 27 percent of respondents indicated that retaining staff would be difficult.

Figure 32: Ease of Attracting and Retaining Staff



Program Capacity and Expansion Potential

What is the current maximum group size your program accepts? (n=62)

Of the programs that responded to the survey, the average maximum group size is 108 per day. The smallest program had a maximum capacity of 9, while the largest could accommodate up to 400 people per day. The statewide maximum capacity reported in this survey is 6,560 daily slots. Note that this capacity is not equally distributed throughout the year and that other age groups and programs (i.e. leadership programs, summer camps, or other facility uses) will compete with outdoor education for some of the capacity.

Table 15: Maximum Capacity Distribution

Maximum Daily Program Capacity			
Smallest Program	**Largest Program**	**Average**	**Total**
9	400	108	**6,560**

The greatest total daily capacity was reported in the Tacoma-Pierce Region (1,078), followed by Northwest (920), Seattle-King (841), and Snohomish (783) regions. No capacity was reported in Benton-Franklin region.

Figure 33: Total Daily Capacity by Region

	Total Daily Capacity
Benton-Franklin	0
Eastern	420
North Central	380
Northwest	920
Olympic	620
Pacific Mountain	520
Seattle-King	841
Snohomish	783
South Central	598
Southwest	60
Spokane	340
Tacoma-Pierce	1,078
Total	**6,560**

What is the current minimum group size your program accepts? (n=60)

Respondents have minimum group size requirements ranging from 1 student to 50, with the average being a minimum group size of 11.

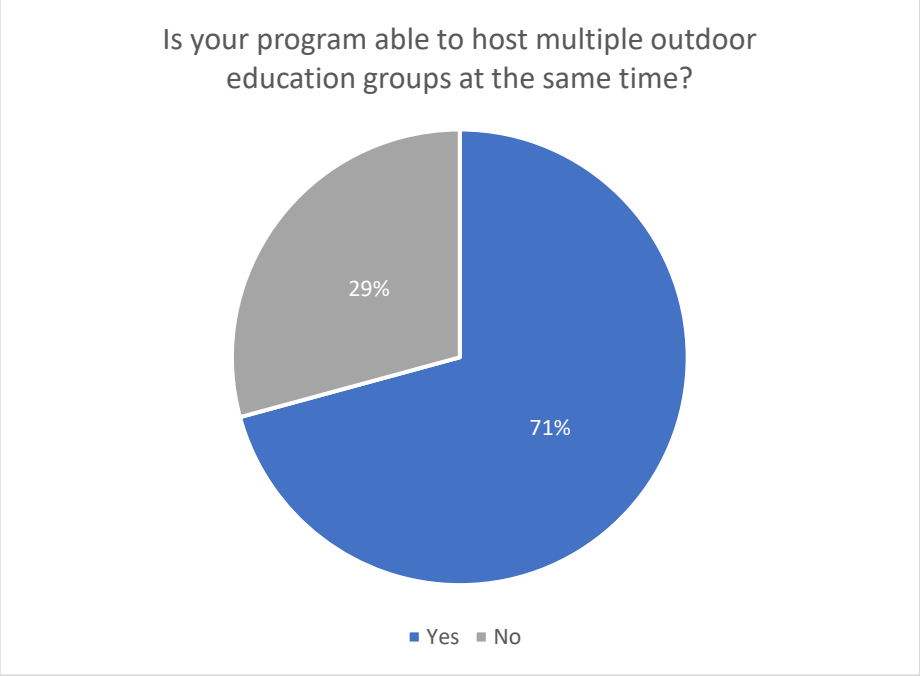
Table 16: Minimum Capacity Distribution

Minimum Program Capacity		
Smallest Program	**Largest Program**	**Average**
1	50	11

Is your program able to host multiple outdoor education groups at the same time? (n=65)

Overall, 71 percent or respondents reported being able to host more than one outdoor education group at a time. It can be assumed that the sum of the groups would not exceed the maximum group size (i.e. two groups of 50 or one group of 100).

Figure 34: Ability to host multiple groups simultaneously



Thinking about your residential programs, what is the average size of your sleeping accommodations (i.e. the average number of beds per cabin) (n=45)

Average sleeping accommodations ranged from 1-person tents to 200-bed dorms.

Table 17: Average Tent, Cabin, or Dorm Capacity

Average Cabin/Tent/Dorm Capacity		
Smallest Program	**Largest Program**	**Average**
1	200	20

What is the total capacity for your sleeping accommodations (i.e. total number of beds -- this may be greater than or less than your program capacity). (n=45)

The average residential program can house 169 people; however, capacity ranges from 8 to 700 depending on the program. Total overnight capacity in Washington exceeds total program capacity, potentially suggesting room for expansion. The same pattern is not true of all regions – for example, the maximum overnight capacity for Spokane is 9 people, based on the programs responding to this survey.

Table 18: Maximum Overnight Capacity Distribution

Maximum Program Overnight Capacity			
Smallest Program	**Largest Program**	**Average**	**Total**
8	700	169	7,436

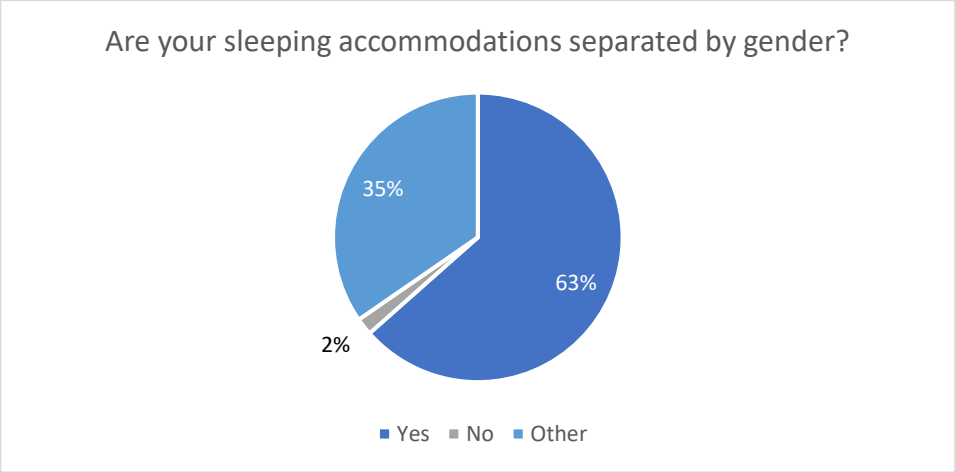
Table 19: Total Overnight Capacity by Region

Total Overnight Capacity	
Benton-Franklin	0
Eastern	130
North Central	806
Northwest	1,058
Olympic	808
Pacific Mountain	850
Seattle-King	527
Snohomish	1,046
South Central	744
Southwest	26
Spokane	9
Tacoma-Pierce	1,432
Total	**7,436**

Are your sleeping accommodations separated by gender? (n=52)

For those with residential outdoor education programs, most (63 percent) separate students by gender. Those who responded *Other* generally let schools decide how to separate students, if they want to.

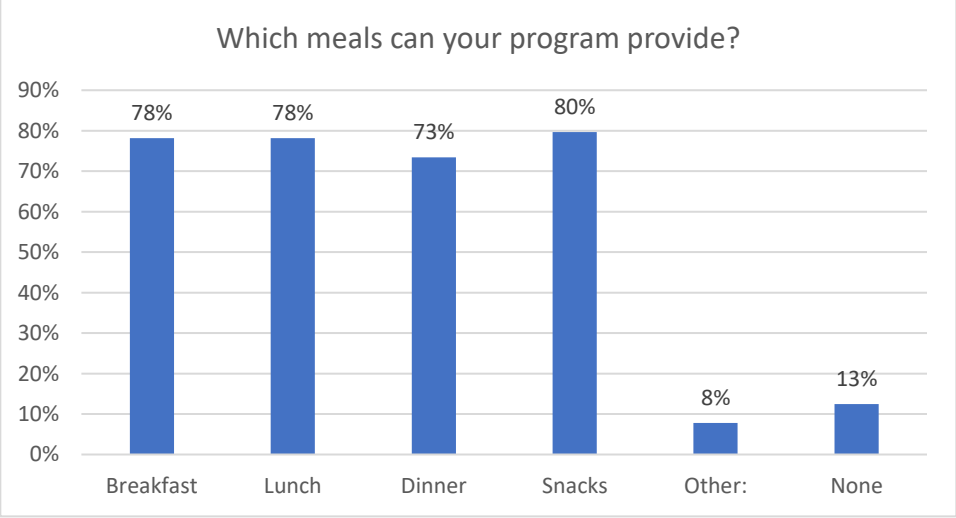
Figure 35: Gender Separation in Overnight Accommodations



Which meals can your program provide? (select all that apply) (n=64)

More than 70 percent of programs reported being able to provide breakfast, lunch, dinner, or snacks to students. Only 13 percent of respondents do not provide any food; however, these programs do not offer residential outdoor education.

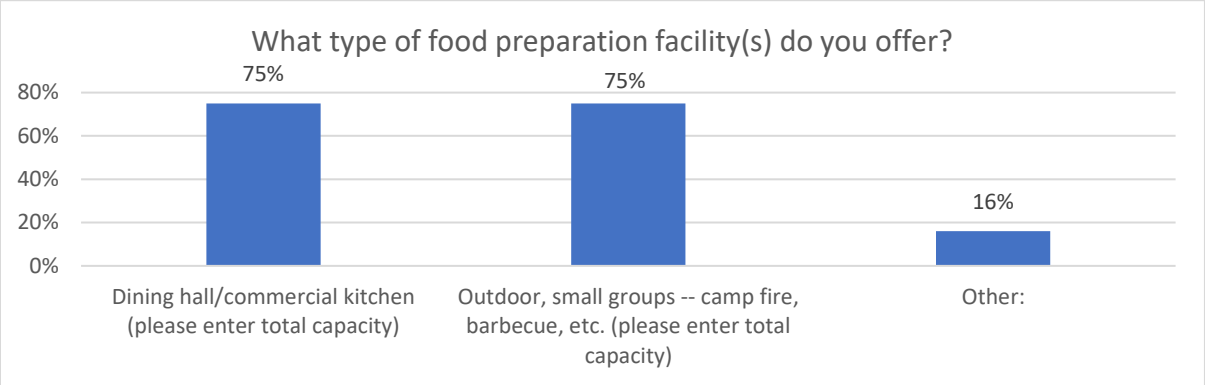
Figure 36: Ability to Provide Meals



Please tell us a bit more about your food-preparation and dining capacity (select all that apply) (n=56)

For those who provide food, 75 percent have dining halls or commercial kitchens and 75 percent have outdoor cooking options. *Other* responses include small kitchens and food from vendors or the school.

Figure 37: Food Preparation and Dining Facilities Available



Dining halls tend were able to serve 190 people, on average; however, capacity by program ranged from 30 to 500. The total statewide capacity reported through the survey is 6,078.

For outdoor dining, the average capacity reported was 132, with individual program capacity from 12 to 400. Statewide, respondents reported a capacity of 3,174 – slightly more than half of the statewide dining hall capacity.

Two regions have no dining capacity reported within the survey: Benton-Franklin and Spokane. The Southwest region has a reported dining hall capacity of 80 people, but no reported outdoor dining.

Table 20: Dining Distribution by Capacity and Region

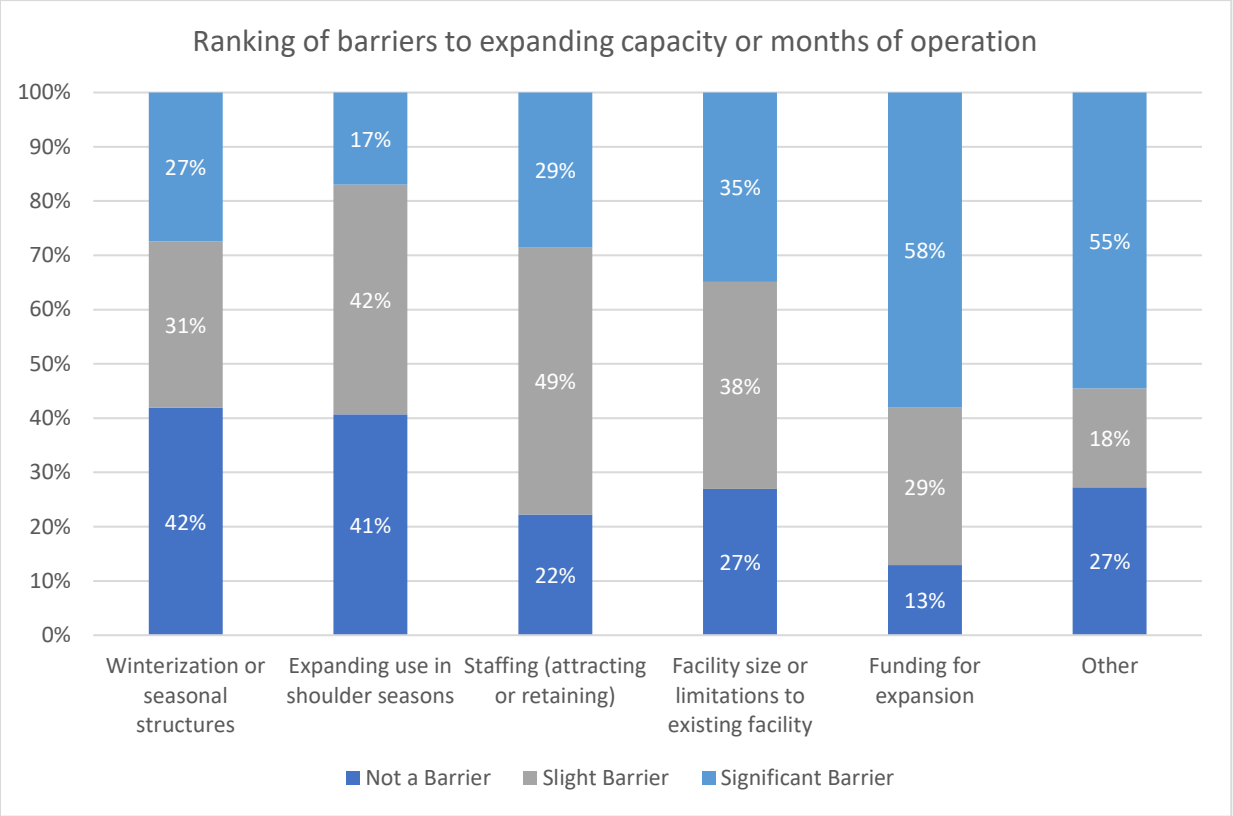
Maximum Dining Hall Capacity			
Smallest Program	**Largest Program**	**Average**	**Total**
30	500	190	6,078
Maximum Outdoor Dining Capacity			
Smallest Program	**Largest Program**	**Average**	**Total**
12	400	132	3,174

Total Capacity	Dining Hall	Outdoor Dining
Benton-Franklin	0	0
Eastern	200	100
North Central	375	210
Northwest	688	480
Olympic	817	192
Pacific Mountain	800	130
Seattle-King	200	200
Snohomish	960	498
South Central	694	364
Southwest	80	0
Spokane	0	0
Tacoma-Pierce	1,264	1,000
Total	**6,078**	**3,174**

Please rank how significant the following barriers are to increasing your capacity or months of operation: (n=63)

The greatest barriers to expansion are funding (87 percent), staffing (78 percent), and facility limitations (72 percent). Expanding shoulder season use (59 percent) and winterization (58 percent) were also barriers to more than half of respondents. Other barriers include water rights, avalanche risks, zoning, and support in the surrounding community.

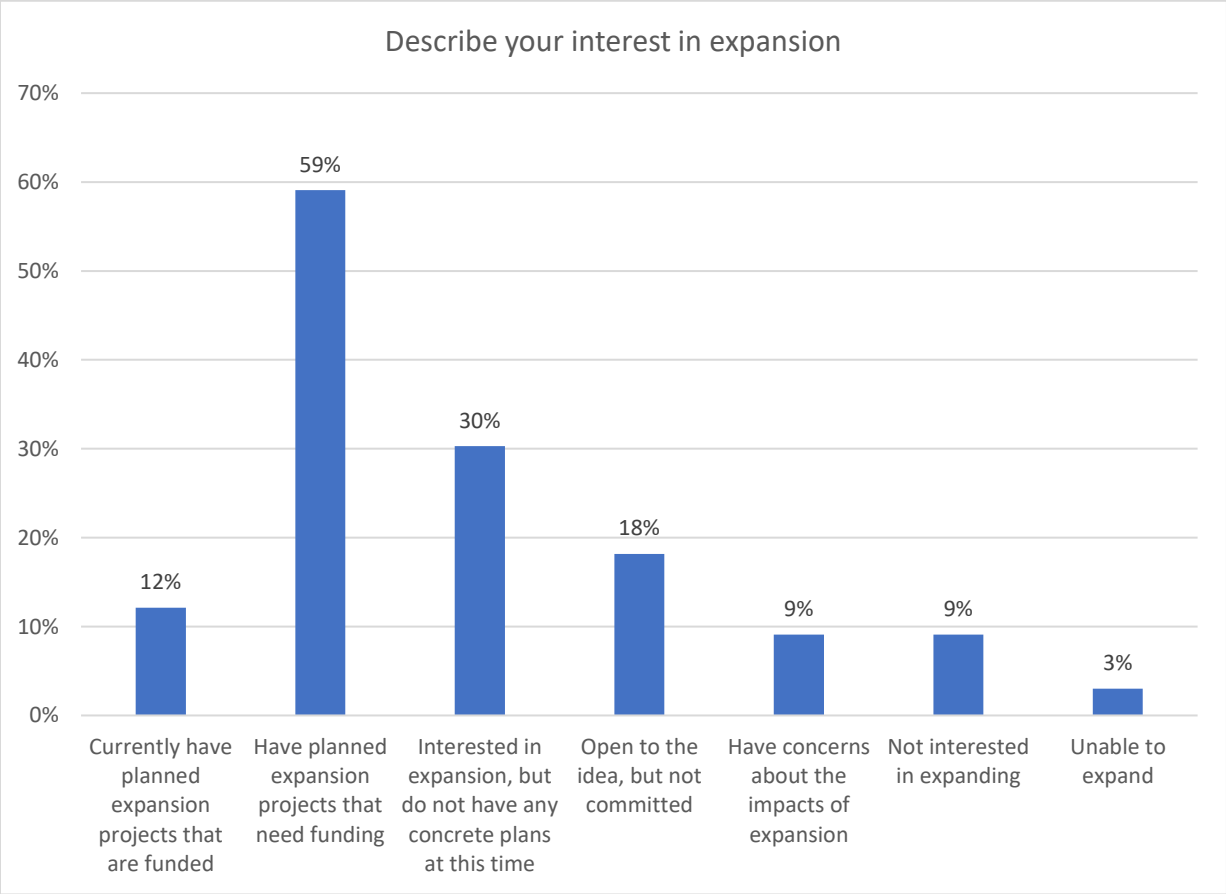
Figure 38: Barriers to Expanding Months of Operation



We would like to understand your overall interest in potentially expanding your facility or program to accommodate more children each year. Which of the following best describes your interest in expansion? (select all that apply) (n=66)

Respondents were able to select more than one answer choice, therefore column totals should not be added together. More than half of respondents (59 percent) have an expansion project planned but are lacking funding. Only 3 percent of respondents are unable to expand and 9 percent are unwilling to expand.

Figure 39: Interest in Expansion



Other Considerations

In thinking about best practices for outdoor education, can you tell us your top resources that provide this guidance for you? (n=47)

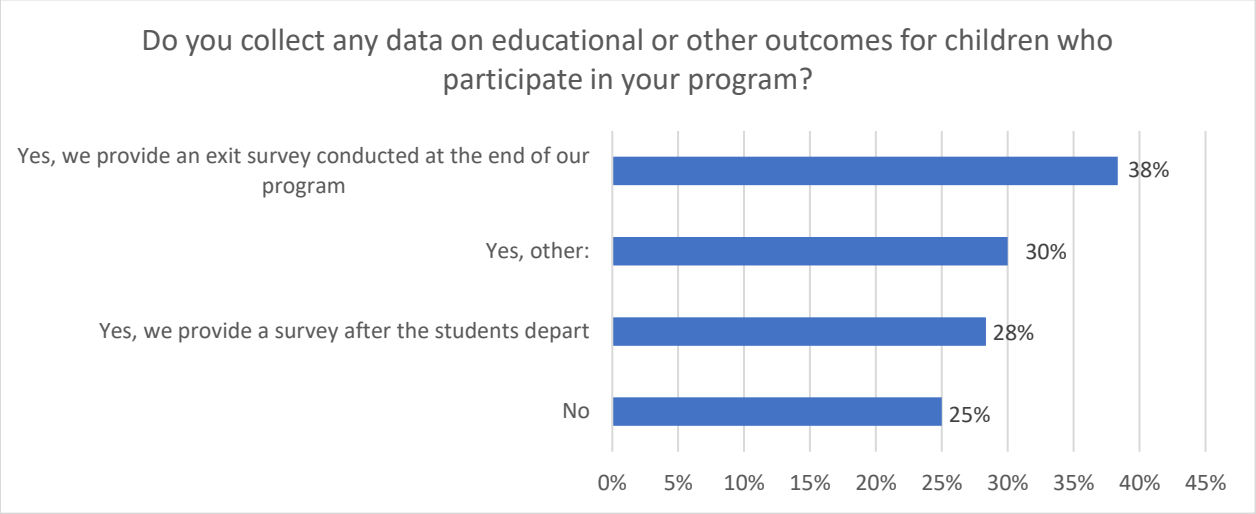
Many programs look to online resources and peers for guidance. Commonly cited national resources include the American Camp Association (ACA), BEETLES, and program-specific organizations (i.e. Boy Scouts, YMCA, religious organizations, universities).

Figure 40: Best Practices Resources Word Cloud

Do you collect any data on educational or other outcomes for children who participate in your program? (select all that apply) (n=60)

Most respondents (75 percent) survey their participants, with most data collection happening at the end of the program (38 percent). *Other* responses include surveying teachers, inconsistent survey implementation, and informal feedback.

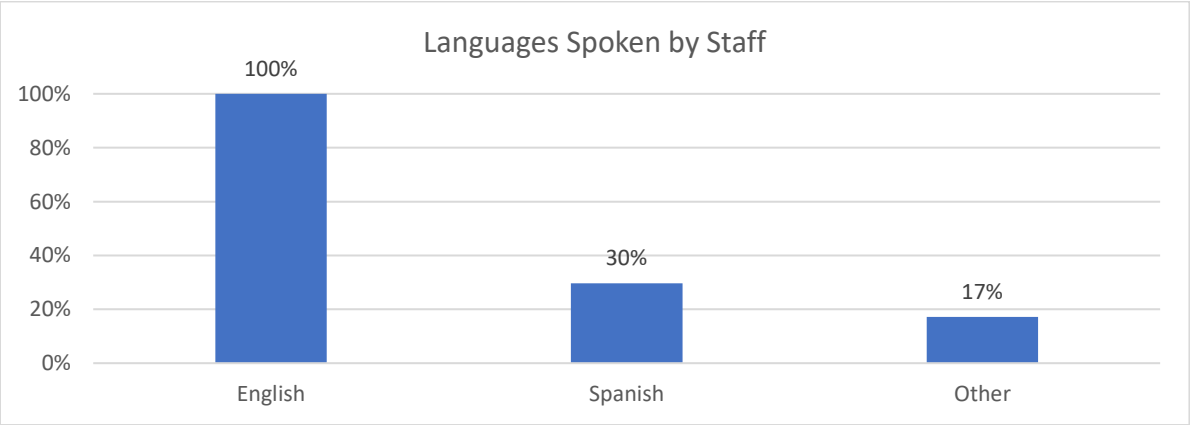
Figure 41: Program Data Collection



In terms of academic and other activities, what languages are spoken by staff? (select all that apply) (n=64)

All programs have staff who speak English and 30 percent of the programs have staff who speak Spanish. Programs that responded *Other* tend to have international staff, with languages varying by year.

Figure 42: Languages Spoken by Staff



If requested, do you provide printed materials (i.e. health forms, consent forms, program overviews) in languages other than English? (n=61)

More than half (54 percent) of respondents offer their printed materials in a language other than English. Of those who do offer materials in other languages, 64 percent offer material in Spanish, 7 percent in Mandarin, and 7 percent in Russian.

Figure 43: Languages of Materials/Forms

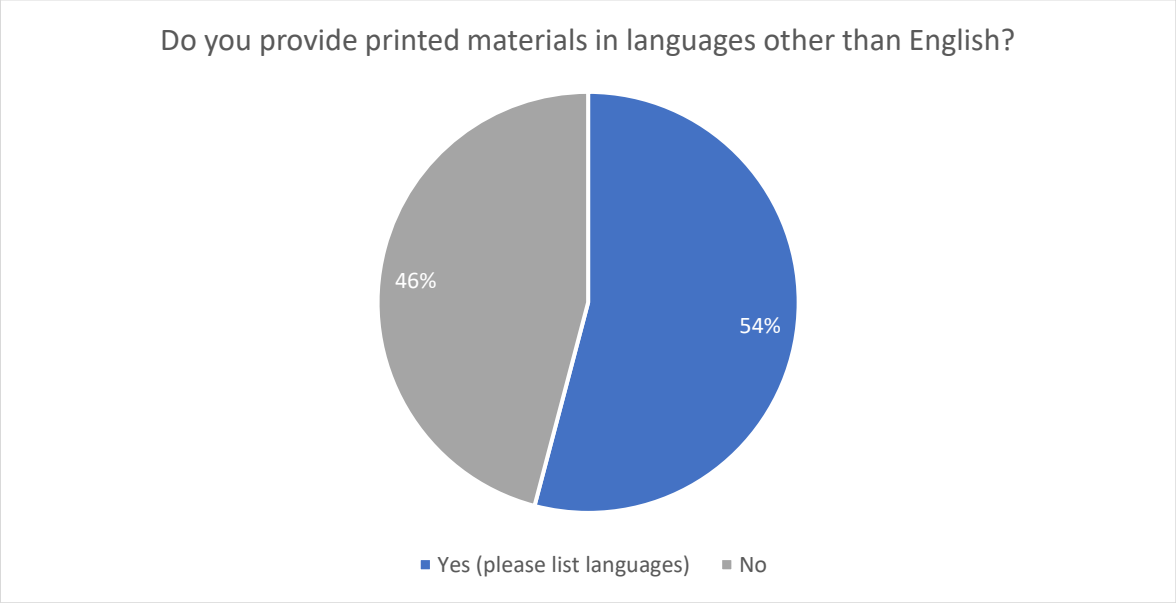
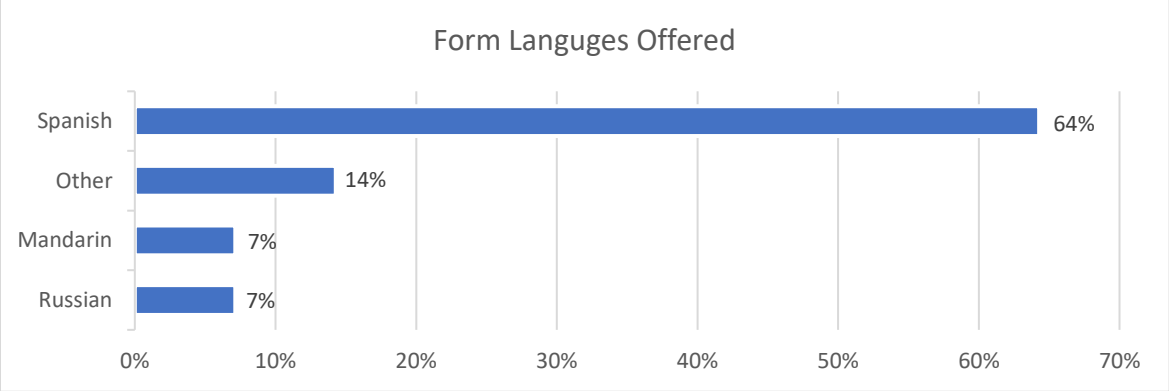


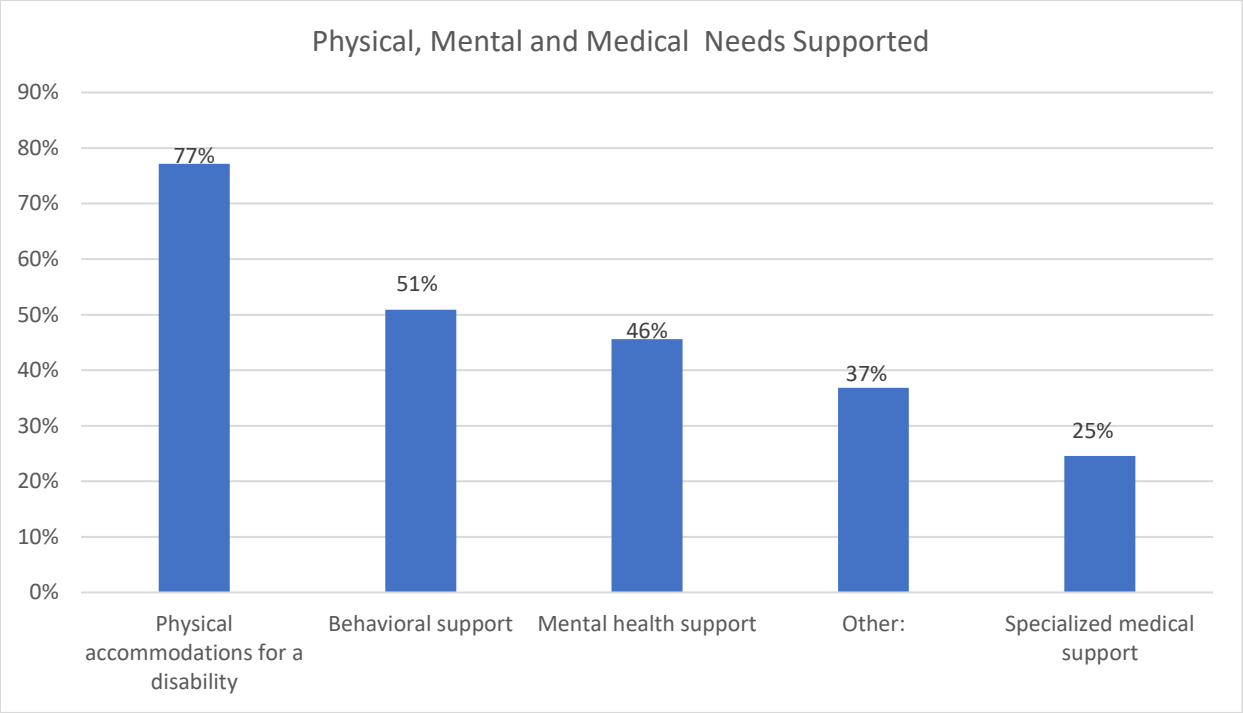
Figure 44: Other Languages Offered for Printed Materials



Please select all physical, mental, and medical needs your program can support: (n=57)

Of those programs that are able to support special needs, 77 percent are able to provide some level of physical accommodations, 51 percent offer behavioral support, and 46 percent offer mental health support. Support for specialized medical needs was the least common among respondents (25 percent). Those who responded *Other* generally rely on assistance from schools in supporting students with special needs.

Figure 45: Physical, Mental, and Medical Needs Supported



Over the past few years, have you had any requests for dietary, physical, or other accommodations that you could not reasonably meet? If so, please tell us more about the requests and what you would need to be able to meet a similar request in the future. (n=43)

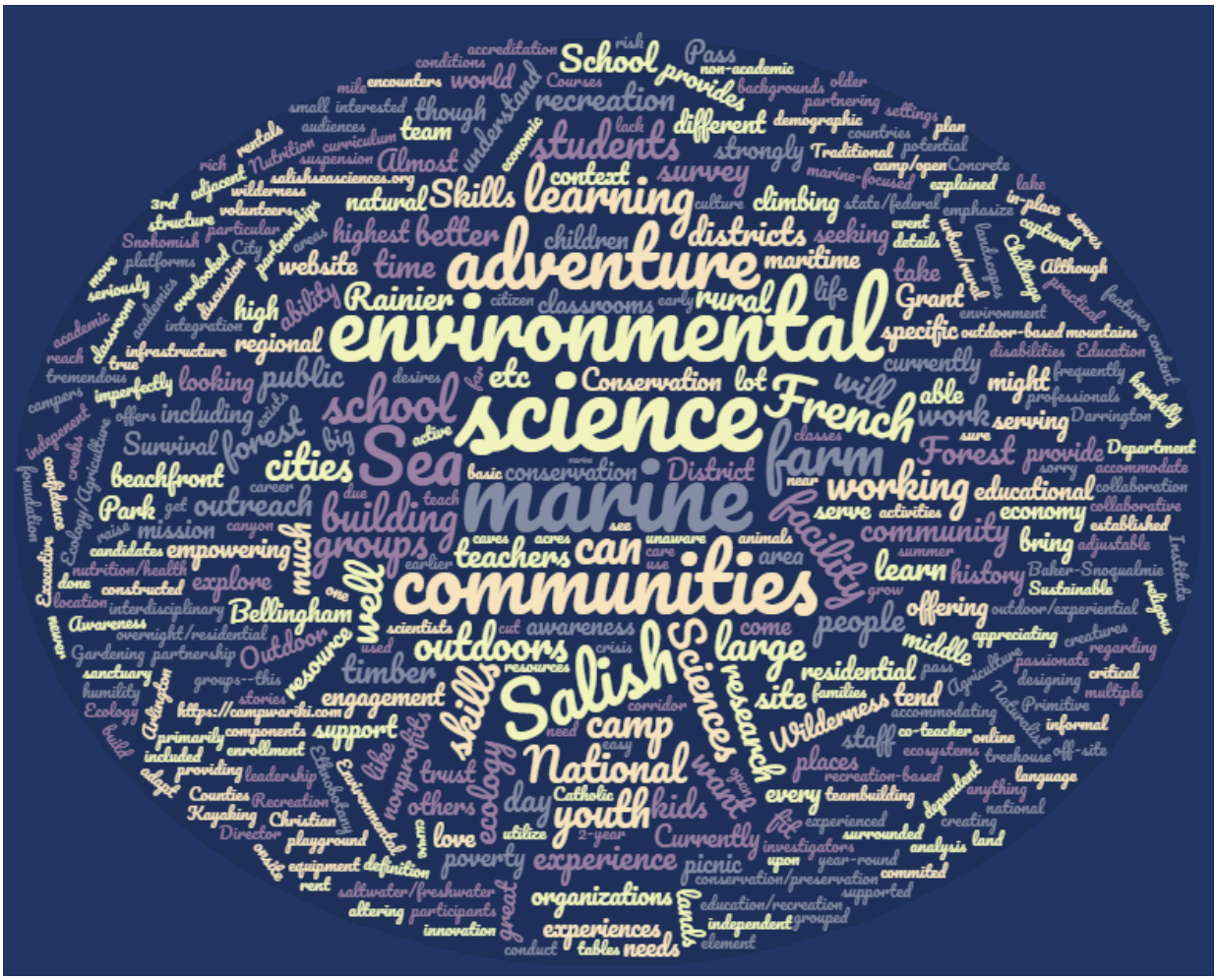
Common struggles include:

- The physical terrain or built facilities
- Staff who are not trained to support specific needs
- Insufficient staff to provide 1:1 support
- Some dietary needs cannot be met, so students will bring their own food

Please tell us more about any other special attributes of your program that we may not have captured within the survey (i.e. marine-focused, agriculture-focused, specialties, etc.) (n=48)

Throughout responses, there is a focus on place-based learning. This can relate to the local environment, tribes, or industry. In the word cloud below, common references include environmental and marine science, communities, adventure, and the Salish Sea.

Figure 46: Special Camp Attributes



Benefits of Outdoor Education

First, what do you think are the key benefits of outdoor education for students? (n=49)

The key benefits for students fall into two broad categories: academics and SEL (social and emotional learning). One respondent summarized the general consensus well (lightly edited):

- SEL: self-esteem, peer relations, leadership, self-control
- Improved academic engagement, confidence, and achievement
    - Especially for students who do not traditionally thrive in the classroom
- Improved physical and mental health
- Environmental awareness and stewardship

Figure 47: Benefits for Students

Second, please tell us a bit more about the key benefits of your program for your staff/volunteers: (n=47)

When asked about the benefits to outdoor education staff, respondents tended to focus on intangible benefits rather than tradition employment benefits including wages, health insurance, etc. Common responses include:

- Getting to do enjoyable/rewarding work
- Gathering teaching experience
- Benefits of working in a natural environment
- Interacting with a diverse group of students

Figure 48: Benefits for Program Staff/ Volunteers

Third, what is the benefit of providing outdoor education to your overall organization? (n=45)

Many respondents report that outdoor education aligns with their mission or helps to expand their brand image within the community. For many, outdoor education allows them to expand into shoulder seasons or to weekday use, thus increasing revenues and supporting more stable employment. Respondents also mention benefits to students, staff, and their local community.

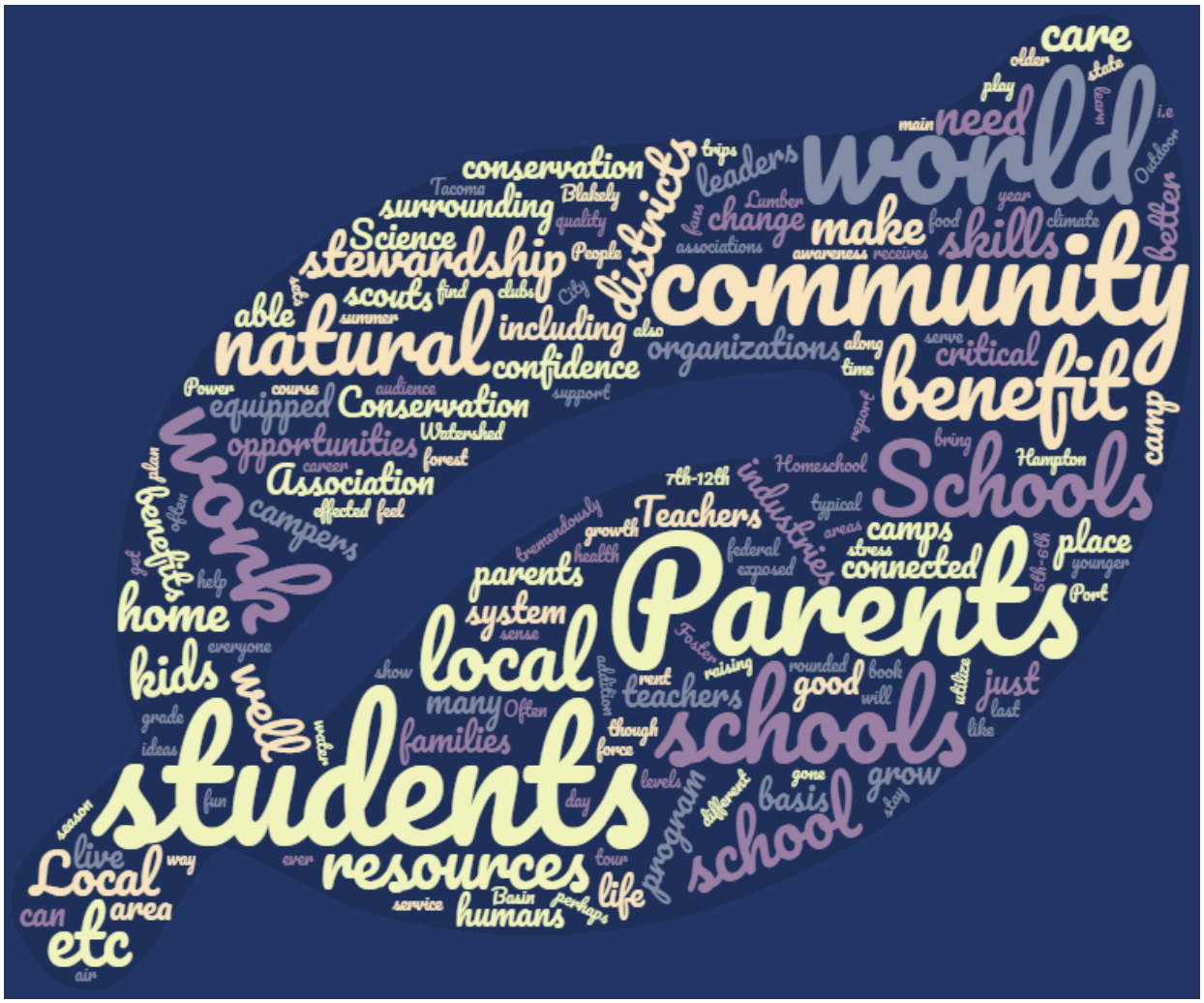
Figure 49: Benefit to Outdoor Education Organization

Please use the space below to identify any other stakeholder groups who you believe receive primary or secondary benefits from students attending outdoor education programs: (n=36)

Respondents report that outdoor education's benefits spread far beyond the students at an outdoor education program. Through these programs and the lessons students learn benefits are also seen by:

- The environment and industries that rely on it
- Families of participants
- Schools and teachers
- Local economies
- Donors and community partners
- The broader Washington community

Figure 50: Other Stakeholders and Benefits



Appendix B – Outdoor School Program Discussion Groups

Participant Background

Let's start with introductions. Can you tell us your name and a bit about your experience in the outdoor education field? Where do you all work now? What types of programs do you offer?

In all, 13 people participated in discussion groups representing 12 different camps. Five discussion sections were held, each of which had 1-3 participants. Program stakeholders were well-represented in terms of geography. Stakeholders were also well represented in terms of the types of camps offered. While many participants represented residential programs, we also heard from day programs and representatives that do not currently run an outdoor school program.

The participating outdoor program stakeholders were a mix of men and women. The demographics of the research participant group is not necessarily representative of the demographics of the US population; therefore, we must be mindful that underrepresented groups (Black, Indigenous, and People of Color) were not heard in these discussions. The lack of representation highlights the need for more diversity in the outdoor recreation space. Nonetheless, discussion groups provided meaningful insight into a number of topics related to outdoor education.

Outdoor Education Attributes and Best Practices

When you hear the term outdoor education, I am interested in what comes to mind in terms of activities, academics, location, and duration. Let's take each one separately with some quick responses:

Activities

Many of the participants listed activities that were not included in the survey that they took previously. Program stakeholders listed non-academic activities and emphasized outdoor skills. Some activities mentioned were survival skills, plant identification, camping, and hiking.

Academics

In terms of academics, the participants noted hands-on experiences and interdisciplinary learning. Some participants mentioned "science" generally, while many mentioned more specific disciplines such a geology or biolog

Location

A commonly used phrase was "place-based." This term was applied to many other aspects of outdoor education, meaning that activities and curriculum were dependent on the physical location of the site. Many participants emphasized the importance of regional biomes (i.e., marine, volcanoes, forests). Others said that outdoor education can be anywhere from the schoolyard to a local or National Park.

Duration

The greatest source of disagreement was in the duration of outdoor education. Many of the differences of opinion were surrounding the age of the children participating. Several participants agreed that a full 5-day experience is important, though the most common answer was "3 days, 2 nights."

Given your experience in the field, I'm interested in hearing more about best practices are most important when running an outdoor education program. Again, let's break this apart into smaller questions.

What age or grade level is best suited to this type of program?

Many participants said that older children (late middle school age) are best suited for outdoor education. They noted challenges with extracurricular activities with high school students. Though, some preferred working with high school students. Some said that students below third grade struggle with homesickness and cited difficulties with parents allowing younger children to attend an overnight trip. Participants also noted that 5th/6th grade students have the least amount of extra-curricular conflicts that could prevent them from attending.

Are there any best practices with respect to months or seasons of operation?

There were some differences between groups in response to this question with no clear consensus. Some focused on weather, saying that May-October is the best time of year to ensure the best activities. Many also emphasized that the best time of year depends on the specific camp/region.

Other participants reflected on the best time of year for the students academically. Some said that the end of the school year (June) was the best time because it is a celebration of the end of school or that the beginning of the school year (September) is best as a kick-off trip to get to know each other. Others said that June is the worst time because students are 'checked out' and ready for summer vacation or that September is the worst time because students aren't yet comfortable with their classmates.

What about the role of outdoor education staff vs. school staff or volunteers?

Most participants had similar roles for different staff members and volunteers. Most groups had full-time staff do most teaching and leading activities while school staff and volunteers act as chaperones and handle behavior management. Only one participating program used the school's teachers to provide curriculum. Some participants utilized college or high school students as additional staff. Several participants said that they have difficulties retaining staff and finding staff from diverse backgrounds.

The key takeaway from our discussions is that each program and school has found a balance of staff and volunteers that match with their underlying values and fiscal/operational constraints.

What guides your curriculum design?

Many participants said that their curriculum evolved over time as they gained experience. Many also said that they used the pandemic to update their curriculum. One source that many participants

mentioned was BEETLES[60], a curriculum developed by UC Berkeley, several others also used guidance from other universities. Project Learning Tree was also mentioned as an important source of outdoor curriculum. Some participants also said that they adapt curriculum based on the district or teacher's desired outcomes.

Many programs reported leveraging the use of internship programs from Western Washington University to create custom curriculum for their facility.

Are there any organizations you look to for guidance?

All research groups shared similar organizations that they look to for guidance. Some of the commonly mentioned organizations were as follows:

- Association of Nature Center Administrators (ANCA)
- Department of Children, Youth, and Families (DCYF)
- National Outdoor Leadership School (NOLS)
- American Camp Association (ACA)

When thinking about operating an outdoor education program, what liability issues are most important to consider? What are some best practices in this area?

While many participants noted the importance of background checks and first aid training, an unexpected liability issue was fire risk. A few participants discussed the rising expense of fire insurance and the threat that forest fires pose to camps.

The length of programs can vary. In your opinion, how many days would the ideal outdoor education program be?

Many participants agreed that 3 days and 2 nights is an ideal amount of time for outdoor education for fifth and sixth grade students. Several people stated that four to five days is necessary for the students to settle in and be comfortable in nature. Others said that 2 weeks was best. The participants agreed that the 'ideal' length of time depends on the age of the students.

Several participants noted the importance of day programs. These programs can be at minimum just a few hours and may be a good alternative to residential programs for certain groups.

[60] Better Environmental Education, Teaching, Learning & Expertise Sharing

Expansion Planning

If Washington State were to provide funding so that all 5th and/or 6th graders in the state could go to a multi-day outdoor education program, do you think there is enough capacity among existing providers to meet that need?

Almost all participants agreed that there is not enough capacity currently to ensure every 5th or 6th grade student in Washington receives outdoor education.

If Washington needs to expand the number of available outdoor education slots, where would that expansion come from? Existing programs? New programs? Government run/operated facilities?

Participants offered a number of solutions, but overwhelmingly agreed that expanding outdoor education would require a mix of expanding existing camps and funding new ones. Several participants said that assistance hiring more staff at existing camps would be a good way to expand capacity. Many agreed that much of the new capacity would have to come from new camps.

What barriers do you see to expanding the capacity of outdoor education in WA?

We expected most participants to mention funding as a significant barrier, and they did. However, many participants cited lack of support from schools and districts as the main barrier. Several participants said that having strong support from the district, school, or community members is what keeps outdoor education as a priority in education. A few participants also noted the barriers from other groups due to the potentially high costs to expanding outdoor programs which they may fear would result in higher taxes.

What would help lower those barriers?

The consensus among participants was that people need to know that outdoor school is important. Several participants said that they have just a few strong supporters at the school or district while many teachers and parents feel that outdoor school is not valuable. Raising awareness of the importance of outdoor education was frequently cited as a good way to reduce barriers.

What partners and organizations within Washington are best suited to helping the state turn an outdoor education expansion plan into action?

Many participants mentioned the same organizations that they look to for guidance (ANCA, ACA, etc.). Several others noted public land managers such as the Department of Natural Resources, the National Parks Service, and Washington State Parks. A few also suggested building better relationships with Tribal governments across the state. Some participants cited their relationships with universities as potential partners in helping the state develop a plan to expand outdoor education.

Equity and Accessibility

I want to next talk about equity and accessibility – two different things but connected. When you think about outdoor education programs in general and your program specifically, what do you notice in terms of equity and accessibility?

Many participants cited accessibility as a major issue that they struggle to better address. While many of the participants had strategies to accommodate physical disabilities, several participants did not feel that they were doing enough to support students with disabilities.

How have you noticed the COVID-19 pandemic impacting equity or accessibility?

With the pandemic shutting down many camps, most participants said that the pandemic worsened equity and accessibility. However, a few said that the pandemic improved some aspects of equity and accessibility because they were able to bring outdoor content to the students in the form of virtual tours or remote presentations, including students who may not be able to attend outdoor school normally.

What would be most helpful in addressing these equity disparities?

While many participants said that increasing funding and scholarships for disadvantaged students would be helpful, a significant barrier revolved around cultural issues. For example, many Hispanic/Latinx families do not allow their children to attend outdoor school because of a variety of cultural barriers. The participants proposed that informing parents of the benefits of outdoor education would help reduce this barrier. Another proposed solution was to offer an 'open house' so that parents could see where their children would be staying.

Many of the participants said that they struggle with attracting and retaining BIPOC staff members. They claimed that increasing the diversity of their staff would likely make BIPOC students and their families feel more comfortable. However, they also recognize this issue as pervasive in the outdoor community and that the long-term solution to attracting more BIPOC staff may start with getting BIPOC students into outdoor school.

How do you see accessibility being better supported in the Washington outdoor education landscape?

One solution posed to address accessibility was a state-funded supply of accessibility equipment that camps could use as-needed. Other participants suggested uniform guidelines to help with accessibility or increased funding to make their facilities more accessible.

Do you incorporate equity, diversity, inclusion, and accessibility topics in your curriculum?

All participants either said that they already incorporate these topics or that they are working on including these topics in their curriculum.

Appendix C – Interviews with National Leaders in Outdoor School

In addition to talking to outdoor education programs in Washington State, it was important to also gather feedback from national leaders in the outdoor education field. Each interview covered topics including best practices, the benefits of outdoor education, expansion planning, as well as equity and accessibility. Due to busy schedules, some interviewees were unable to provide input on some questions. The three leaders interviewed were:

Ross Turner

Ross Turner is the president of Guided Discoveries, which offers residential outdoor education programs at various locations within California and Virginia. He began his career as a high school science teacher in the 1960s. Soon he realized the value of teaching science outdoors and began on a journey learning about outdoor education programs. In 1978, Turner and his wife started a nonprofit outdoor education program on Catalina Island in an old boarding school. Initially, they served high school students, but later expanded to younger students. Now they have three locations that serve approximately 60,000 4th-9th grade students per year.

Tom Madeyski

Madeyski has worked since 1990 as the executive director for San Diego YMCA Camps. In the 1970s, Madeyski worked for the YMCA in Pennsylvania as the organization began a push to offer programs year-round. In some cases, this meant leasing out camp facilities to outdoor education providers who were looking for residential options. In other cases, YMCA camps developed their own outdoor education programs. He currently oversees the YMCA's residential outdoor education programs for San Diego.

Jane Sanborn

Jane Sanborn is co-chair of the American Camp Association's National Government Relations Committee, as well as the director of development at Sanborn Western Camps in Colorado and a board member for the Colorado Outdoor Education Center (COEC). She has been involved in with summer camps and outdoor education for more than 50 years. She described COEC as a pioneer in the realm of summer camps that have developed and sustained successful residential outdoor education programs.

Outdoor Education Attributes and Best Practices

Each interviewee was asked to list a few key terms that come to mind when thinking about outdoor education through the lens of activities, academics, and location.

Activities

- *Turner*: Social and emotional learning (SEL), collaboration, brainstorming, creativity, fun, team work, snorkeling, hiking, rock climbing, experiments, experiences, ropes course
- *Sanborn*: Experiential, takes place outdoors, role playing, environmental focus

Academics

- *Turner*: Activities and academics are closely related
- *Sanborn*: Outdoors, engaging students in a different way of learning that involves physical movement, best practices from Children and Nature and brain-based learning

Location: When Are Multi-Day Nonresidential Programs Viable?

- *Turner*: Mobile, multi-day programs are well suited to situations where schools do not have nearby residential options or have a large population of students or families who are uncomfortable being away from home over night. These programs can utilize local parks and tailor their programs to local needs.
- *Sanborn*: Some schools that come to her outdoor education program travel over 3 hours. She has also seen programs effectively use city parks and other local resources. The most important factor for her is that the learning happens outdoors.

The next set of questions centered around best practices for outdoor education programs:

Age/Grade Level

All three interviewees agreed that 5th and 6th grade is the norm for residential outdoor education in the United States. Children at this age are likely comfortable being away from home for multiple days, have relatively few extracurricular commitments, and are still curious and willing to learn. They all agreed that residential outdoor education can be tailored to both older and younger children.

Role of Outdoor Education Staff vs. School Staff or Volunteers

The programs Turner, Madeyski, and Sanborn have worked with all have trained staff to run lessons and activities. Where they differ is the role of school staff and volunteers. For Turner, the only role of chaperones from schools is to monitor children while they are not involved in a lesson or activity. In Madeyski's camps, he has had bad experiences using high school counselors and parent chaperones to manage students overnight. As a result, his staff take turns sleeping in the cabins to keep an eye on students. Sanborn, on the other hand, has had immense success using high school counselors in her outdoor education programs. She sees this as a leadership opportunity for the high school students and has school teachers work with them to monitor children. She also avoids having parent chaperones.

Curriculum Design and Resources

- *Turner*: Curriculum design is a collaborative and ever-evolving process that draws inspiration from staff and teachers. Other potential resources for curriculum design include the North American Association of Environmental Educators (NAAEE), the National Science Foundation, and collaborations with local schools, organizations, and community leaders.
- *Sanborn*: Good outdoor education curriculum is experiential and draws from local history, native culture, and natural resources. She notes that there are many resources available online for both outdoor education and youth camp curriculums. She has found that "the more camp-like engagement we can get in OE [outdoor education], the more engaged students are and the more they learn." Jan also follows Colorado K-12 guidelines to align with classroom curriculum.
- *Madeyski*: There should be an emphasis on connecting outdoor education curriculum to state frameworks for key subjects. Two key factors to consider are the needs of local schools and how to deliver the material in an outdoor setting. Because lessons are repeated with every group, the program only needs a handful of hours of lessons and activities.

Liability and Risk Management

- *Turner*: He stresses the importance of ensuring safety for both students and facilities. This comes from thorough research, ACA guidelines, staff training, and proper insurance. On the topic of insurance, Turner highlighted the difficulty many outdoor education facilities are having finding insurers willing to offer them fire insurance.
- *Madeyski*: When it comes to liability and risk management, there is "lots of it." Two factors that he thinks can be underappreciated are fire insurance and the risk of not charging enough to cover the program's fully burdened costs. His annual fire insurance costs increased from $100,000 one year to $600,000 the next. This ties into the concerns surrounding fully burdened costs. With labor and insurance costs risking, programs risk financial distress if they do not fully understand their costs and how much they need to charge to break even. One common model is to break even or operate at a deficit during the school year and charge higher rates for summer camps to compensate.
- *Sanborn*: She noted that programs and schools should be communicating to understand how they are sharing risks and liabilities.

Program Duration

- *Madeyski*: He has worked with organizations offering everything from 2-day/1-night programs to 5-day/4-night programs – which are "the envy of all." From his experience, 2-day trips do not support relationship building or the same level of learning as longer programs. For 3-day trips, he finds that students are just getting to a "good point" when they are sent home, whereas 5-day programs can continue to build on that momentum. He cautions residential programs against offering day programs because of transportation risks and rates that will not be sufficient to cover the program's fully burdened costs. For organizations without residential facilities, he thinks it possible to run a successful program "from a curriculum perspective."

- *Sanborn*: While she has experience working with programs of varying length, she prefers 4- and 5-day trips to make the school's travel time worth it. She has seen day programs run successfully; however, she emphasized the importance of having at least 3 full days outdoors.

Benefits of Outdoor Education

Next, the national experts were asked about the benefits of outdoor education to students and other groups:

Students

- *Madeyski*: He notes that outdoor education provides access to the outdoors for students who may have limited opportunities to do so before. In addition, he sees that outdoor education helps students develop through social and emotional learning (SEL), as well as discovering that what they learn in class can be "real," "fun," and "cool." From his experience, "Kids who don't shine in the classroom do shine in outdoor education." He has found that outdoor education also leads students to build an affinity and love for the natural world.
- *Sanborn*: She points to the many benefits of outdoor education that have been documented in research including SEL benefits, physical activity's ties brain-based education, and greater engagement by students. She stated that children spending time outdoors is "as critical as good nourishment and sleep." As we emerge from the pandemic, she sees outdoor education as an opportunity for students to "be kids again" and "heal" from the past year in safe way.

Other Groups

- Madeyski:
    - Program Benefits: gets rid of a summer camp's shoulder season, provides stable employment for staff, generates stable revenue, and appeals to a more diverse population than summer camps
    - Local Community: outdoor education has positive economic impacts for the communities near the program
- Sanborn:
    - School Staff: benefit from seeing their students in a new light and the behavioral differences that arise in the outdoor setting
    - Outdoor Education Staff: get to do work that they enjoy and know they are making a difference for the students they teach

Expansion Planning

Both Sanborn and Madeyski noted that start-up costs can pose a significant barrier for new programs. In some cases, they have seen municipalities, counties, or large school districts build their own residential facility and then either operate it with their own staff or bring in an outside organization like the YMCA. Similarly, summer camps with underutilized shoulder seasons can expand into outdoor education and employ their staff year-round or outsource to another organization.

Equity and Accessibility

As Sanborn explained, "you don't make any money in outdoor ed." Rather, the goal is for every student who wants to come to be able to come. Programs offset these losses through charging higher rates for summer camp. The San Diego YMCA is the "most diverse camping program in the country," according to Madeyski. This is achieved through years spent developing good relationships and trust with local schools and communities. The YMCA has found that it has the most success when it partners with trusted grassroots organizations who will than talk to the community and help then see the benefits of outdoor education.

In terms of physical accessibility, Madeyski has found that "if you have enough resources and your facilities aren't a huge obstacle, then [making your program more accessible] is manageable." In other words, the biggest barrier to accessibility comes from infrastructure and the land where you operate. If that is reasonably accessible, then it is just a matter of purchasing the right equipment (i.e. an all-terrain wheelchair) – which can be expensive, but less so than remodeling a building.

Concluding Remarks

- *Madeyski*: He is excited that the public is beginning to recognize the benefits of outdoor education for children – "the stewards of tomorrow" – and hopes to see the momentum continue to other states.
- *Sanborn*: During the pandemic, she has seen many schools have success teaching students outside and she hopes that this practice will continue after the pandemic as well with a renewed focus on incorporating physical activity into learning. She also hopes to see more collaboration between outdoor education programs in the future.

Appendix D – K-12 School and District Survey Results

Respondent Background

Which county is your school located in? (n=166)

The survey received responses from at least on school in all counties except: Columbia, Ferry, Garfield, Pacific, Pend Oreille, Skamania, and Wahkiakum. The distribution of responses is similar to the distribution of Washington State's population; however, there are relatively few responses from King County.

All 12 Workforce Development Areas are represented within the sample.

Figure 51: Number of School Responses by County

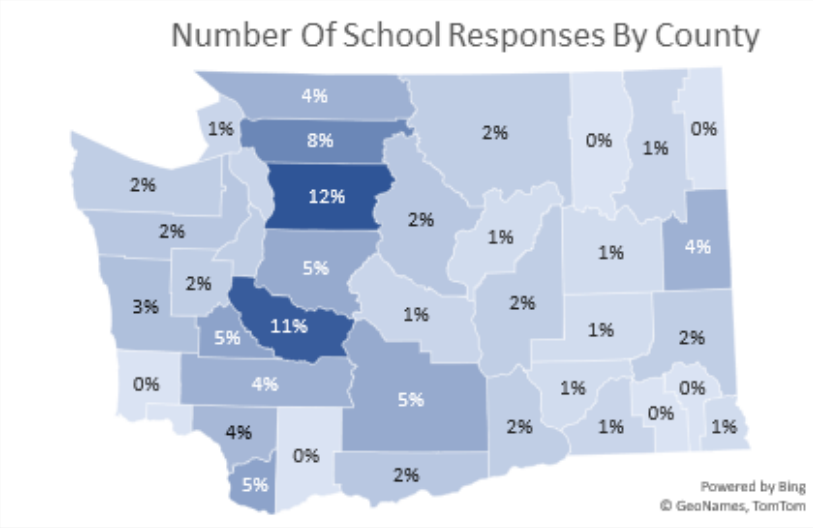
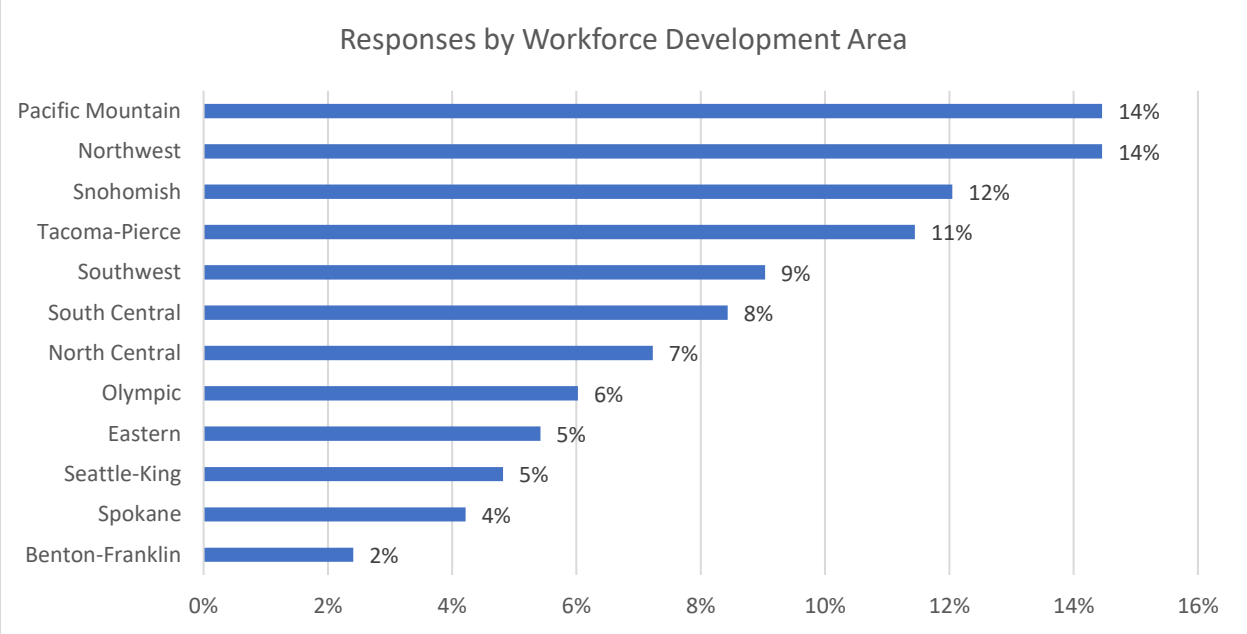


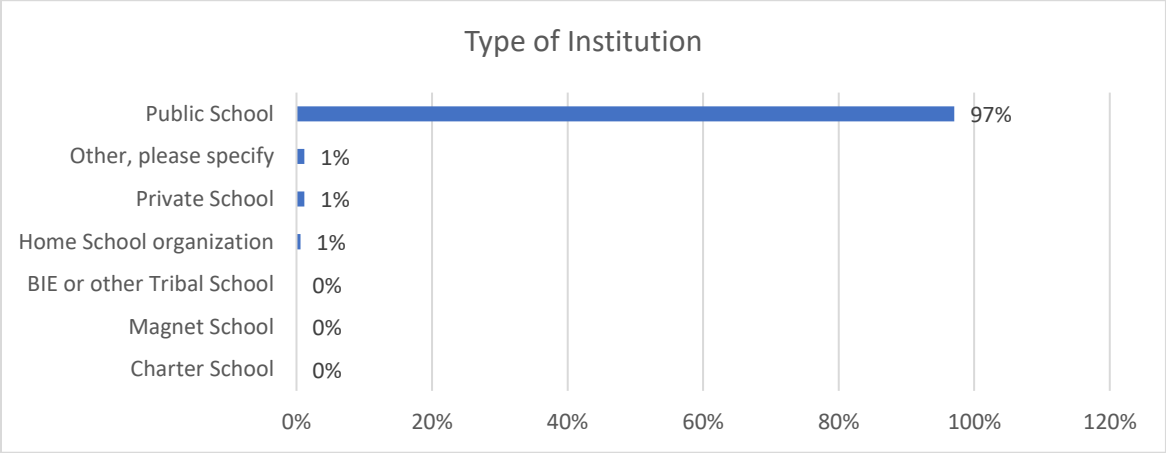
Figure 52: Share of responses by Workforce Development Area



What type of institution? (n=170)

Most respondents (97 percent) represent the public K-12 school system. Other respondents represent private schools, homeschool organizations, skills centers, and online schools.

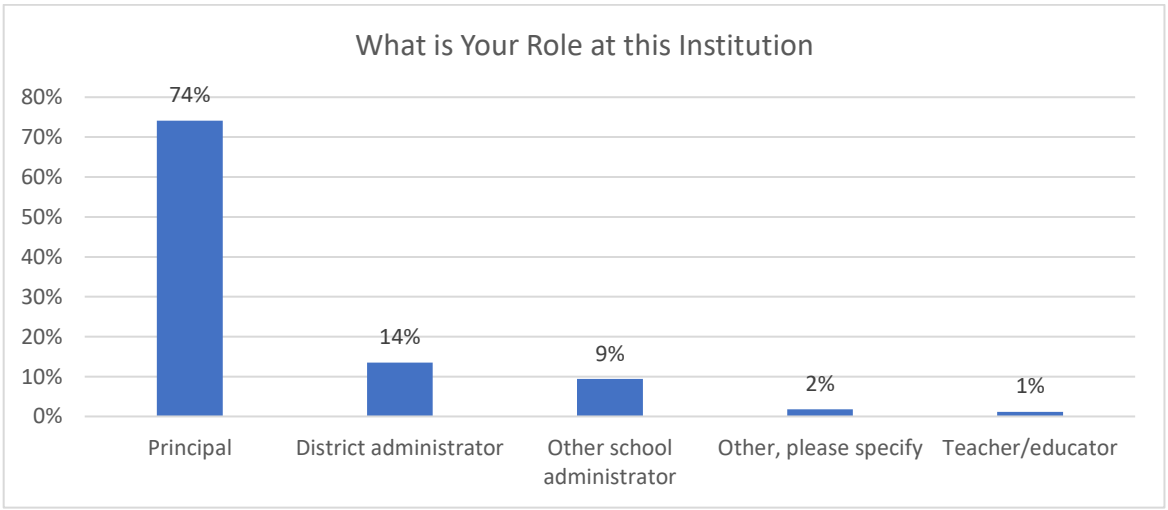
Figure 53: Type of Institution



What is your role at this institution? (n=170)

For the most part, school principals (74 percent) responded to the survey – an outcome of the contact list used to promote the survey. District administrators (14 percent), other school administrators (9 percent), and teachers/educators (1 percent) also responded to the survey. *Other* responses include a school counsellor, secretary, and advocacy chair.

Figure 54: Respondent's Role



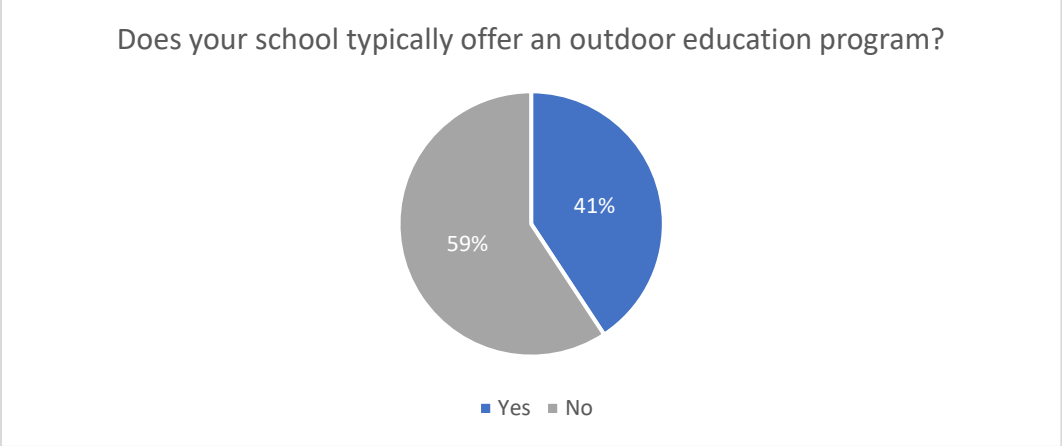
Current Outdoor Education Offerings

Does your school typically offer an outdoor education program? (n= 167)

Of those who responded to the survey, 41 percent typically offer outdoor education for their students. The remaining 59 percent of respondents skipped the following series of questions and were directed to the “

Ideal Outdoor School Program" set of questions.

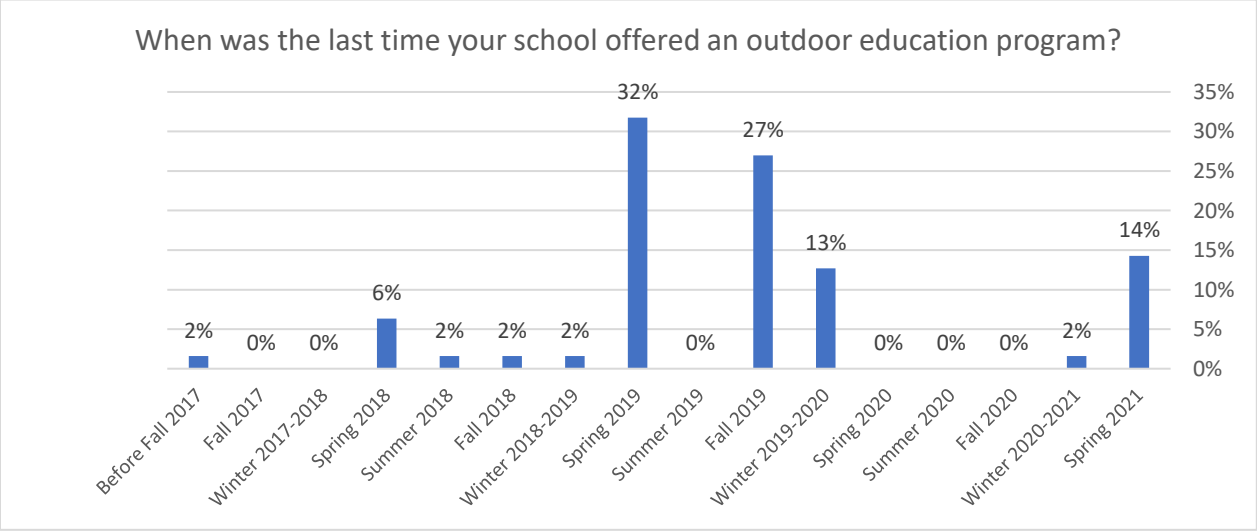
Figure 55: Does school typically offer an outdoor education program



When was the last time your school offered an outdoor education program? (n=63)

Most respondents (84 percent) last offered outdoor education prior to the COVID-19 pandemic. For those attending outdoor education more recently, 2 percent went in the winter months of 2020-2021 and 14 percent went in spring 2021.

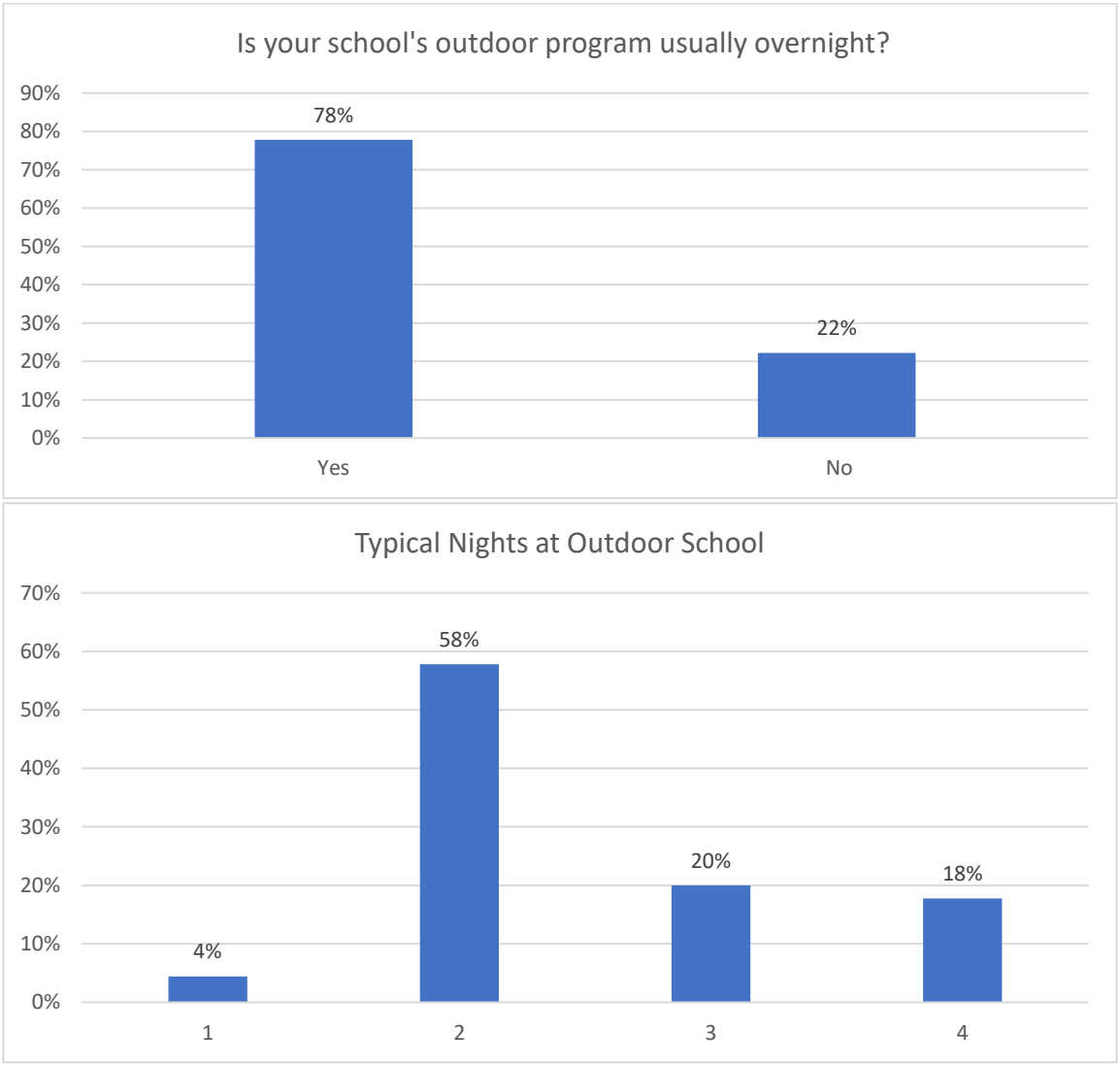
Figure 56: Last time school offered an outdoor education program



Is your school's outdoor program usually overnight? (n=63)

Most respondents (78 percent) typically attend a residential (overnight) outdoor education program. The remaining 22 percent can be assumed to attend daytime-only programs. Of those who attend a residential program, most stay for 2 nights (58 percent); however, 3 night (20 percent) and 4 night (18 percent) programs are also popular.

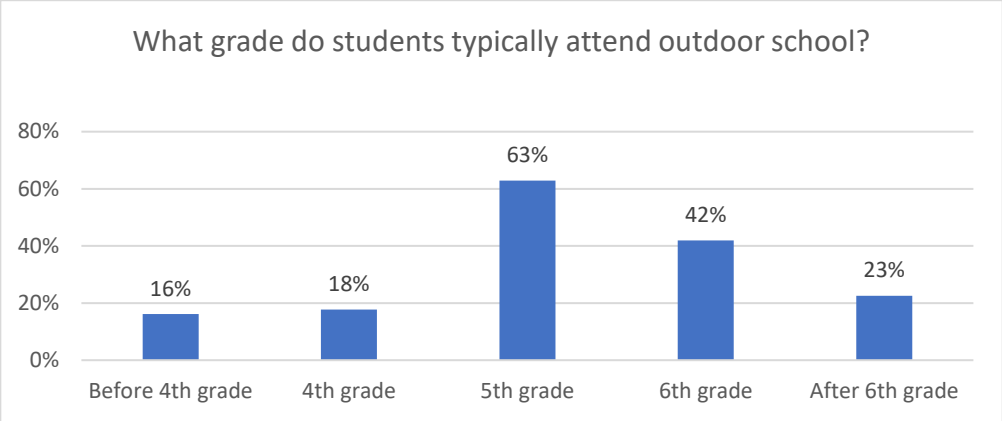
Figure 57: Attendance of Residential vs. Day Programs and Typical Length



What grade do students typically attend outdoor school? Please select all that apply (n=62)

Some respondents have students attend outdoor school in multiple grade levels; however, the most common are 5th grade (63 percent) or 6th grade (42 percent).

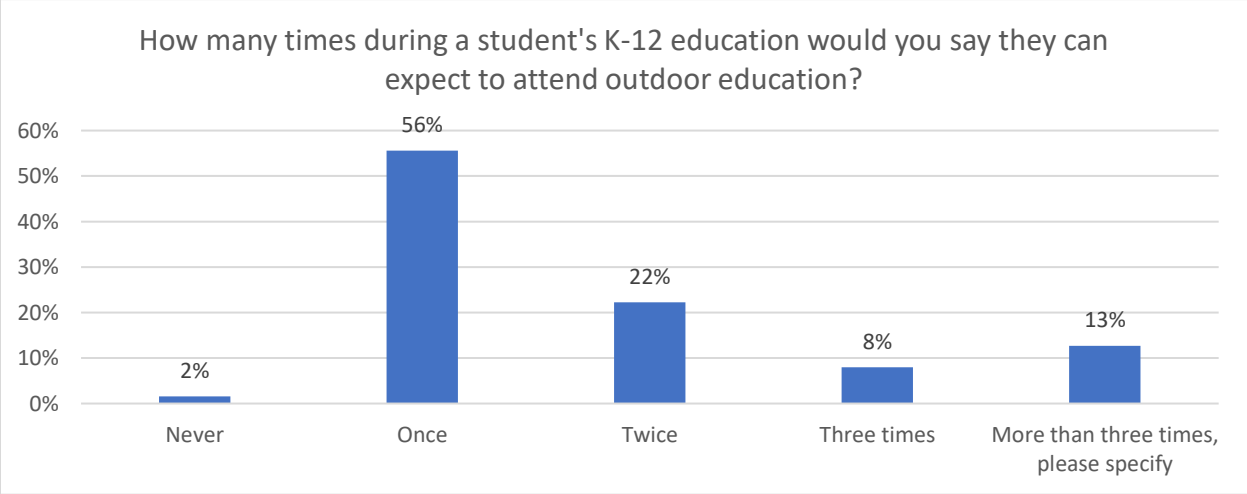
Figure 58: What grade do students typically attend outdoor school?



How many times during a student's K-12 education would you say they can expect to attend outdoor education? (n=63)

Most respondents have students participate in outdoor education once (56 percent). The definition of outdoor education and outdoor school was intentionally not provided within the survey in order to capture all activities the respondent considers to fit the category. For those indicating that students attend outdoor education more than 3 times, most report regular activities including day trips, involvement in the school garden, and other field experiences.

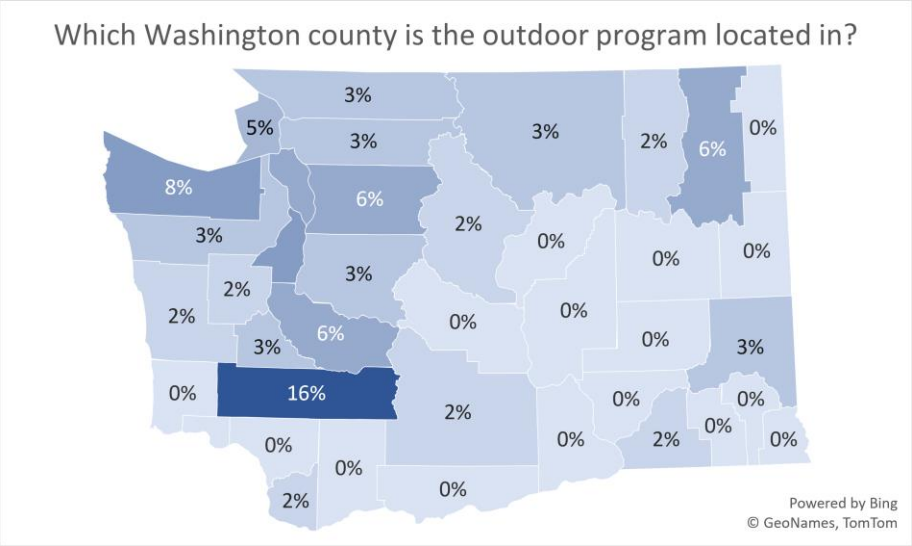
Figure 59: Number of Times Students Attend Outdoor Education



Which Washington county is the outdoor program located in? (n=62)

Most programs are concentrated in Western Washington, with many counties in Eastern Washington having no representation. The greatest number of respondents reporting that they attend outdoor school in Lewis County – likely at Cispus, an outdoor education program owned by the Association of Washington School Principals (AWSP). Note that two respondents reported attending outdoor school outside of Washington, one in Oregon and one in Idaho.

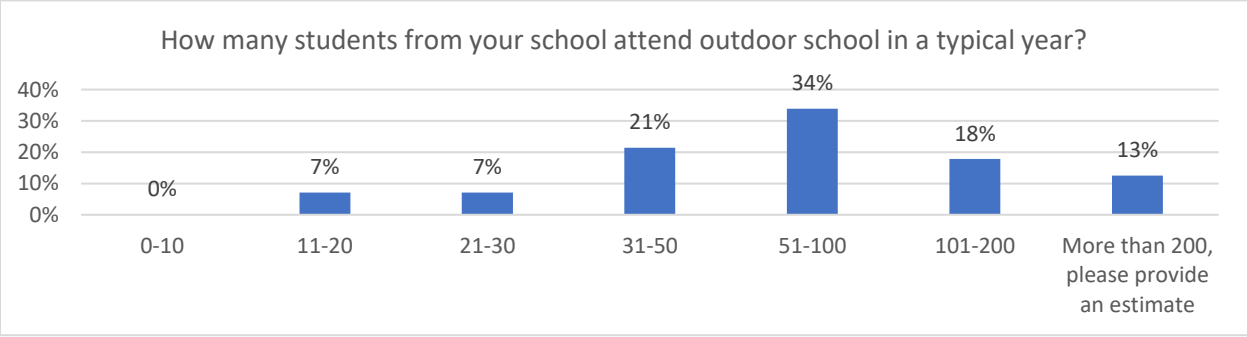
Figure 60: Which Washington county is the outdoor program located in?



How many students from your school attend outdoor school in a typical year? (n=56)

The following chart is primarily a reflection of school size. The greatest number of respondents (34 percent) represent schools where 51-100 students attend outdoor school annually. Many of those reporting outdoor school attendance by more than 200 students represent school districts rather than individual schools.

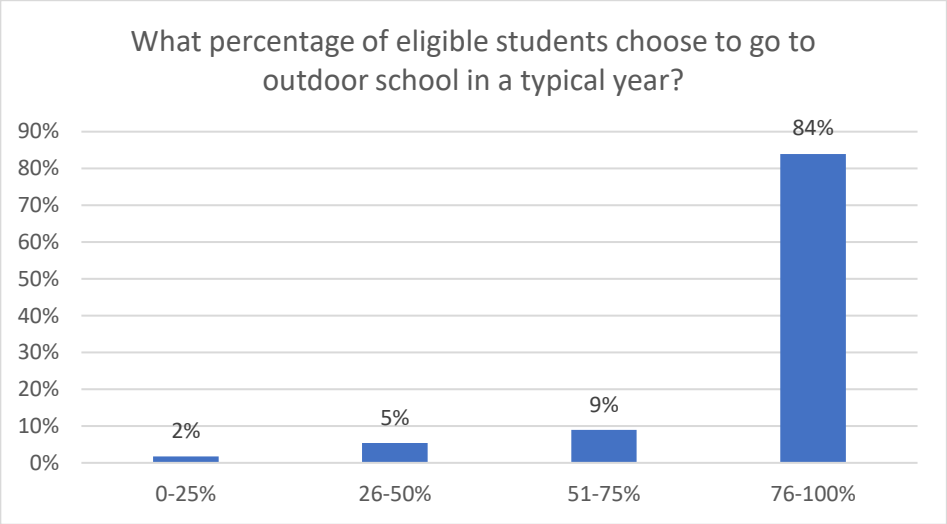
Figure 61: How many students from your school attend outdoor school in a typical year?



What percentage of eligible students choose to go to outdoor school in a typical year? (n=56)

In general, respondents have high attendance for outdoor school programs. Respondents with attendance greater than 75 percent make up the majority (84 percent) of responses.

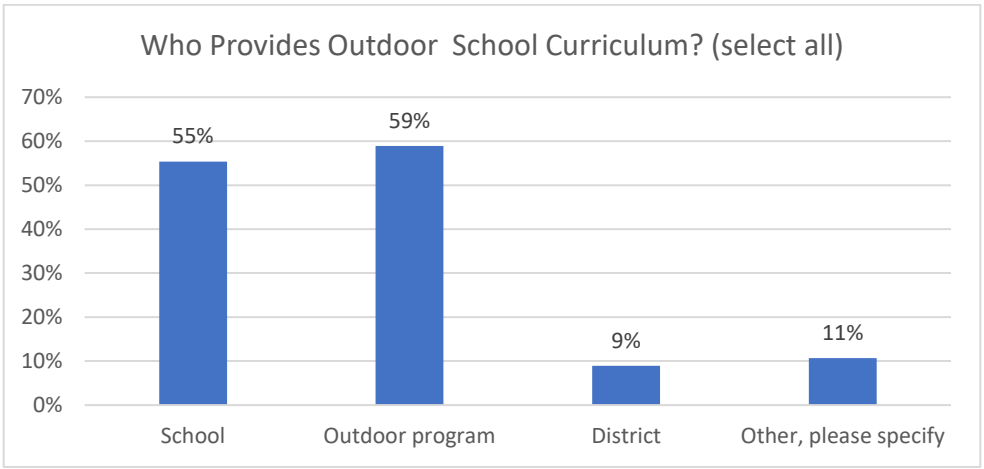
Figure 62: What percentage of eligible students choose to go to outdoor school in a typical year?



Who provides the outdoor school curriculum? If multiple groups collaborate, please select all who provide curriculum. (n=56)

The most common curriculum providers are the outdoor program (59 percent) and the school (55 percent), with many respondents (23 percent) relying on a collaboration between the two groups. *Other* collaborators include nonprofits, museums, and high school students.

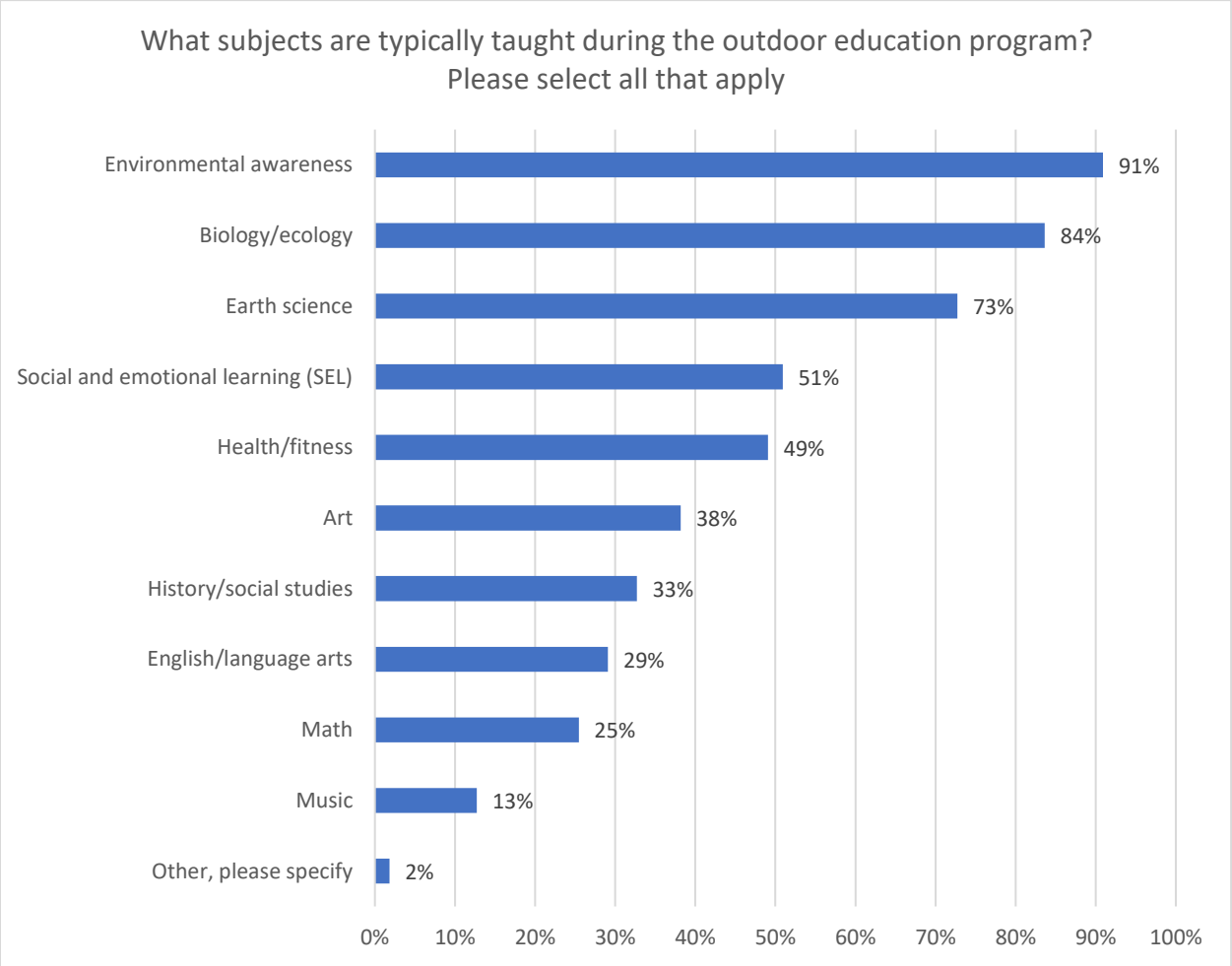
Figure 63: Provider of Outdoor School Curriculum



What subjects are typically taught during the outdoor education program? Please select all that apply (n=55)

The most commonly taught subjects include environmental awareness (91 percent), biology/ecology (84 percent), earth science (73 percent), and social and emotional learning (51 percent). This reflects a strong focus on science, while other subjects including art (38 percent), history (33 percent), math (25 percent), and music (13 percent) are less widely represented.

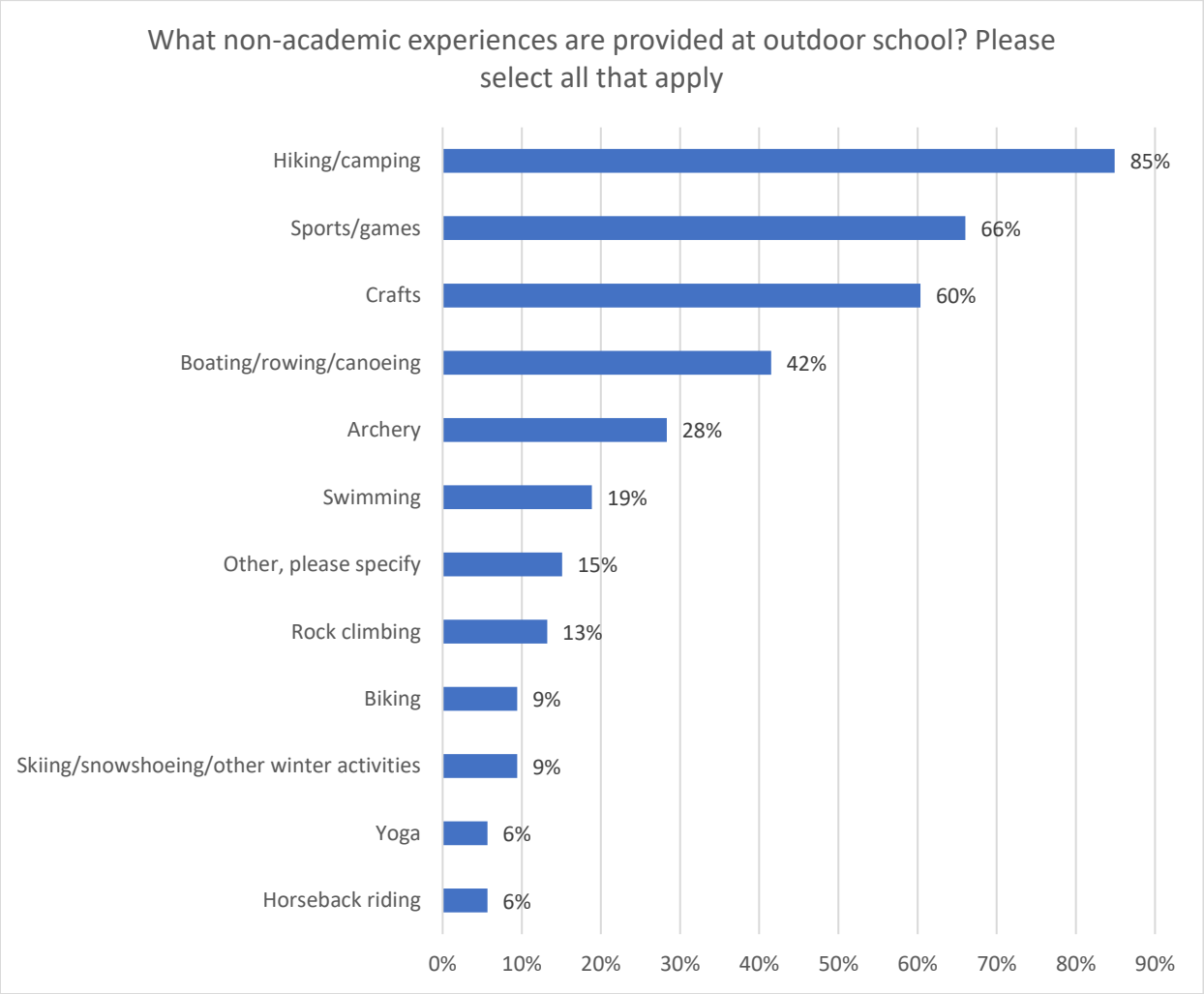
Figure 64: What subjects are typically taught during the outdoor education program



What non-academic experiences are provided at outdoor school? Please select all that apply (n=53)

In terms of activities, the most common are hiking/camping (85 percent), sports/games (66 percent), and crafts (60 percent). Other activities are dependent on the type of facility, location, and staff. Interestingly, in the previous question only 38 percent reported students learning about art, while here the percentage participating in a program with crafts is 60 percent. This may reflect a disconnect between what respondents consider to be academic and non-academic.

Figure 65: Availability of non-academic experiences



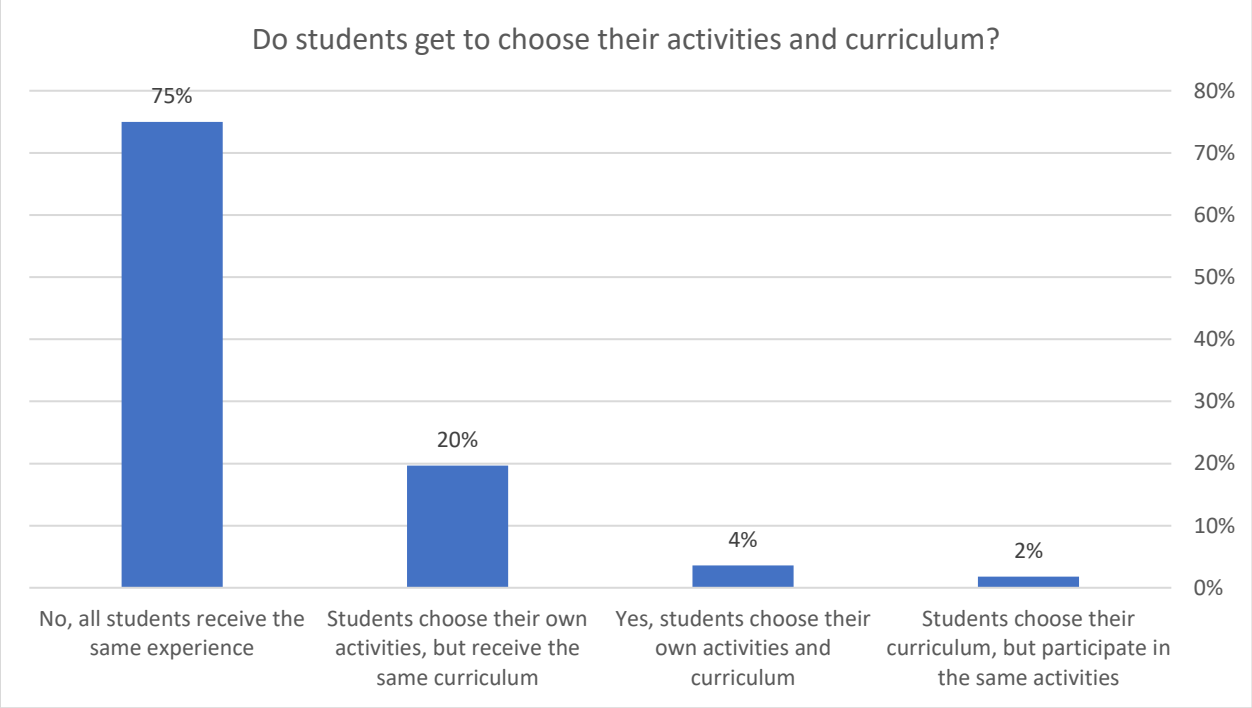
When planning your outdoor education experience with your provider, how much control do you have regarding the content and schedule? (n=56)

Respondents were asked to express their control over content and schedule on a scale of 1 (no control) to 10 (complete control). On average, respondents had more control over content (6.8 out of 10) than scheduling (6.0 out of 10), but in both cases the average suggest relatively high levels of control.

Do students get to choose their activities and curriculum? (n=56)

Most respondents (75 percent) report that all students have the same curriculum and participate in the same activities. Where there is flexibility, it generally takes the form of students choosing what activities to participate in (20 percent).

Figure 66: Do students get to choose their activities and curriculum?



For students who choose not to attend outdoor school, what do they do while their peers are outdoor school? (n=51)

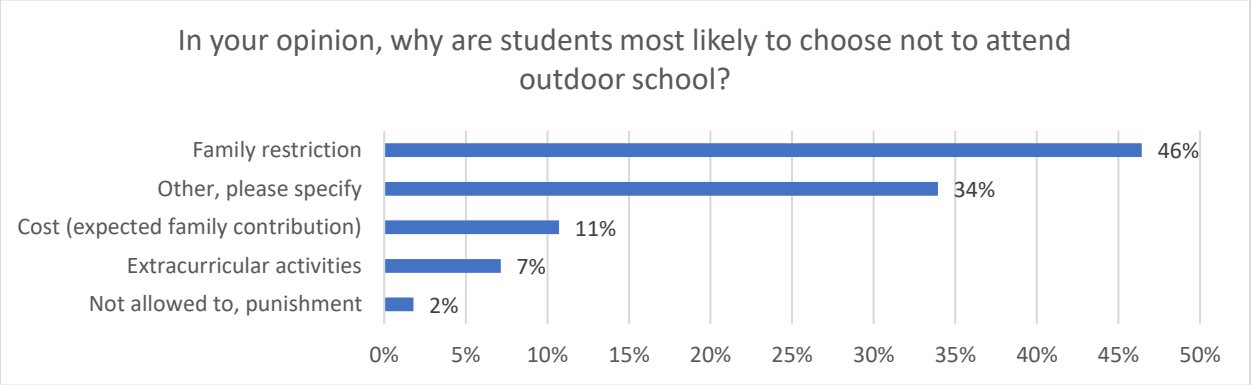
The majority of respondents explained that students who do not go to the outdoor education program attend school or are given at-home assignments instead.

Figure 67: Word Cloud - What students who do not participate do instead

In your opinion, why are students most likely to choose not to attend outdoor school? (n=56)

Note that this question did not allow for multiple answer choices, thus respondents had choose the most common reason. Family restrictions were most common (46 percent), followed by *Other* which generally references students being scared to be away from home. Cost to families was reported to be the primary barrier for 11 percent of respondents' students.

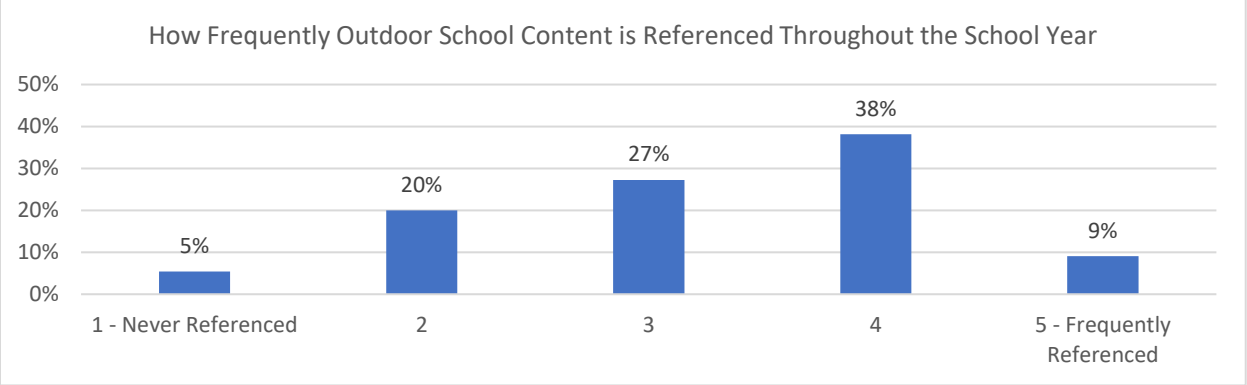
Figure 68: Reasons for Not Attending Outdoor School



We are curious about how students who don't go to outdoor school are affected outside of outdoor school in their learning or social experiences. On a scale from 1 to 5, how often would you estimate outdoor school is referenced outside of outdoor school? An example of a 5 response would be that students have a project where they are supposed to identify plants on campus using information that they learned at outdoor school or that teachers assign students to groups in class according to their outdoor school cabin assignment. (n=55)

On average, outdoor school concepts are referenced fairly frequently (3.3 out of 5) during the remainder of the school year. This suggests that students that students who do not attend outdoor school may struggle to engage with content in their classroom during the rest of the year.

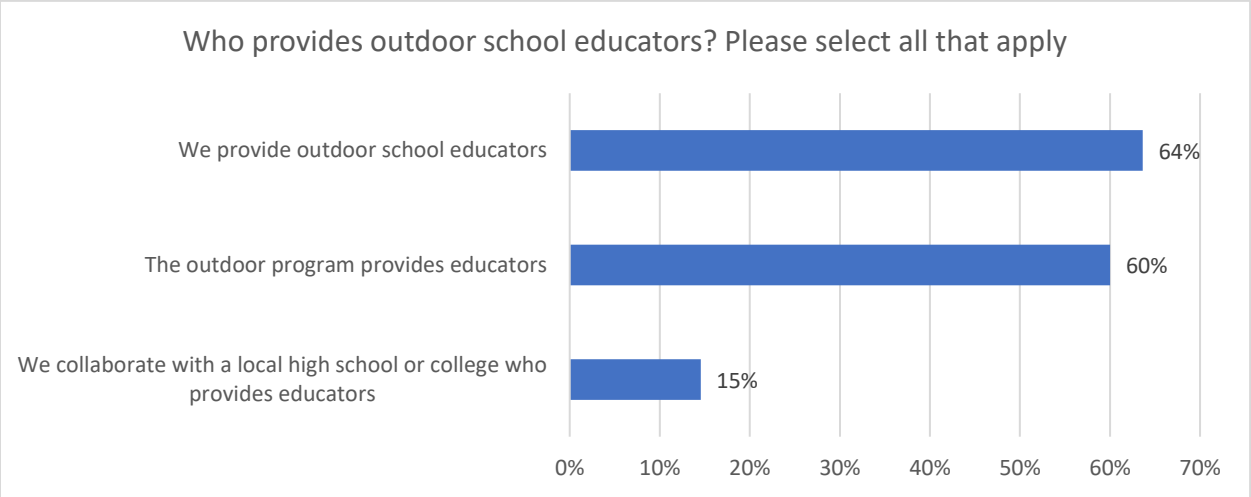
Figure 69: How Frequently Outdoor School Content is Referenced



Who provides outdoor school educators? Please select all that apply (n=55)

School-provided educators (64 percent) and outdoor education program-provided educators (60 percent) are both common. Overall, 29 percent of respondents indicated that both school and program staff are involved in teaching students at outdoor school.

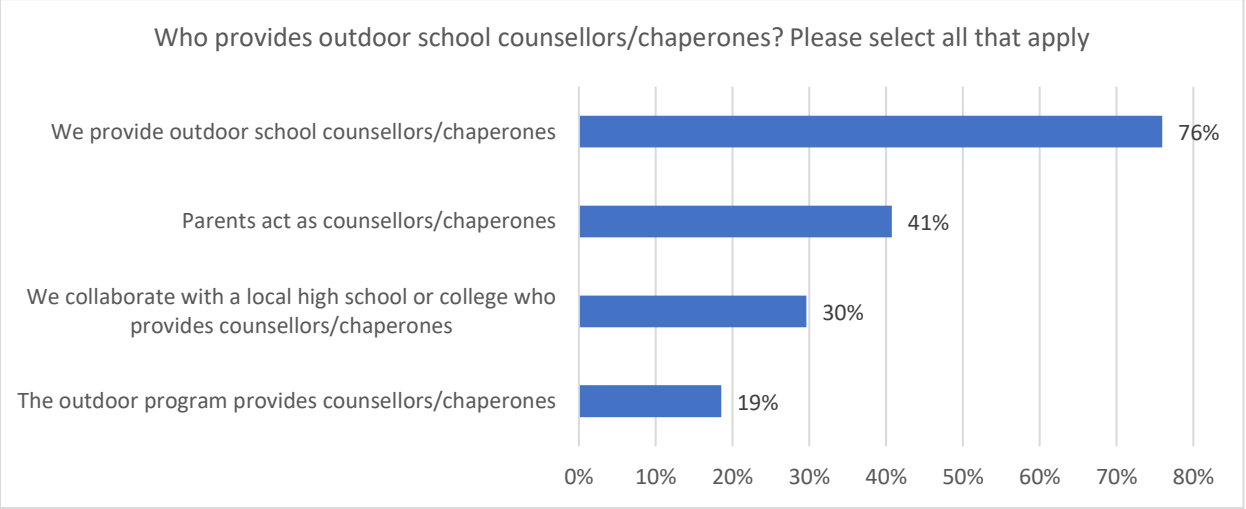
Figure 70: Who provides outdoor school educators?



Who provides outdoor school counsellors/chaperones? Please select all that apply (n=54)

School counsellors are the most common chaperones (76 percent), followed by parents (41 percent), high school or college students (30 percent), and outdoor school staff (19 percent). Half of respondents reported relying of a combination of the four categories.

Figure 71: Who provides outdoor school counsellors/chaperones?



How much does the school pay in a typical year for students to attend outdoor school? (n=41)

Many programs were unsure of their costs or reported that other groups including their school district or PTA/PTO pay for outdoor school. Estimates of total school cost were divided by the estimated number of students attending (see earlier survey question). Total cost per student averaged $195 and ranged from $1 to $1,600. Note that respondents define outdoor school in many ways – traditional residential outdoor education, field trips, school gardens, student outdoor clubs, and high school outdoor recreation classes – which helps to explain the variability in cost per student.

Table 21: Total School Costs per Student

School Cost per Student		
Minimum	**Average**	**Maximum**
$1	$195	$1,600

Regardless of who pays, what is the total cost for transportation to and from outdoor school? For example, even if families pay for bussing, what is the total cost of bussing? (n=37)

Given the variability in how schools approach outdoor education, per student transportation costs range from $0 to $333. The average transportation cost per student is $46. Similar to the previous question, many respondents were unsure of their costs.

Table 22: Transportation Cost per Student

Transportation Cost per Student		
Minimum	**Average**	**Maximum**
$0	$46	$333

Regardless of who pays, what is the total cost to the school for educators/staff/counsellors? Please do not include regular teacher salaries, but please do include any additional payments that teachers receive for teaching outdoor school. (n=37)

Looking at educator/staff/counsellor costs, we find a range of $0 to $149 per student with an average of $31. Again, costs depend on the type of program and whether teachers/staff/counsellors receive compensation for being involved in the program.

Table 23: Educator/Staff/Counsellor Cost per Student

Educator/Staff/Counsellor Cost per Student		
Minimum	**Average**	**Maximum**
$0	$31	$149

Regardless of who pays, what is the total cost to the school for outdoor school supplies? (n=39)

Outdoor school supply costs average $24 per student; however, we again find a large variation in costs depending on the type of program. Many report receiving donations for students who are unable to pay for their own supplies (i.e. sleeping bag, hiking boots, rain jacket).

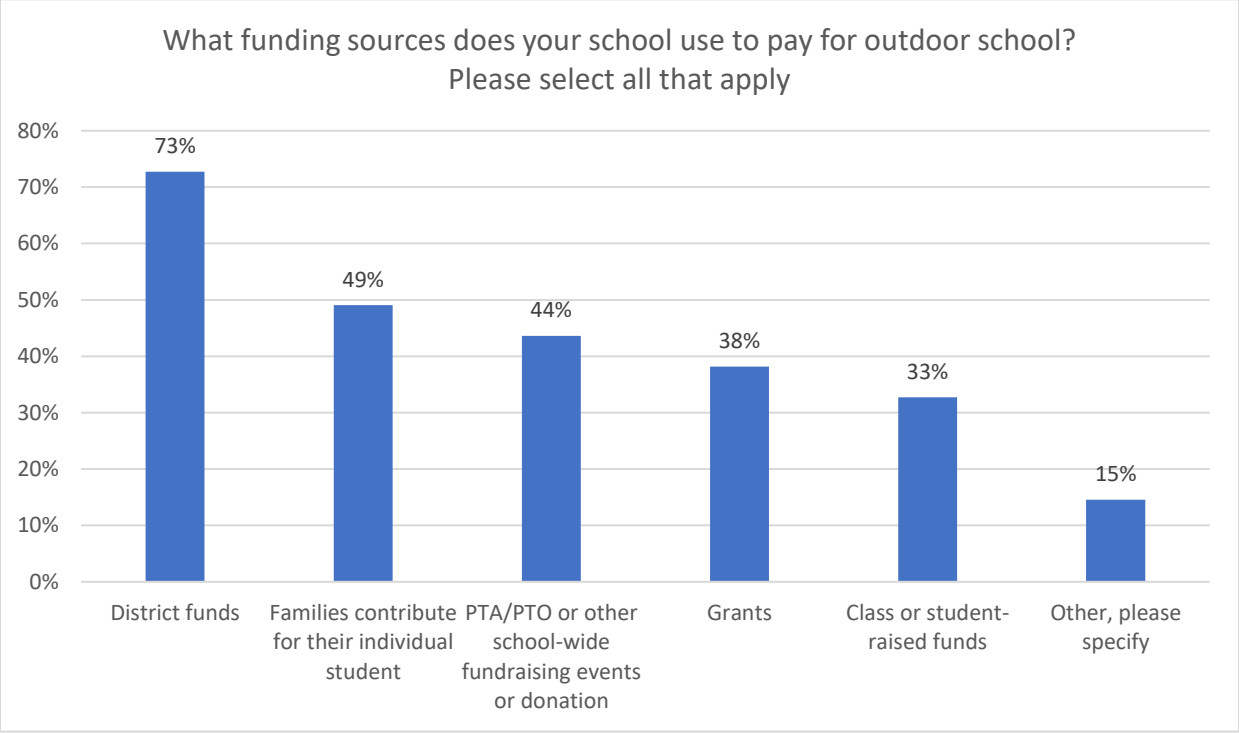
Table 24: Supplies Cost per Student

Supplies Cost per Student		
Minimum	**Average**	**Maximum**
$0	$24	$400

What funding sources does your school use to pay for outdoor school? Please select all that apply (n=138)

Among survey respondents, district funds were most commonly used for outdoor school (73 percent). Family contributions (49 percent), school-wide fundraising (44 percent), grants (38 percent), and class/student fundraising (33 percent) are also common. *Other* responses include school budgets and private donors.

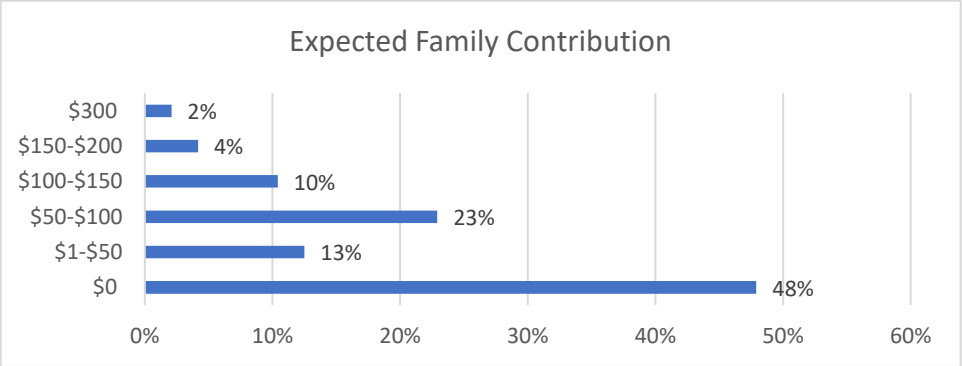
Figure 72: What funding sources does your school use to pay for outdoor school?



In general what is the typical amount a family is expected to contribute to participate in an outdoor education program beyond what is covered by the school, fundraising or other external sources? (We understand that some families may receive scholarships or other funding to cover this amount on a case-by-case basis.) (n=48)

Nearly half of respondents (48 percent) report that there are no direct costs to families for students attending outdoor school. Other respondents reported per-student costs ranging from $10 to $300, with 23 percent falling in the $51 to $100 range.

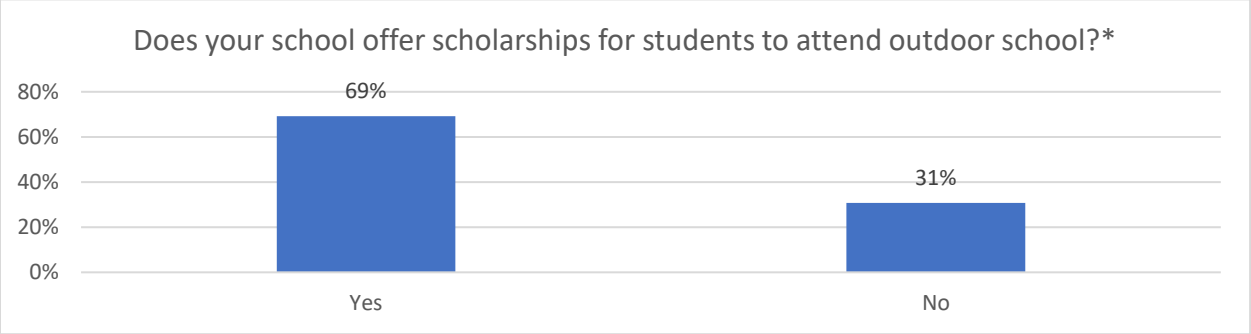
Figure 73: Expected Family Contribution per Student



Other than offering fundraising opportunities (if you do), does your school offer scholarships for students to attend outdoor school who would otherwise not be able to afford it? (n= 52)

Overall, 69 percent of respondents provide scholarships to students while 31 percent do not. All but one respondent who selected *No* generally have $0 per student costs, therefore there is no need for additional scholarships.

Figure 74: Availability of scholarships

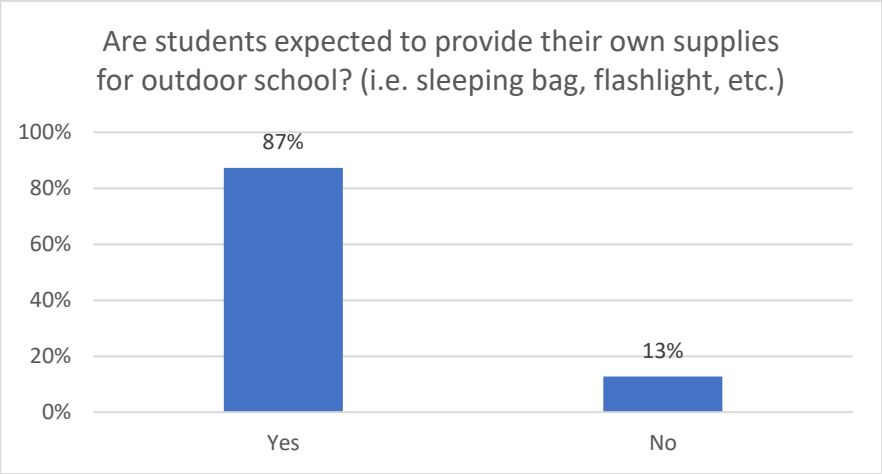


Note: All "No" responses are from schools that offer outdoor education to <u>all</u> students for free

Are students expected to provide their own supplies for outdoor school? (i.e. sleeping bag, flashlight, etc.) (n=55)

Most respondents (87 percent) require students to provide their own supplies for outdoor school. This could pose a financial barrier for some students, thus exacerbating equity issues.

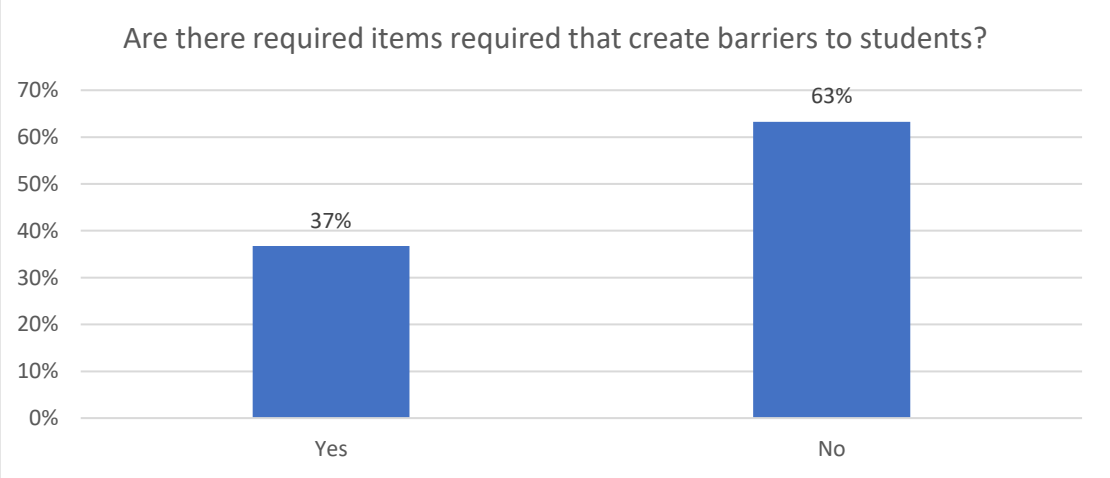
Figure 75: Are students expected to provide their own supplies



Are there items required that create barriers to students? (n=49)

For respondents who require students to bring certain supplies, 63 percent report that required items do not create a barrier for students.

Figure 76: Are there required items required that create barriers to students?



We are interested in knowing which required items create barriers to students. Please specify in the box below which supplies are commonly needed. (n=17)

This question was only shown to respondents who indicated that required items can be a barrier for students. Common items include sleeping bags, as well as shoes and clothes suitable for the outdoors.

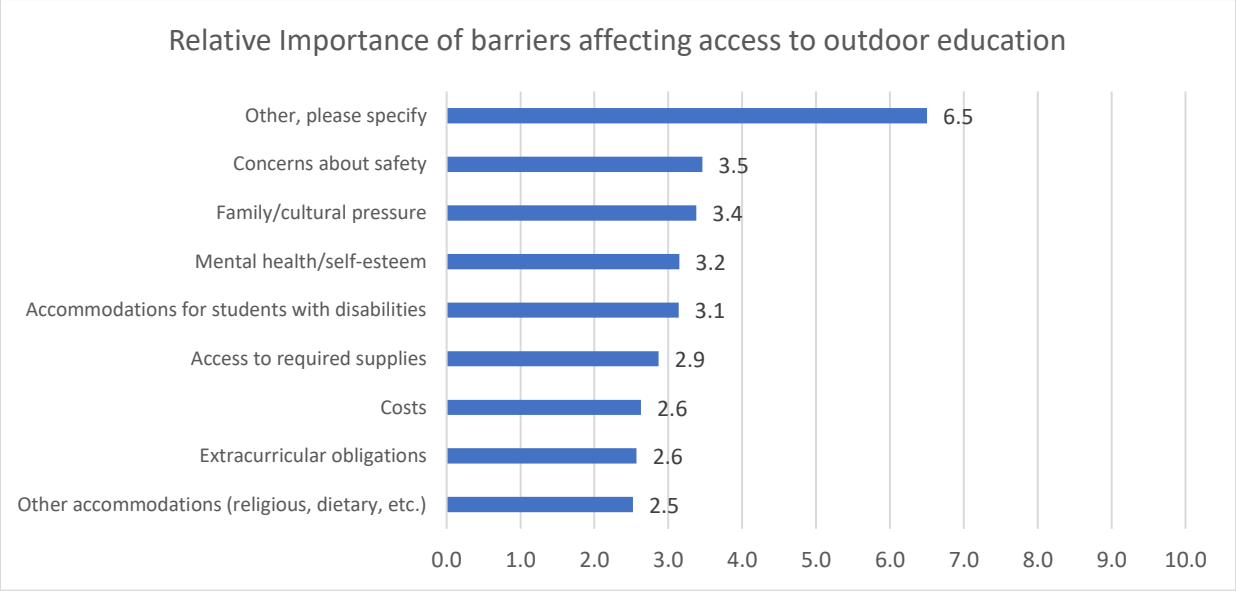
To the best of your knowledge, what is the average cost to a teacher who provides outdoor education? Please include any costs for transportation, supplies, and childcare that are not covered by the school. (n=48)

Costs to teachers average $60; however, 68 percent had $0 expected cost. Many respondents were unsure of the cost to teachers, especially for child care. Others mentioned costs that cannot be quantified: "The greater cost to staff is their personal time away from their families and home responsibilities."

Think about the different barriers that you know prevent students from accessing outdoor education. Barriers may make it more difficult for a student to participate or prevent them from participating all together. Please use the sliders to evaluate to what extent each of these factors prevents students from accessing outdoor school. (n=44)

On this scale, 0 = *Not a Barrier* and 10 = *Significant Barrier*. In general, most barriers were considered to be fairly minimal. *Other* barriers are larger because respondents only mentioned other barriers if they viewed them as significant. These other barriers include transportation, fund raising, and children being uncomfortable away from home.

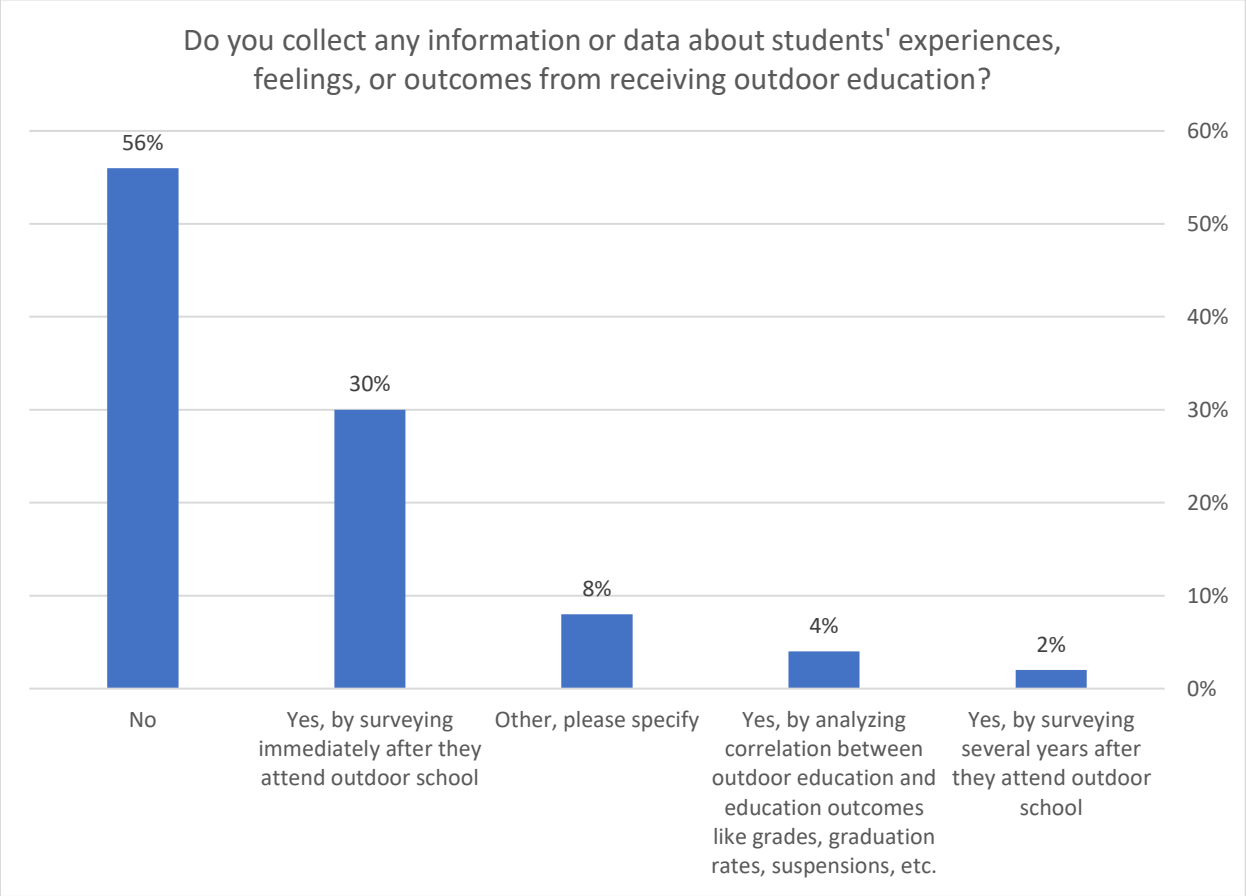
Figure 77: Relative Importance of barriers affecting access to outdoor education



Do you collect any information or data about students' experiences, feelings, or outcomes from receiving outdoor education? Please select all that apply (n=50)

The majority of respondents (56 percent) do not track student outcomes for those participating in outdoor education. Among respondents who do survey students, most data is collected immediately after the outdoor school program.

Figure 78: Collection of outcome data

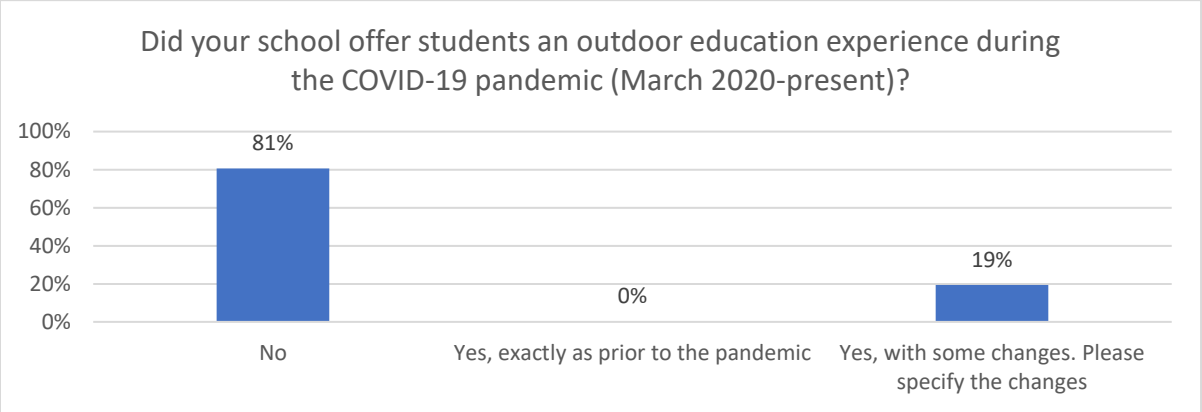


COVID-19 Impacts

Did your school offer students an outdoor education experience during the COVID-19 pandemic (March 2020-present)? (n=150)

Note that this question was shown to both respondents who typically offer outdoor education and those who do not. In comparison to the 41 percent of respondents who typically have students attend outdoor education, only 19 percent participated in some form of outdoor education during the pandemic.

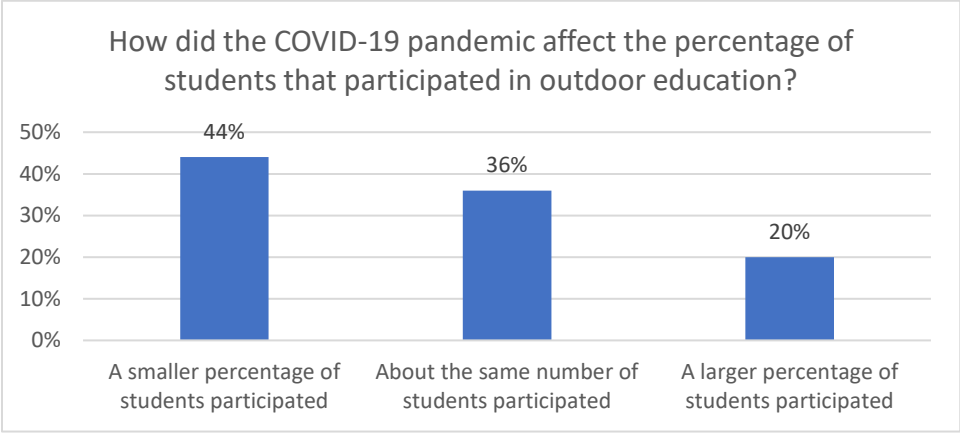
Figure 79: Program Changes Due to COVID-19



How did the COVID-19 pandemic affect the percentage of students that participated in outdoor education? (n=25)

For those who did provide outdoor education during the pandemic, attendance varied. A significant number of respondents (44 percent) had lower than usual participation; however, the remaining 56 percent had similar or greater participation.

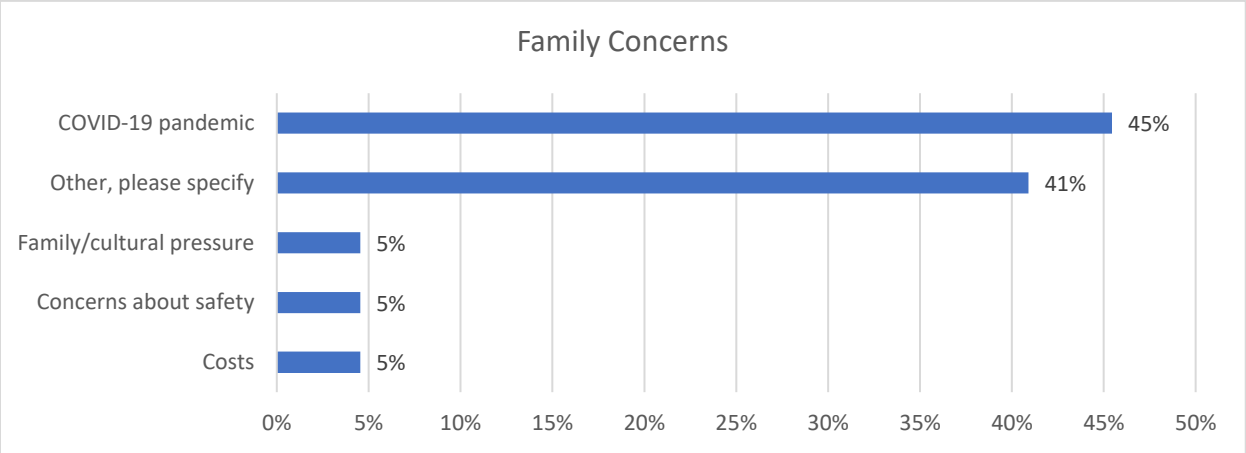
Figure 80: COVID-19 Impacts on Participation



What was the main concern from families about students participating in outdoor school during the pandemic (regardless of if the student participated)? (n=22)

Primary concerns were commonly related to the COVID-19 pandemic (45 percent). *Other* responses included closed facilities and less prioritization of outdoor education by parents and staff.

Figure 81: Family Concerns During the COVID-19 Pandemic



Please describe anything else you would like us to know about how the COVID-19 pandemic affected your school's outdoor education experience (n=11)

Two respondents reported never having offered outdoor education. Other responses include:

- We were unable to offer our experience at all.
- We were effected mostly by the outside/governmental restrictions
- We want to provide an outdoor classroom and also areas that students can learn outside.
- We had to significantly reduce the number of experiences that we offered.
- We had a monthly outdoor learning program just started in the fall of 2019. It went away during the pandemic. We are looking to bring it back this year.
- The teachers adapted their curriculum to an on site outdoor education experience. All 5th graders participated, and in some instances teachers from other grade levels assisted. Parent feedback was positive.
- Students asked for outdoor picnic tables so that they could eat outdoors - they were purchased. They viewed this as a safer alternative to eating inside.
- It was cancelled for two years.
- Bus riding was a challenge with social distancing.

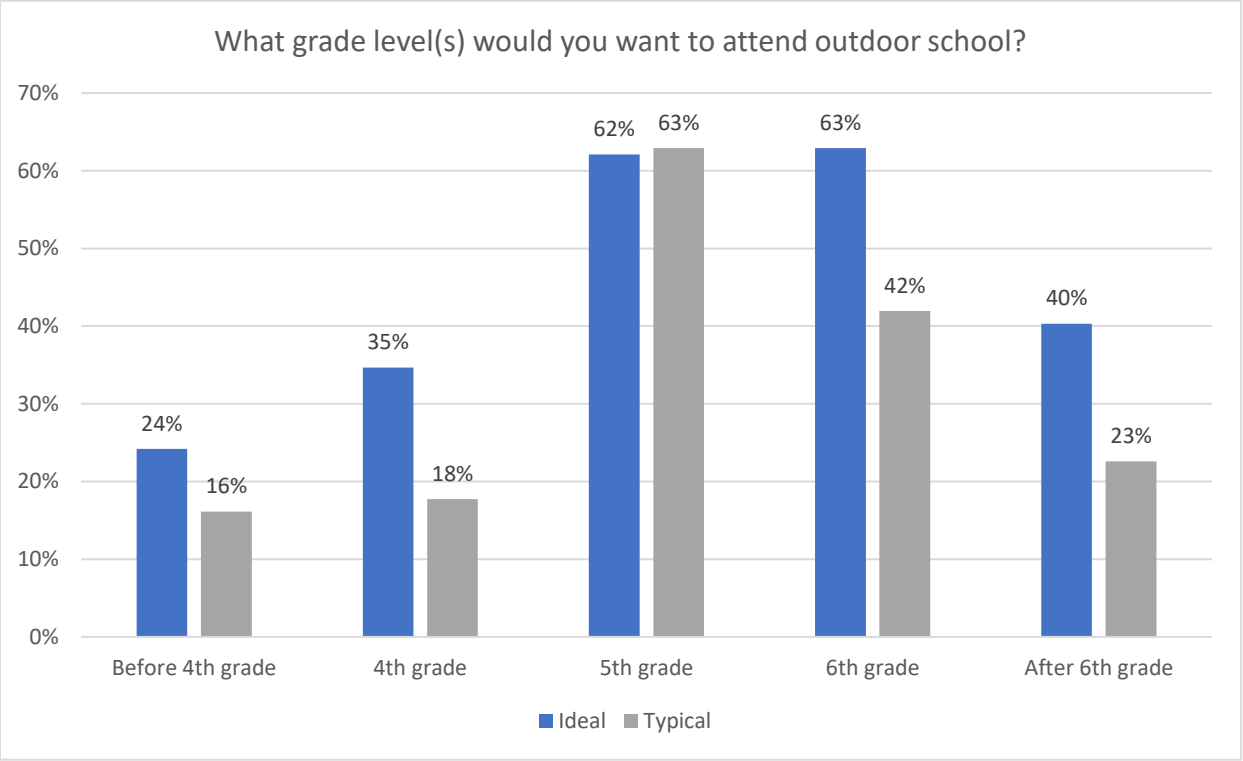
Ideal Outdoor School Program

In this section, we compare respondents' ideal outdoor school attributes (*Ideal*) to those reported earlier by respondents who typically offer outdoor education (*Typical*). Ideal program responses come from schools with and without a history of offering outdoor education to students.

What grade level(s) would you want to attend outdoor school? Please select all that apply (n=124)

In an ideal world, respondents would like to see more outdoor education across all grade levels than is typical (among schools that offer some outdoor education). The one exception is for 5th grade, where 62 percent of *all respondents* would like to see students participate in outdoor education and 63 percent of *respondents who typically offer outdoor education* have 5th grade students attend. Overall, this suggests that many schools would like to see outdoor education – both day programs (on and off campus) and residential programs – incorporated multiple times throughout a students K-12 education.

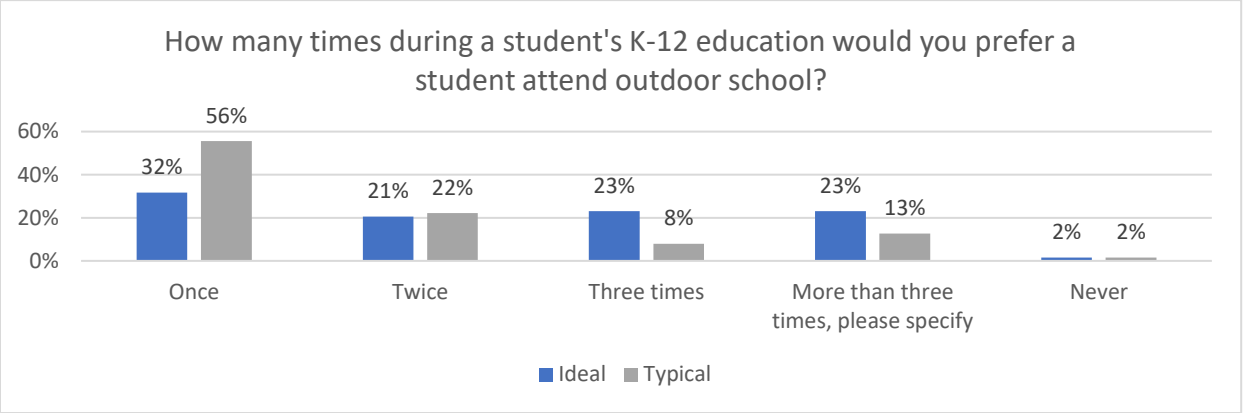
Figure 82: Ideal Outdoor Education Grade Level



How many times during a student's K-12 education would you prefer a student attend outdoor school? (n=126)

The majority of those who responded *More than 3 times* stated a preference for an annual or more frequent outdoor education. In an ideal world, respondents are less likely to want students to experience outdoor education once or twice, and more likely to want students involved three or more times.

Figure 83: Ideal Outdoor Education Frequency



Where would you want students to attend outdoor school? Please enter a specific camp, County, or general region (n=115)

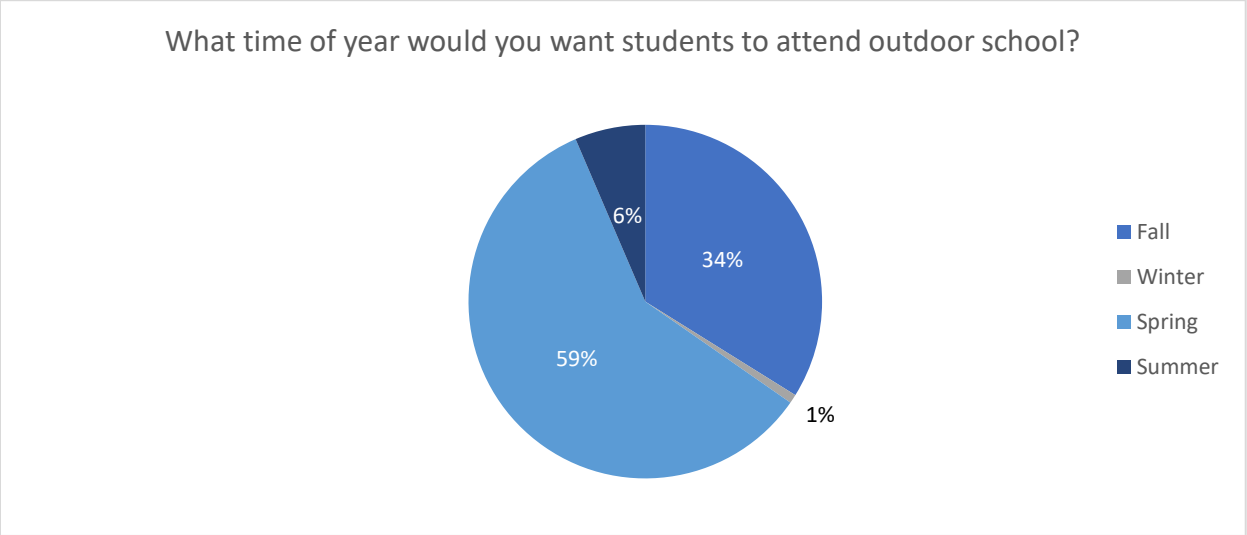
Responses Include:

- Cispus (22)
- Somewhere in Washington (13)
- Snohomish (8)
- Pacific Mountain (8)
- Tacoma-Pierce (6)
- Spokane (6)
- Unsure (5)
- South Central (5)
- Eastern (5)
- North Central (4)
- Nature Bridge (4)
- Northwest (3)
- North Cascades Institute (3)
- Camp Wooten (3)
- Camp Orkila (3)
- Southwest (2)
- Packwood Camp (2)
- On Site (2)
- Local Parks – City, County, State, or National (2)
- Islandwood (2)
- Camp Seymour (2)
- Camp Casey (2)
- YMCA Camp Reed
- Specific Program
- Riverview Bible Camp
- Olympic
- Millersylvania State Park
- Lake Wenatchee YMCA Camp
- Lake Retreat
- Chewelah Peak
- Cascade Camp
- Camp Spaulding
- Camp Saturna
- Camp Roganunda
- Camp Moran
- Camp Bishop
- Benton-Franklin
- Opportunities for Homeschool Students

What time of year would you want students to attend outdoor school? (n=124)

The most popular times for outdoor education are Spring (59 percent) and Fall (34 percent). This is likely a reflection of two factors: weather and the academic year.

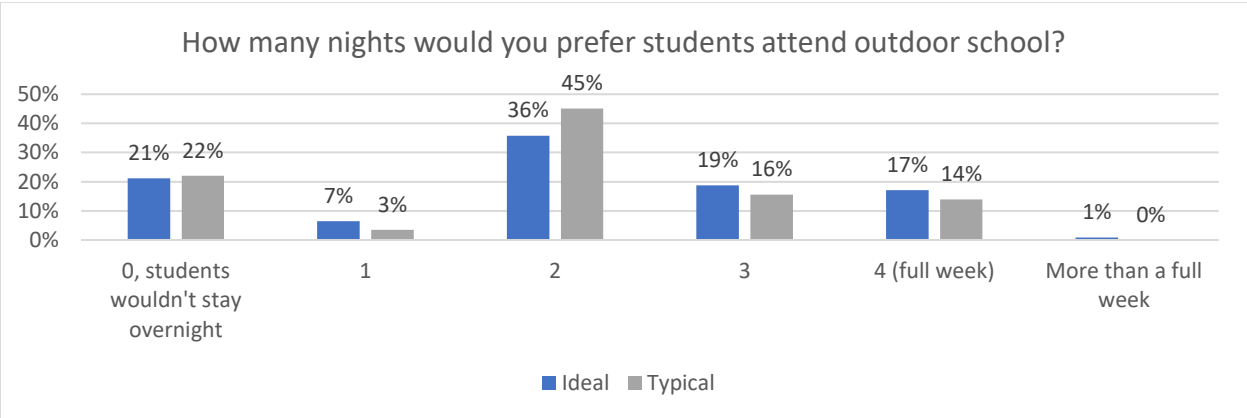
Figure 84: Preferred season for outdoor school



How many nights would you prefer students attend outdoor school? (n= 123)

Compared to the typical offerings of respondents who attend outdoor school, the ideal program is more likely to be 1 night, 3 nights, or 4 nights. The ideal program is less likely to be 2 nights. Approximately 21 percent of respondents prefer a non-residential program.

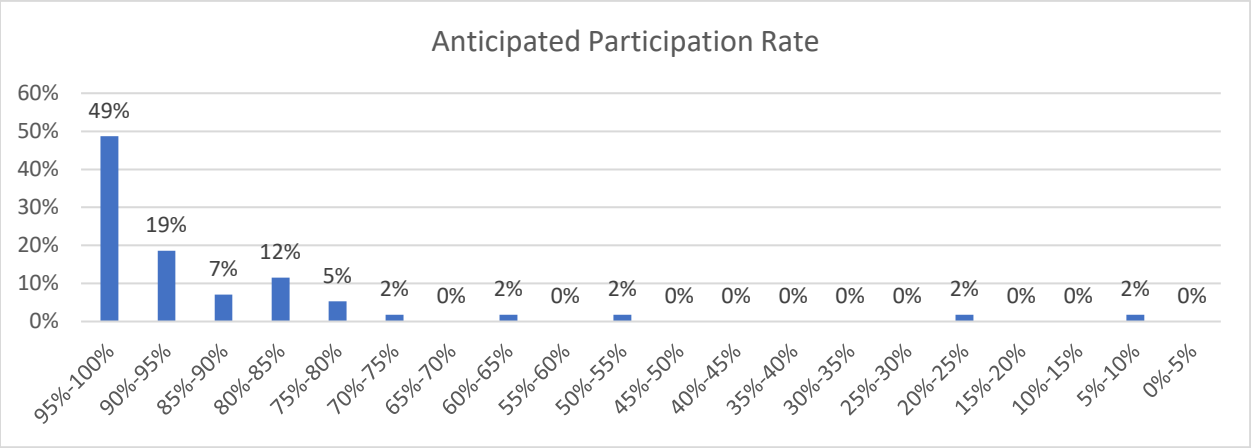
Figure 85: Preferred number of nights



What percentage of eligible students do you think would attend outdoor school if there were no cost barriers? Keep in mind that there may still be other barriers. (n=113)

The majority (68 percent) of respondents expect over 90 percent of students to participate in outdoor school if it was offered. A total of 92 percent of respondents expect attendance of 70 percent or more.

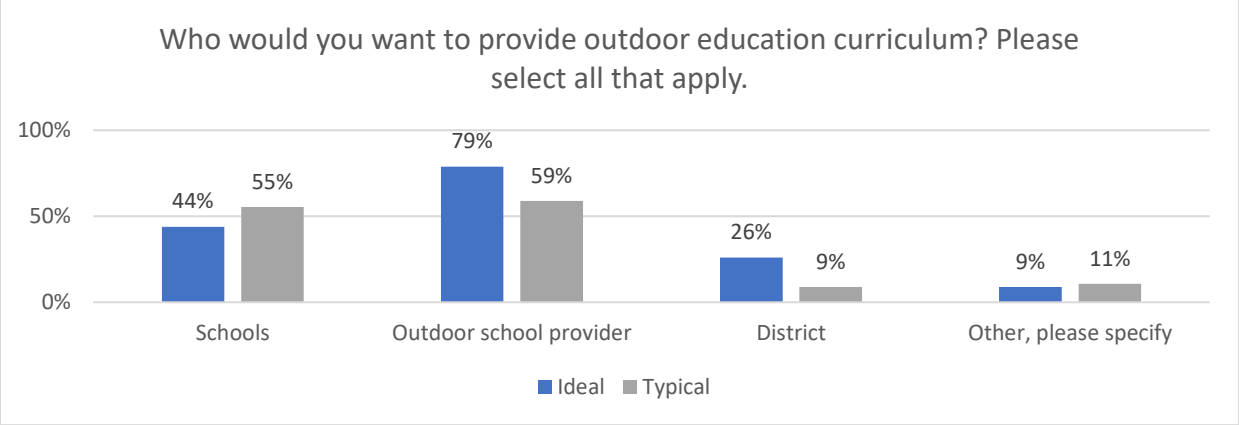
Figure 86: Anticipated Participation Rate



Who would you want to provide outdoor education curriculum? Please select all that apply. (n=123)

In comparison to the typical distribution of curriculum duties reported earlier in the survey, respondents are far more likely to prefer that their outdoor school program (79 percent vs. 59 percent) or school district (26 percent vs. 9 percent) provides curriculum. Respondents are less likely to want curriculum responsibilities to fall on schools, compared to what is typical (44 percent vs. 55 percent). *Other* collaborators include: universities/university students, educational service districts (ESDs), OSPI, community organizations, and tribes.

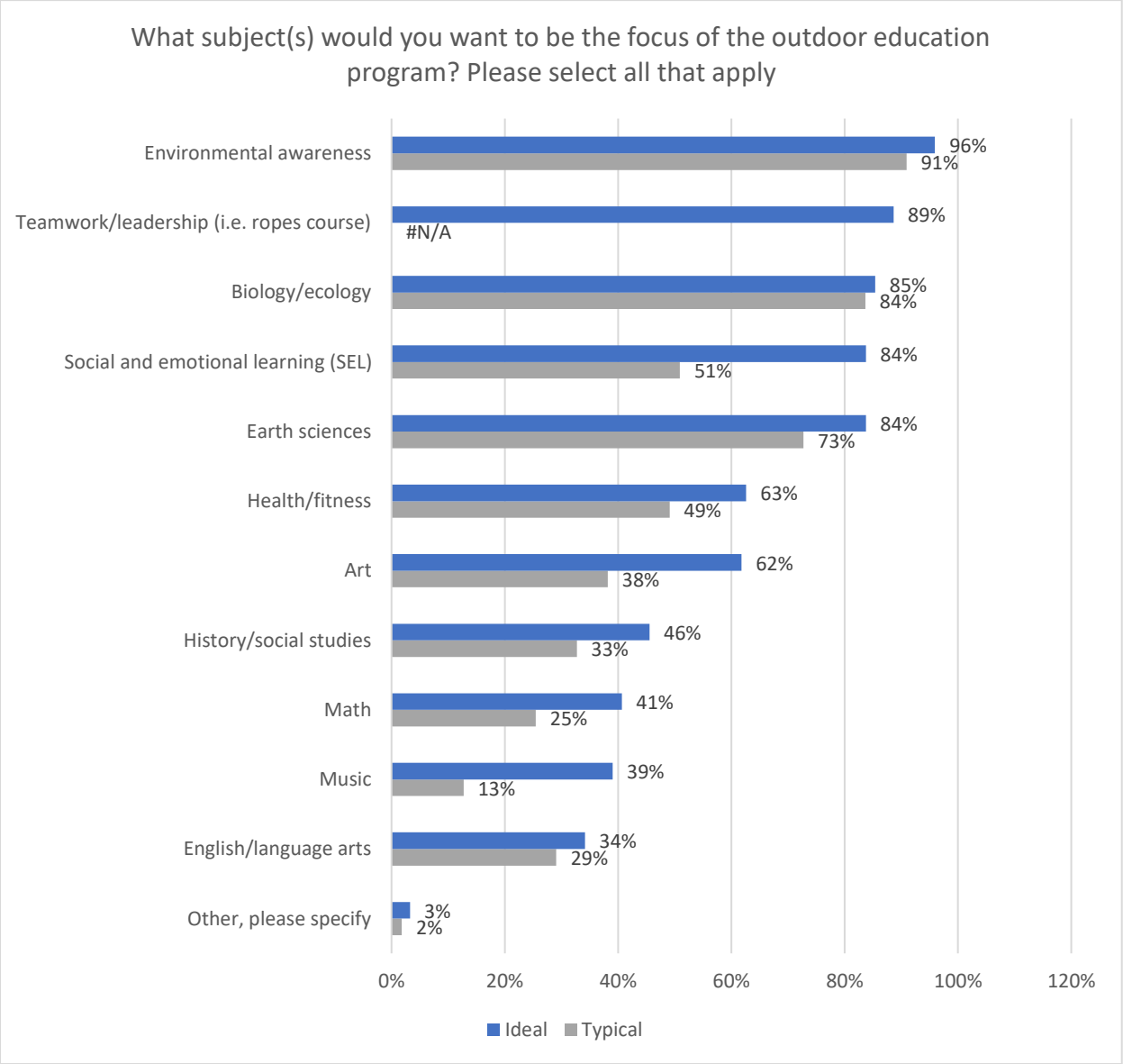
Figure 87: Ideal Curriculum Provider



What subject(s) would you want to be the focus of the outdoor education program? Please select all that apply (n=123)

In general, respondents are more likely to want to see each subject incorporated into outdoor education than is typical. The largest gap between ideal and typical offerings is for social and emotional learning (SEL). A total of 84 percent of respondents want SEL to be a focus in outdoor education, while only 51 percent of respondents who attend outdoor education report that SEL is a focus of the program.

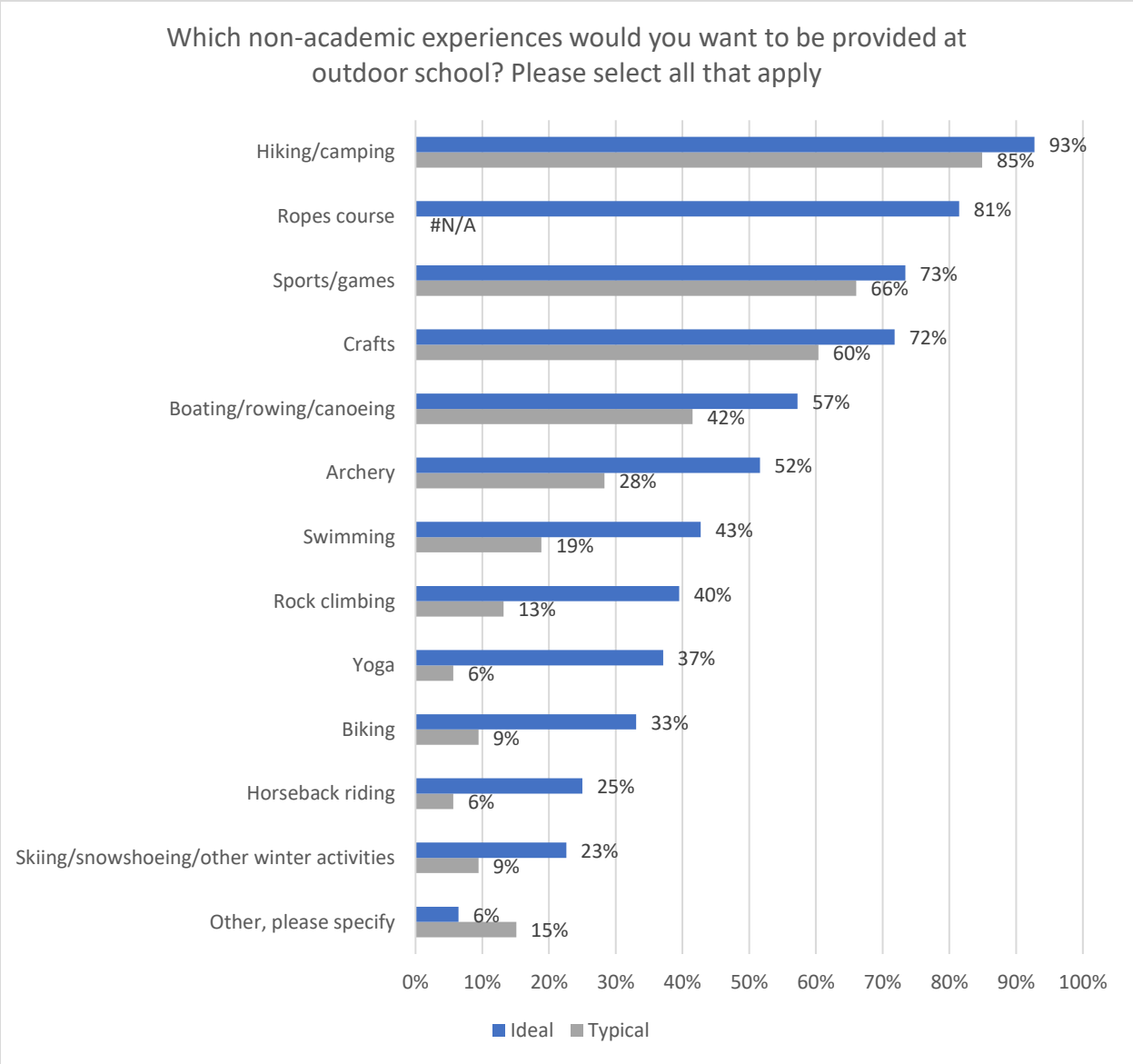
Figure 88: Preferred academic subjects



Which non-academic experiences would you want to be provided at outdoor school? Please select all that apply (n=124)

Similar to academics, respondents want to see a greater variety of non-academic experiences than was reported by schools who typically attend outdoor education.

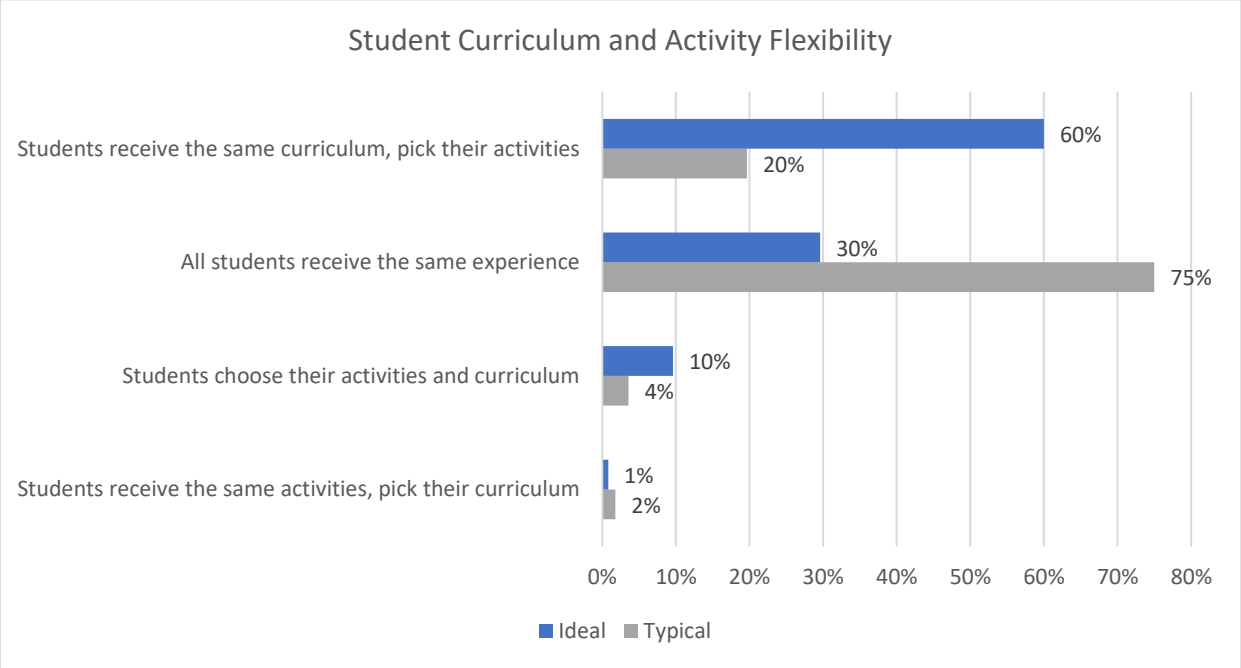
Figure 89: Preferred non-academic experiences



Would you prefer students pick their activities/classes or that all students receive the same experience? (n=125)

While typically respondents report that all students receive the same curriculum and activities (75 percent), respondents report that their ideal outdoor education experience would provide the same curriculum to all students while letting students choose what activities to participate in (60 percent).

Figure 90: Preferred Customizability



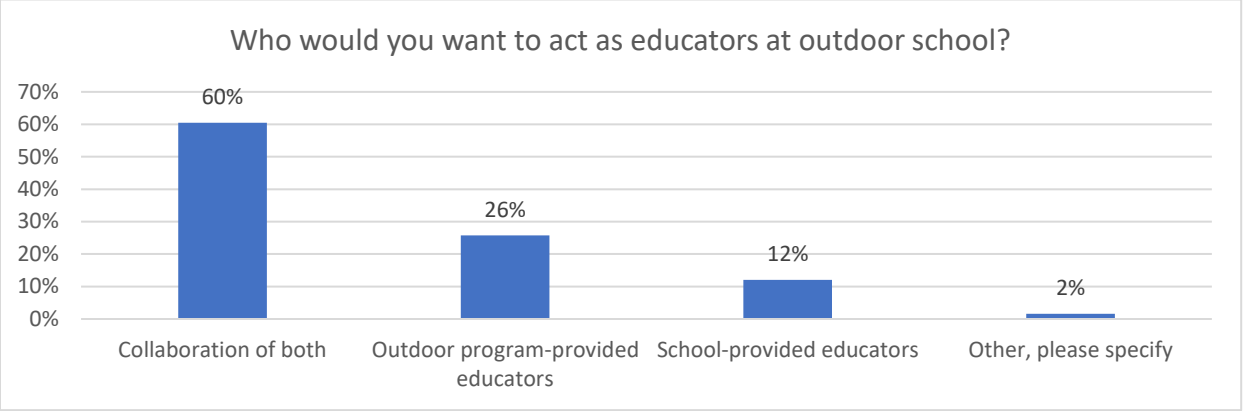
What would you prefer students who choose not to go to outdoor school do while their peers are at outdoor school? (n=124)

For students who do not attend outdoor school, most respondents expect them to either attend school or work on at-home assignments while their peers are away.

Who would you want to act as educators at outdoor school? (n=124)

The majority of respondents (60 percent) would like schools and outdoor education program staff to share teaching duties. Approximately ¼ of respondents (26 percent) would like outdoor school staff to be fully responsible for teaching and 12 percent would like schools to be fully responsible for teaching in an outdoor school setting.

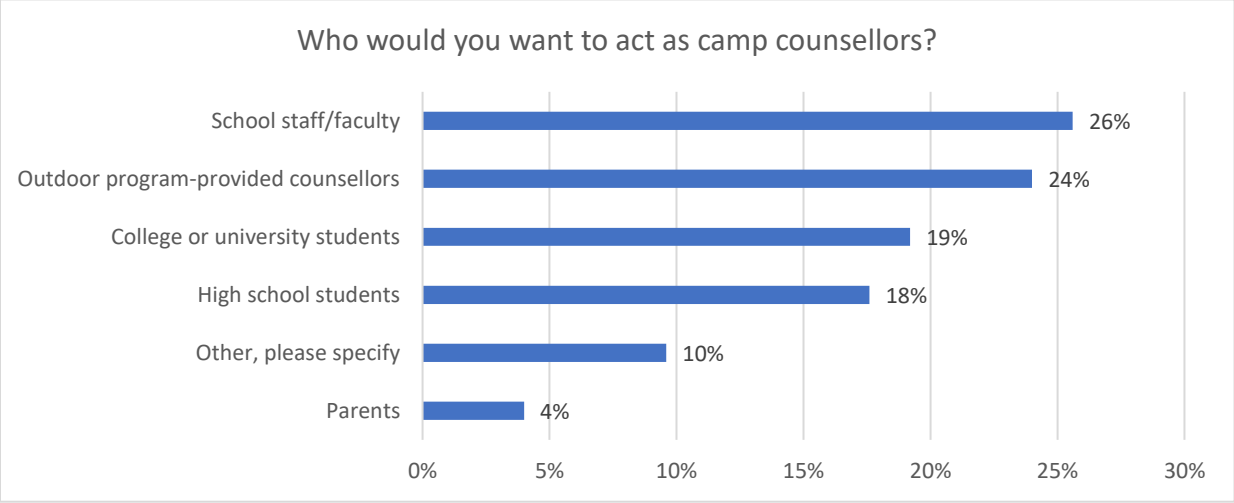
Figure 91: Who would you want to act as educators at outdoor school?



Who would you want to act as camp counsellors? (n=125)

Between school staff (26 percent), outdoor education program staff (24 percent), college students (19 percent), and high school students (18 percent), there is no clear preference for who should act as chaperones/camp counsellors. *Other* responses generally reference a combination of the available options. Note that parents are only the preferred option for 4 percent of respondents.

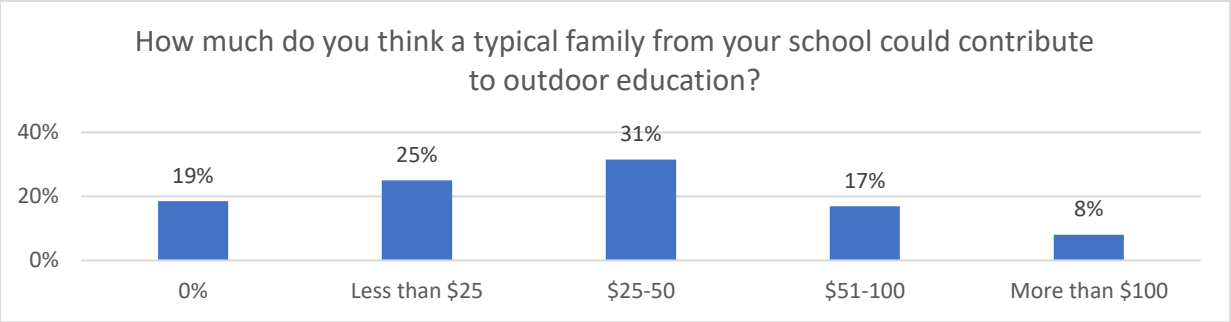
Figure 92: Who would you want to act as camp counsellors?



How much do you think a typical family from your school could contribute to outdoor education? (n=124)

Approximately 75 percent of respondents anticipate that the average family in their school could not contribute more than $50 to outdoor education. Nearly 20 percent report that the average family could not provide any funding toward outdoor education.

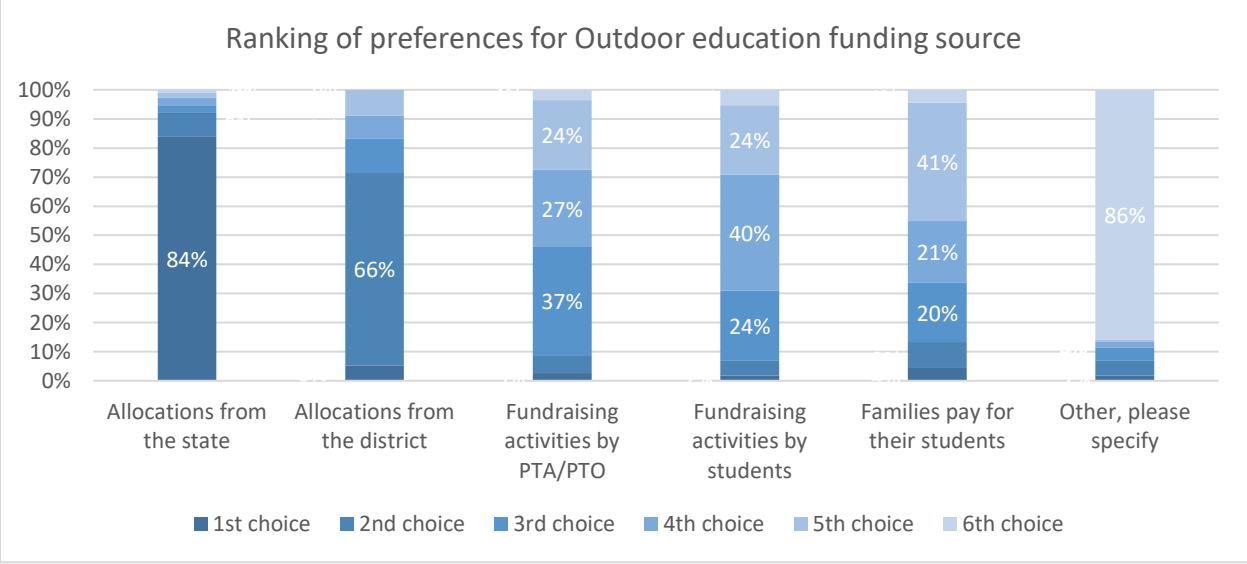
Figure 93: Family Contributions



What would be your preferred funding mechanism for outdoor education? Please rank the choices from most preferred to least preferred (n=113)

Respondents report that their ideal outdoor education experience would be funded through allocations from Washington State (84 percent). If state funding is not available or sufficient, the reported order of preference for funding is allocations from the school district, fundraising from PTA/PTO, fundraising by students, and lastly contributions by families.

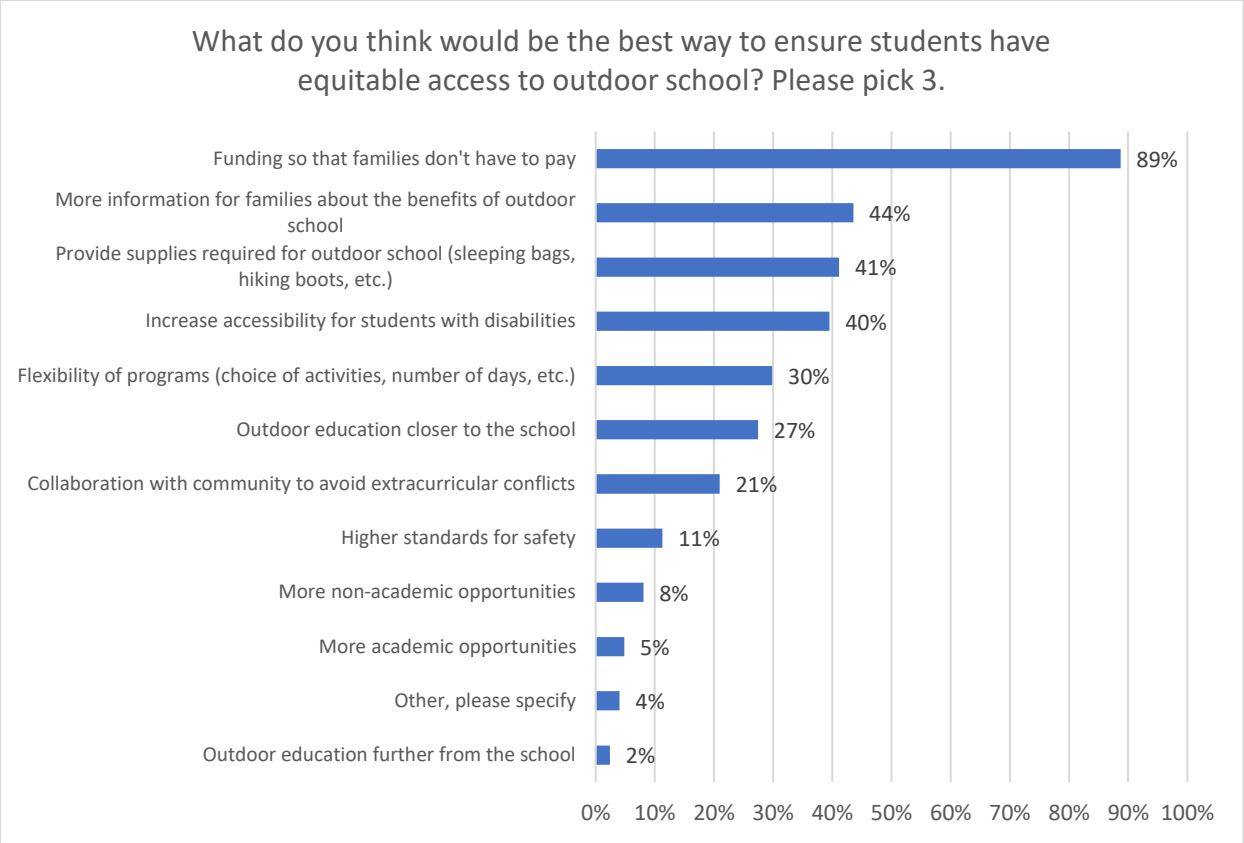
Figure 94: Ranking of preferences for Outdoor education funding source



What do you think would be the best way to ensure students have equitable access to outdoor school? Please pick 3 (n=124)

Respondents identify eliminating financial barriers (89 percent) as the best way to ensure equitable access to outdoor education. Other best practices for ensuring equitable access include providing information to parents on outdoor school benefits (44 percent), providing students with supplies (41 percent), and increasing accessibility for students with disabilities (40 percent).

Figure 95: Ways to ensure equitable access to outdoor school programs



What else would you like us to know about increasing accessibility and equity for outdoor education programs? (n=38)

Responses are as follows:

- Minimize any safety concerns
- Many of the students at my school have never had an experience being in nature. They benefit from the time learning in this environment, the relationships they build with others, and the self-confidence they gain from being away from home for 4 days and 3 three nights.
- Losing Chewelah Peak as a venue and the personnel attached to that program has been horrible. Our students have been negatively impacted by that loss.
- Let's move beyond "Outdoor Education" to "Education Outdoors." At Alternative high schools like ours, the issue is not WHAT to teach but the venue in which to teach it differently. We need access to facilities that are not dominated by "the haves," as [redacted] is with ASL and student leadership groups. We need places we can book, that provide activities, and that will be open to our agenda.
- It would be great if it could tie into our science curriculum, thereby meeting some of the standards that would be "missed" during those days away from the school building.
- In elementary school, grade level will dictate what type of experience is appropriate. Overnight trips would not be appropriate for our youngest students but our older students could go for up to three days.
- I want to learn about the potential of funding to "catch up" the two grade bands that missed out on this opportunity as 6th graders
- I think it's unfortunate that the bigger districts won't access this because of red tape.
- Each region of Washington has outdoor activities that are popular, whether it be fishing, shooting, hunting, river rafting, sailing, camping, hiking, ATV use, etc. Each opportunity should be celebrated and supported by the tax dollars collected by our government.
- How can we support this?
- Our outdoor experience is completely home grown and is not connected with a Outdoor School Facility. We believe that allows our teachers and staff to specifically tailor the experience with the academic standards being taught in the classroom through field work and adventure.
- I believe outdoor experiences every year (but especially transition years-6th and 9th) would dramatically alter the school experience both students and staff in a positive way.
- For me, I would want to just get the students to the outdoor school and have the curriculum, activities, etc all ready for us. We are so busy with the day to day activities that we don't have time to help set up the curriculum for outdoor school. I'm SOOO excited about this idea but the thought of creating the curriculum and activities is overwhelming.
- If it is considered an essential academic experience as part of a fully funded public education, we should not be charging extra for families to have their students attend.
- Families who do not speak English or who have never let their child sleep over in another location will need a lot of prepared information and assurance to feel comfortable. Videos? Q&A? Forum to ask questions directly? Etc.
- Funding to help pay for outdoor-educators, rather than depending on teachers to do more/extra work to provide the outdoor school.
- have Muslim representation in communication materials
- Not all outdoor programs are equal. [redacted] has a fully functional facility and experience, on the other hand, [redacted] is unsafe, unkept, and the Camp employees are less knowledgeable (as an example).

- collaborate with the state ESD to develop standards based credit opportunities for high school students that are interdisciplinary. Provide extended opportunities for students to earn pathway credits toward graduation in a standards based model. Provide opportunities to attend that don't conflict with traditional school schedules (ex: over winter or spring break, during the summer, one weekend a month)
- Are there programs available for elementary students at this time? If so, what is the cost to families? Is transportation available?
- Are there diverse districts that are still making this happen? I would like to learn from them.
- We live in a region with many outdoor opportunities. Our students need access to structured outdoor activities so that they continue to choose healthy outdoor options for recreation.
- We are a small community with no PTA/PTO and a high poverty so fundraising by students is extremely difficult as well.
- This is why I would want it to be available to all students. Students who already attend a camp don't need it as much as the students who do not have other opportunities to attend.
- This is a great idea if we can keep it local. We have issues with enough bus drivers.
- This experience is powerful for students
- The biggest barrier currently is funding. We are piloting a program at Cascade Camp that we hope to be able to grow.
- Our school is over 50% Native American. A strong emphasis on Native American ways of experiencing the outdoors would be a benefit.
- Providing all camp information, registration, fundraising, communication in a families native language with ample opportunity to "preview" camp (videos, pictures, virtual camp walk throughs) so families understand this experience. Our families from Central America have shared it is not "culturally expected" for their children to stay away from home. Maybe day camp is an option instead of an all or none expectation.
- We have accessed Chewelah Peak with 4th and 8th graders in the past. It is now closed. This limits our opportunities.
- Our students, staff and parents love the outdoor education experience.
- We believe that the outdoor education piece is essential for growth, both emotional and educational. We have seen camp change students lives on so many levels. It is something that has benefitted many of our students.
- Viable options for students who choose not to participate if the program is during the school year.
- These programs are incredibly important for the development of our students and for equity of opportunity for all, should be fully funded by the state and/or district.
- Our summer program ran an outdoor program this year. (Skagit Safari)
- Provide language supports for English learners
- Promoting the benefits of outdoor education and how it provides a more well-rounded learning opportunity for students.
- Clear goals for the time

Appendix E – K-12 School and District Discussion Groups

Participant Background

Let's start with introductions. Can you tell us your name and a bit about where you work?

In total, there were 8 participants who attended a discussion group. While the sample is small, the participants represent a variety of perspectives and geographies – at least one person from every major area of the state participated. The groups included superintendents, principals, and teachers who could speak to the outdoor education opportunities happening at their school or in their district. Some participants came from districts with established outdoor education traditions, while others were interested in starting an outdoor education tradition.

The timing of this research was a barrier to further engagement. We solicited feedback from late August to mid-September – the busiest time of year for school staff. More than 50% of those agreeing to speak with us were unable to follow-through on the commitment due to emerging issues at their school.

Before the pandemic, what types of outdoor education opportunities were you providing to students, if any? At what grade levels? Where?

Prior to the pandemic, those with outdoor education traditions tend to involve multiple grade levels. For younger students, day trips were common – hikes, visits to hatcheries, and other outdoor activities. For older students, multi-day residential outdoor education is more common. One high school offers outdoor recreation classes for students.

The pandemic was obviously a big disruption for schools. What do you think students lost out on by not having outdoor education this year?

Schools with outdoor education traditions view them as a "rite of passage" that students missed during the pandemic. Many participants also note the mental health impacts of remote school and less time outdoors. From the perspective of teachers, outdoor education provides a chance to "get to see kids shine who don't usually get to shine." Many children who struggle in the classroom will "blow [teachers] away" in an outdoor education setting.

Post-pandemic, are you expecting any changes to how you approach outdoor education for your students?

Participants agreed that, if anything, the pandemic will lead to more outdoor education and activities in schools because they realize it is safer than being indoors. Many reported that their lunch period is now outside, and many teachers are choosing to hold their classes outdoors. Some schools are considering building gardens or greenhouses on campus to facilitate more outdoor education. In terms of traditional residential outdoor education, participants see this as a way to get students excited about returning to school and learning.

Outdoor Education Program Attributes

When you hear the term outdoor education, I am interested in what comes to mind in terms of activities, academics, location, and duration. Let's take each one separately with some quick responses:

Activities

Commonly mentioned activities include outdoor recreation (i.e. hiking, rock climbing, survival skills, kayaking) and games or crafts that involve creativity and are geared toward social and emotional learning (SEL).

Academics

In terms of academics, science was the most mentioned academic subject. The specific discipline – biology, marine science, geology – varied depending on the resources available. While there was a focus on science, discussion participants are looking for interdisciplinary learning that incorporates multiple subjects as well as social and emotional learning (SEL). Another aspect of academics that participants valued was place-based learning, which could include the local environment, local history, indigenous history and culture, and regional industry topics (i.e. agriculture, logging, fishing).

Location

Participants generally agreed that outdoor education can happen in a variety of settings – local parks (city, state, or national), tribal land, and traditional outdoor school facilities. Most participants are looking for something close to home, but away from major cities.

Duration (max/min)

Answers range from a class period to a multi-day program, and even year-round outdoor education. Ultimately, the consensus was that any time outdoors is beneficial to students, but longer experiences and more frequent experiences are better.

Time to bring out my magic wand… If you could design your ideal outdoor education program for your students, what would it be? Again, let's break this apart into smaller questions.

What age or grade level would you want to participate?

Most participants would like to see more outdoor education built into every grade, with the duration, location, and lessons varying based on student age. In terms of residential outdoor education, 5th or 6th grade was the consensus. Participants note that at this age students are transitioning to middle school, are comfortable being away from home, and have relatively few extracurricular activities that would prevent them from being out of town for a few days. Some participants would like to see more involvement of high school students as chaperones or mentors at outdoor school.

Is there a time of year that would be ideal or off limits?

The biggest factors limiting scheduling are school schedules – holidays, testing, semester start/end dates – and weather. Participants focused in on two seasons for outdoor education: fall and spring. They reported that fall is ideal for relationship building and setting the tone for the rest of the year. Spring, on the other hand, gives students the opportunity to circle back to what they learned that year, solidify existing relationships, and celebrate the end of the year.

Would you prefer a residential/overnight experience or a multi-day only program?

Participants prefer residential programs but acknowledge that day programs may be better suited to other age groups or specific situations where there are barriers keeping students from attending a residential program. Depending on the school, preferences for residential program length range from 2 to 4 nights. For day programs, most participants would prefer to scatter multiple days throughout the school year rather than having them be consecutive.

What about the role of outdoor education staff vs. school staff or volunteers?

In general, discussion participants are looking for an outdoor education program with staff who teach lessons and facilitate activities; however, some schools have a tradition of having their teachers lead lessons. In terms of school staff and volunteers, most participants agree that they will be responsible for some behavior management and act as chaperones.

What are you looking for in terms of curriculum?

Many participants are looking for curriculum that ties back to what students are learning in the classroom and state learning standards. Some are looking to be able to customize curriculum (i.e. the program has multiple lesson plans to choose from) and others are looking for more of a focus social and emotional learning (SEL).

Unfortunately, I don't have a magic wand… Which brings us to barriers:

What are the biggest barriers or factors you have to consider when deciding whether or not to offer outdoor education to your students?

Common barriers included cost, risk management/liability, and teachers or parents who do not see the value in outdoor education. As one participant notes, "money isn't an issue, it's priorities." In other words, schools have money, but they prioritize other funding needs over outdoor education. If outdoor education is a priority for schools and families, and there is funding dedicated to outdoor education, many of these barriers can be reduced.

What about for your students? What gets in the way of them attending an outdoor education program? (prompt: money, supplies/equipment, family patterns)

Participants generally see cost, family, and historic inequity as factors keeping students out of outdoor education. By removing any financial barrier and making outdoor school available to all, more students will be able to participate and there will be fewer equity issues.

Expansion Planning

If Washington State were to provide funding so that all 5th and/or 6th graders in the state could go to a multi-day outdoor education program, do you think there is enough capacity among existing providers to meet that need? (Prompt: Do you know where you would go? How would you find a program if needed?)

Responses were mixed, with some respondents knowing of vacancies at residential facilities (with or without dedicated outdoor education staff) and others not knowing of enough capacity to support all 5th/6th grade students. Outside of the outdoor education programs participants are familiar with, they were unsure where to look for additional options and would welcome some type of matching tool.

What partners and organizations within WA are best suited to helping the state turn an outdoor education expansion plan into action?

Common partners include tribes, the Association of Washington School Principals (AWSP), the Washington Association of School Administrators (WASA), and students.

Equity and Accessibility

I want to next talk about equity and accessibility – two different things but connected. When you think about outdoor education programs and your own students body, what do you notice in terms of equity and accessibility?

In terms of equity, many participants noted that removing financial barriers is necessary to ensure students from all backgrounds have the opportunity to attend outdoor education. If they ask for family contributions or fund raising, all participants explained that they provide scholarships and gear to students who are facing a financial barrier. One participant noted that outdoor education can counteract historical inequity if all children are given the opportunity to participate in outdoor recreation – an activity historically associated with upper middle class, White households. Participants have found that accessibility can be a barrier for some students with disabilities; however, they have generally found ways to include all students for at least part of the outdoor education experience.

How do you see accessibility being better supported in the Washington outdoor education landscape?

Most participants agree that it is important to focus on what students can do, rather than what they cannot do. For students with disabilities, participants would generally rely on school staff for advice on how to best support students during outdoor school.

Benefits of Outdoor Education

When you think about outdoor education programs, who benefits? What are those benefits?

Students

Benefits include improved equity, connectedness with people and the natural world, interdisciplinary learning, physical and mental health improvement, social and emotional learning (SEL), and greater academic engagement.

Staff

Participants have seen outdoor education benefit teachers by providing them with a chance to connect with students and see them in a different setting. These relationships and insights can then be built upon through the remainder of the school year.

Local Community

Participants reflect that outdoor education teaches the next generation about the importance of natural systems and how they benefit the local community and its industries.

Guidance Document:

Arsenic Treatment for Small Water Systems

November 2005

DOH PUB. #331-210
(updated)

Guidance Document:

Arsenic Treatment for Small Water Systems

November 2005

For more information or additional copies of this report contact:

Training and Outreach Section
Division of Drinking Water
Department of Health
PO Box 47828
Olympia, WA 98504-7828
(360) 236-3164
http://www.doh.wa.gov/ehp/dw/

Mary Selecky
Secretary of Health

Bill White
Assistant Secretary, Environmental Health

Gregg Grunenfelder
Director, Division of Drinking Water

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Introduction and Scope

This guidance document is a resource for small water systems that have elevated levels of arsenic in one or more of their sources and need to comply with the final Arsenic Rule published by the U.S. Environmental Protection Agency (EPA) in January 2001 (January 22, 2001, Federal Register notice, Volume 66, Number 14).

In this document, small water systems are defined as those that generally serve less than 1,000 persons. The statewide data for arsenic indicates that systems under 1,000 population comprise over 80 percent of the Group A water systems with sources that have exceeded the new arsenic standard at some time in the past.

Included in this document are tools to help owners, operators, and board members of small water systems make informed decisions about arsenic compliance options, focused on selecting the most suitable treatment alternative. It is designed to be used by a small water system without the assistance of a licensed engineer.

Several steps can be taken by a small system to decide which treatment technology is best for their system. A licensed engineer would, however, be needed to prepare the design and construction documents for any project installation. On the following page is a checklist of the steps that can be followed by a system to make an appropriate treatment decision.

As with any water treatment process, there are often site-specific conditions that should be identified and factored into the final decision regarding treatment options. This guidance document provides a limited overview of what those specific elements might be.

Throughout this document the units of concentration for water quality parameters (analytical tests) will be given in terms of either "parts per billion" or "milligrams per liter." Parts per billion, or ppb, will be used when the levels of significance for a water quality parameter are very small, and milligrams per liter will be used when the significant level is relatively much higher. A milligram per liter is one thousand times larger than a part per billion.

The reader should keep in mind the units of measurement that apply to the various water quality parameters that are presented. Below is a summary that describes the equivalency of the units of measurement used for substances in drinking water:

- **Part per billion = ppb = microgram per liter = ug/L**
- **Part per million = ppm = milligram per liter = mg/L**
- **1mg/l = 1000 ppb**

For example: 10 ppb = 10 ug/L = 0.010 mg/L = 0.010 ppm

Arsenic Project Checklist

1. Collect and analyze samples for arsenic from each source at the entry to system distribution.

2. Determine compliance status based on regulatory requirements.

3. Evaluate feasibility of non-treatment alternatives such as blending, inactivating existing sources, and/or developing a new source. If non-treatment is feasible, go to Item 10 below. If treatment is necessary, proceed to item 4.

4. Measure water quality parameters (such as pH, iron, phosphate, etc.) for use in determining appropriate treatment options.

5. Identify the needed treatment system capacity in gallons per minute for maximum day demands and for the average annual daily demand.

6. Select the most practical approach(es) using the decision diagrams provided in this guidance document.

7. If practical, pilot test the selected treatment option to confirm that it will perform as expected for the water being treated.

8. Develop preliminary capital and operations and maintenance (O&M) costs using the cost curves provided in Appendix B. Include other site-specific cost estimates that may be associated with the specific system and selected treatment option.

9. Develop project specific cost estimates for construction and initial implementation of the treatment method selected.

10. Seek funding options, such as a Drinking Water State Revolving Fund (DWSRF) loan, and secure funds to complete the project.

11. Implement the project (e.g., design, state approvals, construction, inspections, etc.).

12. Identify and document successful operating criteria and processes through piloting after initiating full-scale treatment.

13. Continuously operate the treatment plant with trained operators.

Note: Steps 1-6, 8, 10 and 13 can be performed without the assistance of a licensed engineer. A licensed engineer must be involved in the piloting, design, and construction of an arsenic mitigation project.

Background

The new federal Arsenic Rule lowered the arsenic maximum contaminant level (MCL) from 50 ppb to 10 ppb and requires existing sources to be in compliance with the new MCL by January 2006. The Arsenic Rule also requires that 2002 annual Consumer Confidence Reports (CCR) include information for arsenic. More information on arsenic related CCR requirements are included on the Washington State Department of Health (DOH) fact sheet (see Appendix A) or on the web at:
http://www.doh.wa.gov/ehp/dw/our_main_pages/arsenic.htm

Purveyors with sources that exceed the new MCL are strongly encouraged to start securing funding as soon as is possible, since it may take from two to three years to determine an appropriate compliance approach, secure the needed funds, and construct the project.

This guidance document was developed to assist purveyors to logically select an appropriate arsenic compliance approach. If treatment is required, the cost information provided in this document can be used in developing costs for use in a DWSRF application.

Information and guidance is provided on the following topics:

- Arsenic occurrence in Washington State;
- Arsenic compliance approaches for small systems (both treatment and non-treatment alternatives); and
- Capital and operations costs for treatment alternatives (including waste disposal considerations).

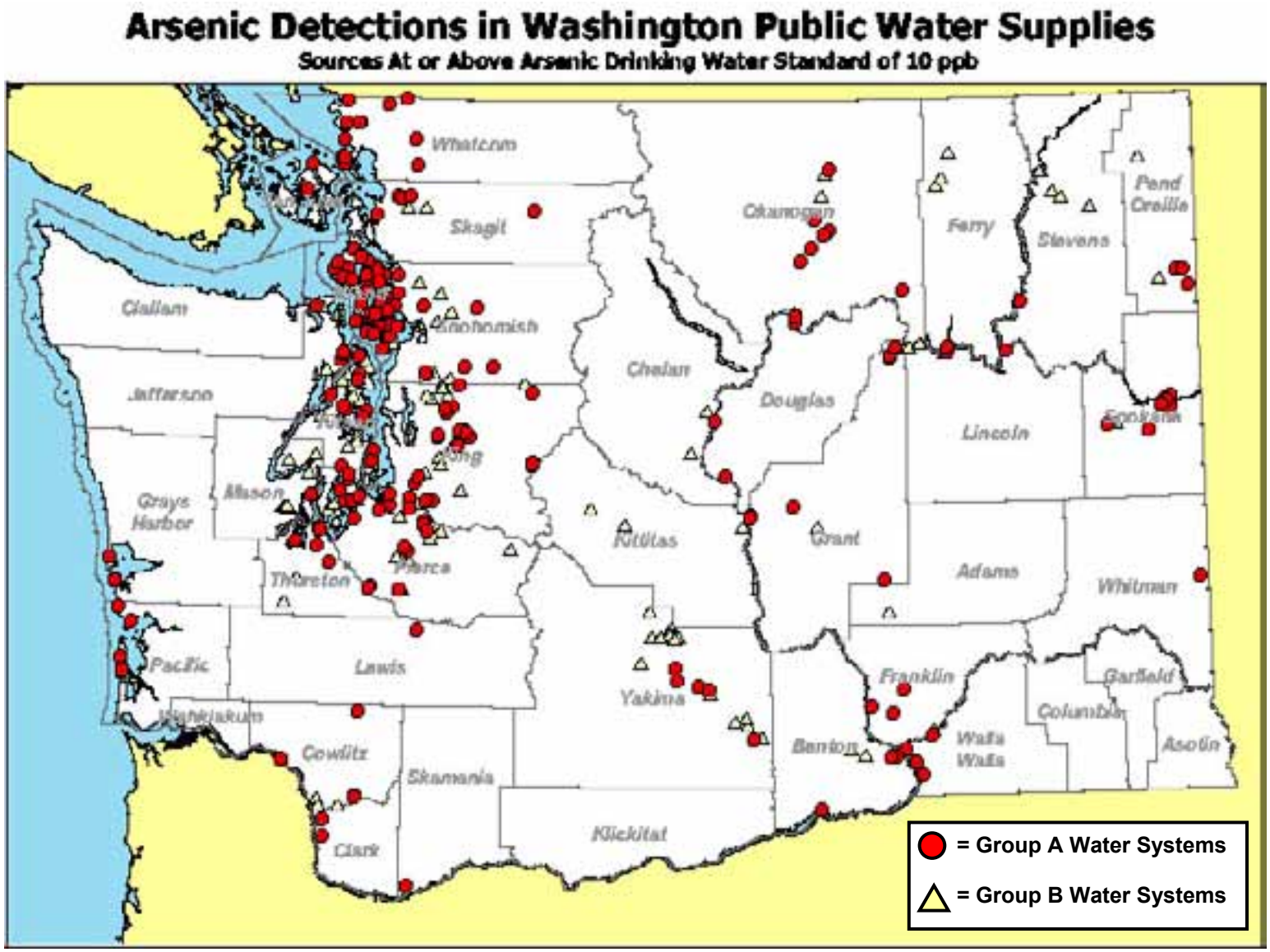
Arsenic Occurrence

Arsenic is a naturally occurring element in the Earth's crust. Most arsenic in drinking water comes from natural rock formations, especially those of volcanic origin. Arsenic is primarily a groundwater issue. There are no known surface water systems in the state that exceed the new arsenic MCL. The Puget Sound regional geology includes glacial and sedimentary deposits of volcanic material. Water that flows through these deposits tends to have greater concentrations of arsenic than other sources of water. As a result, sources in the Puget Sound region are more likely to exceed the new arsenic MCL than those in other parts of the state (Figure 1).

Arsenic has also been deposited in the environment from copper smelting and pre-1950 pesticide applications. However, this arsenic binds strongly to soil and typically remains within the top few feet of the surface. There is no evidence that man-made sources of arsenic have affected drinking water sources in the state.

High arsenic concentrations are not restricted to the Puget Sound Region. Arsenic above the 10 ppb MCL has been found in wells in 33 of the 39 counties in Washington State. The seven counties with the highest number of Group A water systems with arsenic above the MCL are identified in Table 1.

FIGURE 1: Arsenic Detections in Public Water Supplies



A colored version of this map is available at: http://www.doh.wa.gov/ehp/dw/our_main_pages/arseniclist.htm

Table 1:
Arsenic MCL Exceedances for Selected Counties

County	Group A Systems with As > 10 ppb
Island	48
King	21
Pierce	19
Whatcom	15
Snohomish	12
Kitsap	8
Yakima	7

Note: The above information was compiled from DOH source monitoring data for all Group A systems for the period 1993-2002.

Small systems comprise a significant majority of systems with sources that exceed the new arsenic MCL (Table 2). Of the 204 Group A water systems for which arsenic has been detected above the MCL, 85 percent serve less than 1,000 persons and more than 57 percent serve fewer than 100 persons.

Table 2:
Systems with at Least One Arsenic Detection Greater than 10 ppb

Water System Size	Number of Systems
Group A Water Systems serving populations:	
Greater than 10,000	9
Between 5,000 and 10,000	2
Between 1,000 and 5,000	23
Between 500 and 1,000	10
Between 100 and 500	47
Less than 100	117
Total Number of Group A Systems	208

Note: The above information was compiled from DOH source monitoring data for all Group A systems for the period 1993-2002.

Monitoring for Arsenic

If a sample from a source exceeds the arsenic MCL, quarterly sampling for arsenic must be performed to confirm that the running annual average is above the MCL. As summarized by EPA (2002), a water system will be required to provide treatment or to seek other options if any of the following is true for any of their sources of supply:

- A single sample > 40 ppb
- Average of two quarters > 20 ppb
- Running annual average (4 consecutive quarters) > 10 ppb

Arsenic Compliance Approaches

This guidance document addresses general approaches to comply with the Arsenic Rule. With any water treatment process, there are variables that are unique to a specific system. Water systems that encounter more complex or unusual situations are urged to seek the advice of water professionals early in the planning process. With any selected compliance approach, a project report must be completed in accordance with Washington Administrative Code (WAC) 246-290-110. The project report, as well as the design plans and specifications, must be prepared by a professional engineer licensed in the state of Washington.

A brief summary of compliance approaches appropriate for small systems is summarized below for use with the decision diagrams in this guidance document. Additional information on treatment technologies is provided following the decision diagrams.

Non-Treatment Alternatives – include the blending of sources prior to the distribution system, inactivating the problem source, connecting to an adjacent water system, and developing a new source. When feasible, non-treatment alternatives are typically less burdensome and less costly than treatment.

Iron Oxidation/Filtration – involves the oxidation of naturally occurring iron, which binds to arsenic and is then removed by filtration. Iron can be added to increase the amount of arsenic removed by filtration. The process is most effective when pH is less than 7.5 and the concentration of iron to arsenic is 20:1, or greater.

Ion Exchange – involves the exchange of chloride ions for arsenic ions and periodic regeneration of the ion exchange resin with a salt solution. Health concerns associated with system operations and brine disposal limit the applicability of this technology for most small systems.

Sorbents – adsorb arsenic from the water. Well water is passed through a pressure vessel containing a sorbent, which is periodically replaced. The frequency of replacement will vary depending upon the sorbent used, pH, and other water quality parameters. All sorbents need to be National Sanitation Foundation (NSF) 61 approved.

Point-of-use/Point-of-entry (POU/POE) – also referred to as under-the-sink and whole-house treatment units have limited applicability. The 1996 amendments to the Safe Drinking Water Act (SDWA) outline the conditions under which POU/POE devices may be used as a compliance option. Based on a review of the issues involved with POU/POE treatment requirements, DOH will not allow POU/POE treatment for arsenic removal.

Water Quality Information

Water systems considering the installation of arsenic treatment should have adequate water quality information. Certain water quality parameters can interfere with arsenic treatment, while some treatment technologies require specific water quality conditions to be most effective. The water quality parameters in Table 3 will be referenced in decision diagrams that help a water purveyor identify an appropriate treatment technology for further evaluation.

Table 3:
Water Quality Parameters Useful for
Arsenic Treatment Determinations

Water Quality Parameters	
Standard IOCs	**Recommended**
Arsenic (Total)	pH
Chloride	Alkalinity
Iron	Total Organic Carbon
Manganese	Phosphate
Sulfate	Silica
	Arsenic (III)
	Arsenic (V)
	Hardness (Ca, Mg)
	Total Dissolved Solids

Many of these water quality parameters are analyzed during routine regulatory inorganic chemical (IOC) analysis, generally required every three years. Some parameters, such as calcium, magnesium, silica, phosphate, pH, alkalinity, and total organic carbon (TOC), are not routinely analyzed, and determination of their concentrations will require additional monitoring. Speciation testing for arsenic is also recommended to determine if oxidation of As(III) to As(V) will be required.

Figures 2 through 6 present decision pathways that are intended to aid water purveyors in the selection of an arsenic removal process. It is possible that more than one arsenic removal process will be technically suitable. In this case, other factors, such as costs, ease of operation, local service availability, etc., will be important to the final selection of a treatment method.

Note: It is important that the decision matrix process be used prior to any cost analysis for the selection of an arsenic removal process. The technical feasibility of the treatment alternative must be established before costs become a consideration.

FIGURE 2: Decision Diagram 1 - Non-Treatment Alternatives

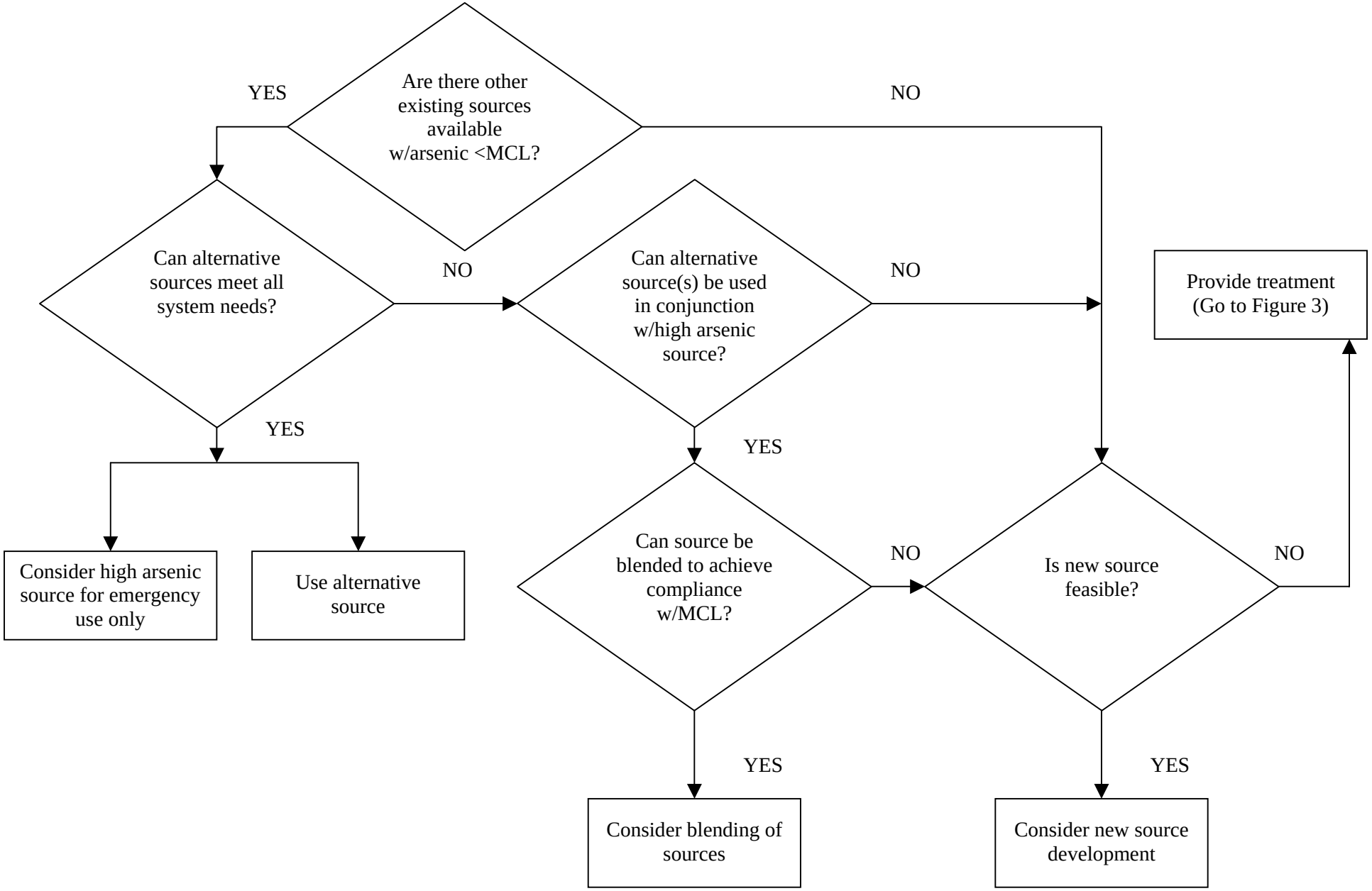


FIGURE 3: Decision Diagram 2 - Iron Oxidation/Filtration Alternative

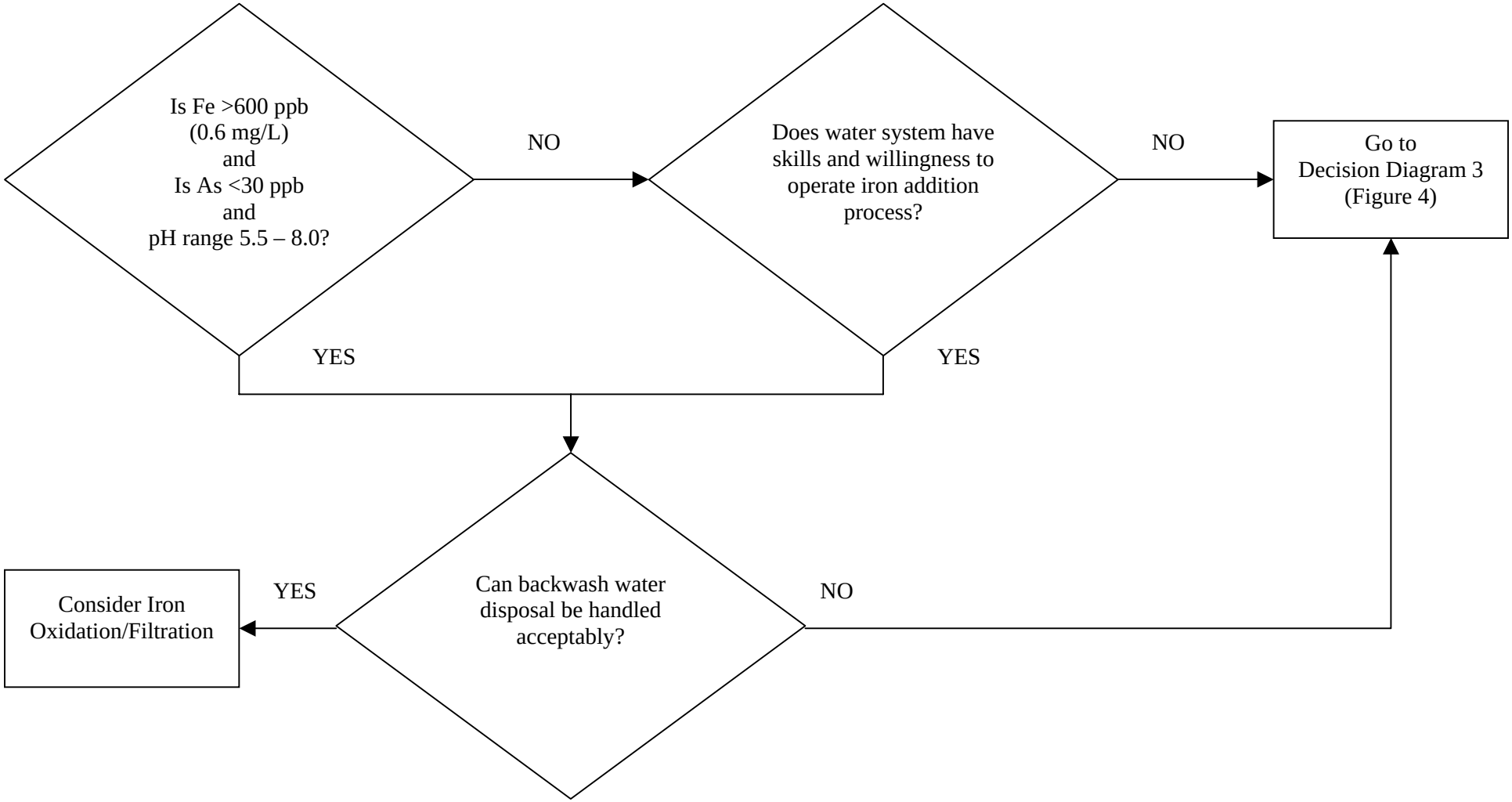


FIGURE 4: Decision Diagram 3 – Ion Exchange Alternative

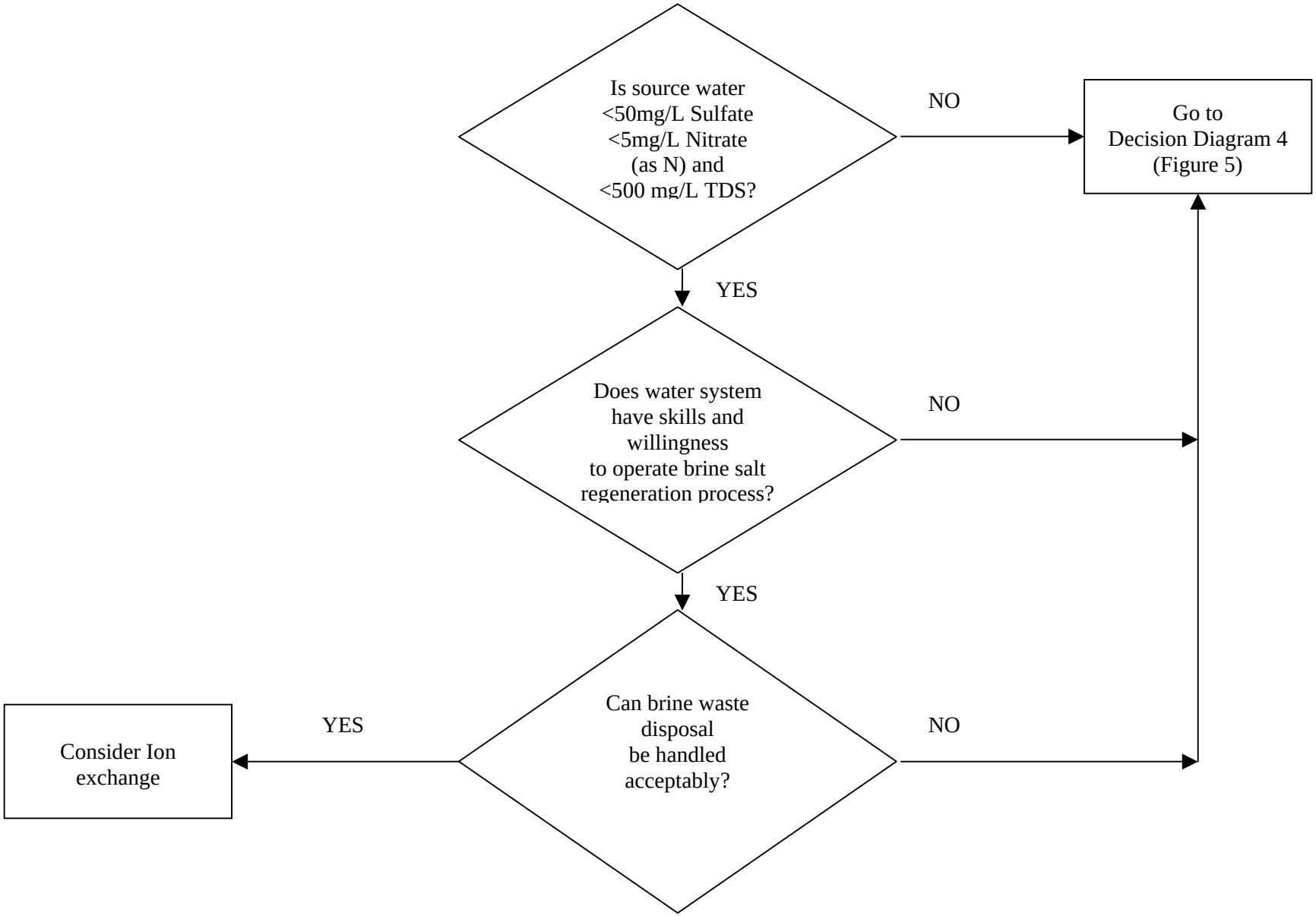
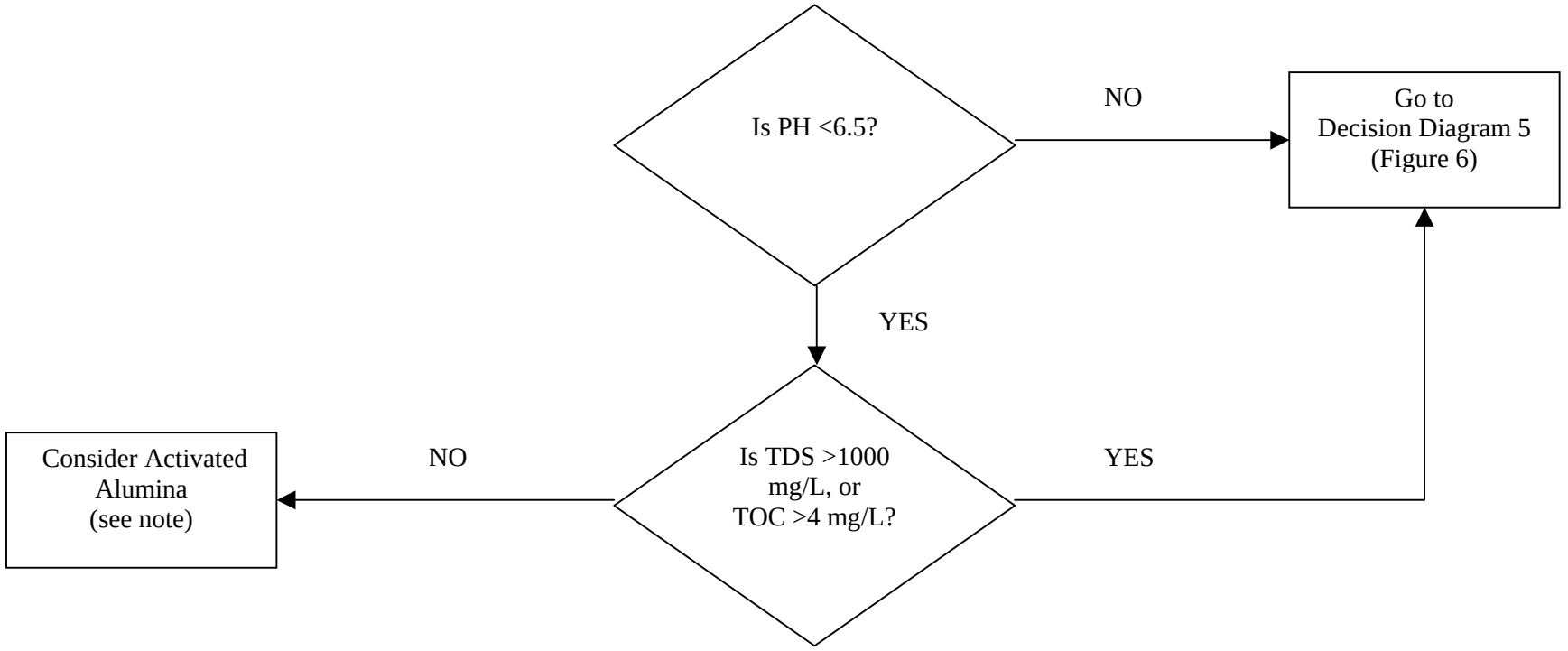


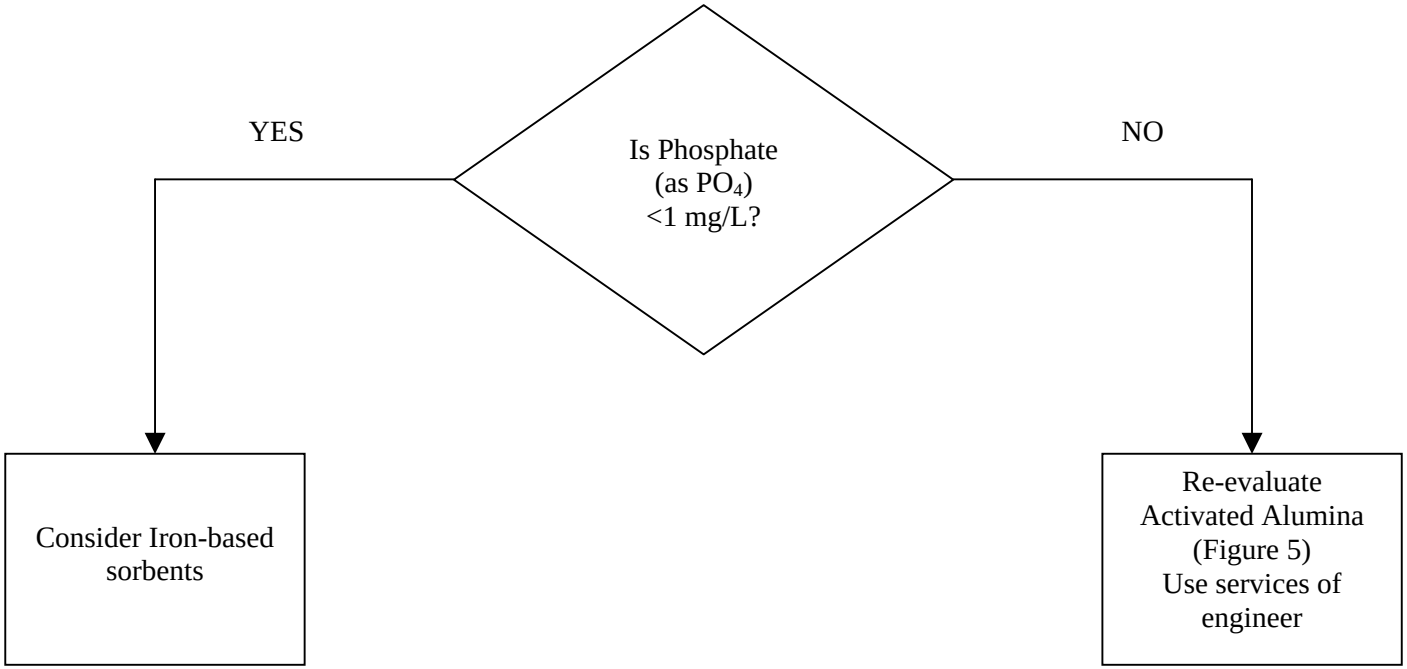
FIGURE 5: Decision Diagram 4 – Activated Alumina Alternative



Note: If water quality levels are <u>greater than</u>
any of the following, then consulting with an engineer to determine possible interference limitations would be appropriate.

1 mg/L Phosphate
250 mg/L Chloride
360 mg/L Silica
0.5 mg/L Iron
0.05 mg/L Manganese

FIGURE 6: Decision Diagram 5 – Iron-Based Sorbent Alternative



Basic Arsenic Treatment Design

Arsenic in water is commonly present in water as dissolved ions. It is present in two different oxidation states: arsenite [AsO_3^{-3}] and arsenate [AsO_4^{-3}]. Arsenite, commonly written as As(III), is the reduced form of arsenic and is more difficult to remove from water than arsenate, As(V), the oxidized form of arsenic. Consequently, most treatment techniques will incorporate chemical oxidation, such as chlorination or ozonation, as an initial step to convert As(III) to As(V).

There are several types of treatment that are available for arsenic. EPA has identified the following "Best Available Technologies" (BATs) for arsenic removal:

- Oxidation/Filtration
- Ion Exchange
- Activated Alumina Adsorption
- Enhanced Coagulation/Filtration
- Enhanced Lime Softening
- Reverse Osmosis
- Electrodialysis Reversal

Only some of the technologies listed above are generally recognized as being suitable for small systems. Enhanced coagulation/filtration and enhanced lime softening apply only to systems currently treating surface water with those technologies. Electrodialysis reversal and reverse osmosis require expensive equipment and are complex to properly operate. They are also not likely to be suitable for small system source treatment.

Of the available technologies, the most appropriate for small systems include:

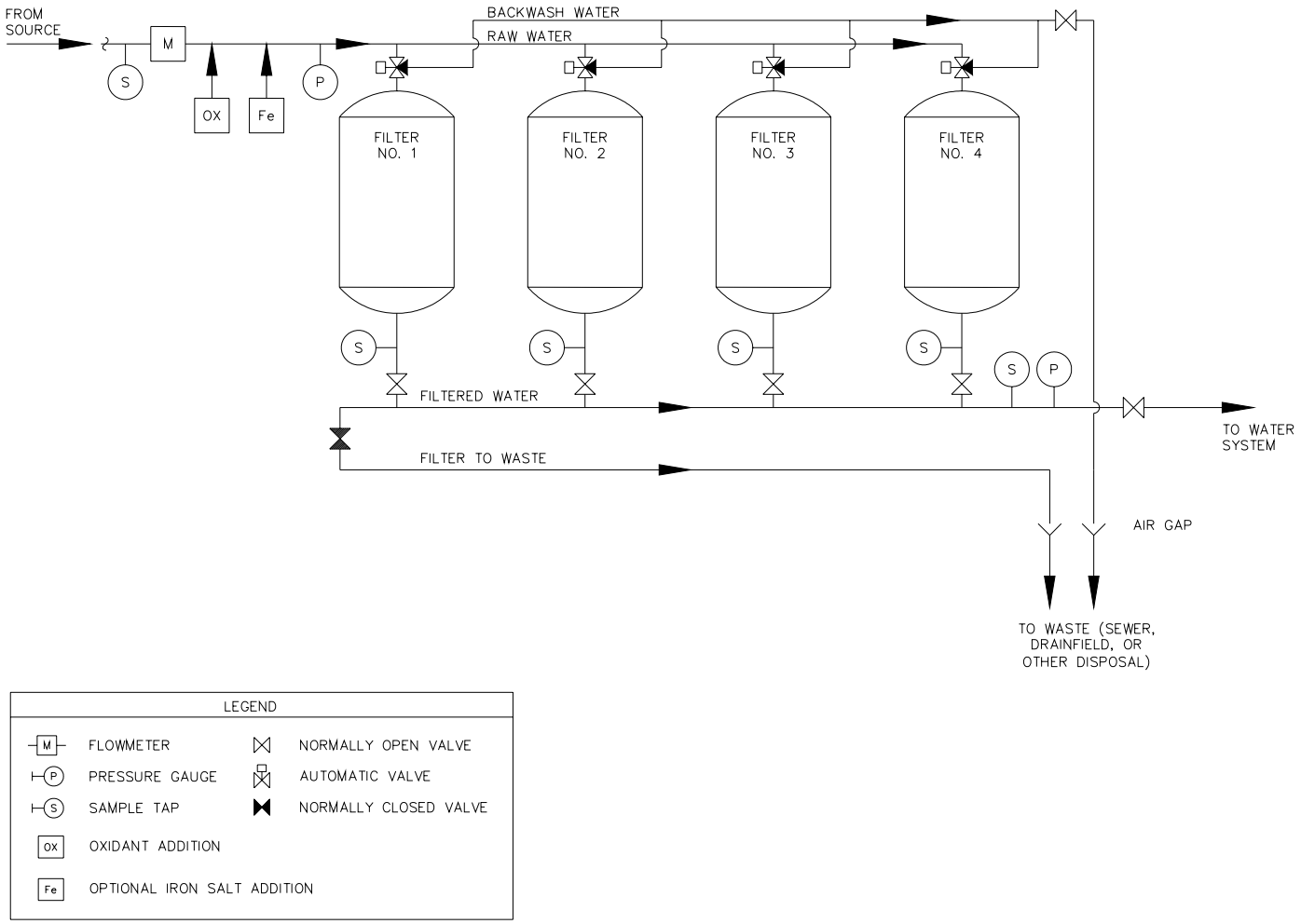
- Oxidation/Filtration;
- Ion Exchange; and
- Sorption (including Activated Alumina and Iron-based Sorbents).

These three technologies are described in greater detail in this document.

Oxidation/Filtration

The oxidation/filtration process involves the oxidation of iron and arsenic, followed by filtration (Figure 7). During the oxidation step, arsenic binds to the iron oxides that are formed. These iron oxides are then removed by filtration. In general, the process is the same as treatment to remove iron and manganese. The key criterion is that there is sufficient iron to bind the arsenic.

FIGURE 7: Iron Oxidation/Filtration Process Schematic



Chlorine, ozone, or permanganate can be used to oxidize As(III) to As(V). The oxidant is injected prior to the filters with sufficient time to allow for the oxidation of the iron and arsenic. The filters then remove the arsenic and iron together. A number of different filter media can be used, including sand, greensand, solid manganese dioxide such as pyrolucite, and manganese dioxide coated sand such as BIRM™. Typical iron and manganese removal equipment is shown in Figure 8.

FIGURE 8: Typical Oxidation/Filtration System Composed of Pressure Vessels and Pyrolucite Media for 200 gpm (ATEC Technologies, Hollister, CA)

Over time, the filter media accumulates the filtered solid material. This causes increased headloss through the filter to a point where it is necessary to backwash the filter to remove the accumulated material. During backwashing, the flow rate is increased and its direction is reversed. This causes the media to be disturbed, allowing the filtered material to be dislodged from the media into the backwash flow. The backwash water with the associated filtered material is directed to waste.

The water quality parameters that most strongly affect this treatment process are the concentration of naturally occurring iron in the raw water and the raw water pH. Ideally, the ratio of iron to arsenic will be greater than 20:1 and the pH between 6.0 and 8.0. The process effectiveness decreases significantly when the pH is greater than 7.5. The addition of iron in the form of ferric chloride ($FeCl_3$) can be used to provide additional iron, as well as decrease the raw water pH. This benefit from iron addition should be weighed against the potential for decreased filter run times, increased backwash water disposal, and process complexity concerns for very small systems.

Typical design parameters for oxidation/filtration systems are included in Table 4 and cost information is provided in Appendix B.

Table 4:
Iron Oxidation/Filtration Design Parameters

Parameter	Value
Media loading rate	3-12 gpm/sq. ft.
Empty bed contact time	3 minutes
Oxidant	Chlorine, ozone, permanganate
Media depth	20-48 inches
Backwash rates	15-30 gpm/sq. ft
Approximate backwash volume	4-10% of production

Iron Oxidation/Filtration Wastes

The main waste stream from iron oxidation and filtration is the backwash water that contains particulate iron oxides. The iron oxides tightly bind arsenic. Previous studies have indicated that the concentration of arsenic in the solids is well below the threshold for being considered a hazardous waste (MacPhee 2000, Chiwirka 2001). The Washington State Department of Ecology (Ecology) has indicated that the filter backwash water is conditionally exempt from the state-based permit requirements, if discharged to the ground and proper management practices are employed.

Ion Exchange

In the ion exchange process, arsenic ions bind to an ion exchange resin and, in the process, displace chloride ions. The resin is contained within a pressure vessel (Figure 9) and periodically regenerated with a concentrated salt solution. Water softeners function similarly, removing calcium and magnesium from water in exchange for sodium.

FIGURE 9: Typical Ion Exchange System Composed of Pressure Vessels Filled with Anion Exchange Resin Capable of Treating 75 gpm (Kinetico, Newbury, Ohio)

Other ions compete with As(V) for binding sites on the ion exchange resin. The most important of these ions is sulfate. Since sulfate binds more strongly to the resin than As(V), the amount of water that can be treated prior to regeneration is proportional to sulfate concentration (Figure 10). If the resin is not regenerated often enough, all the arsenic that is bound to the resin will be dislodged from the column over a very short period of time. This phenomenon, known as chromatographic peaking, can result in treated water with arsenic concentrations several times that of the untreated water.

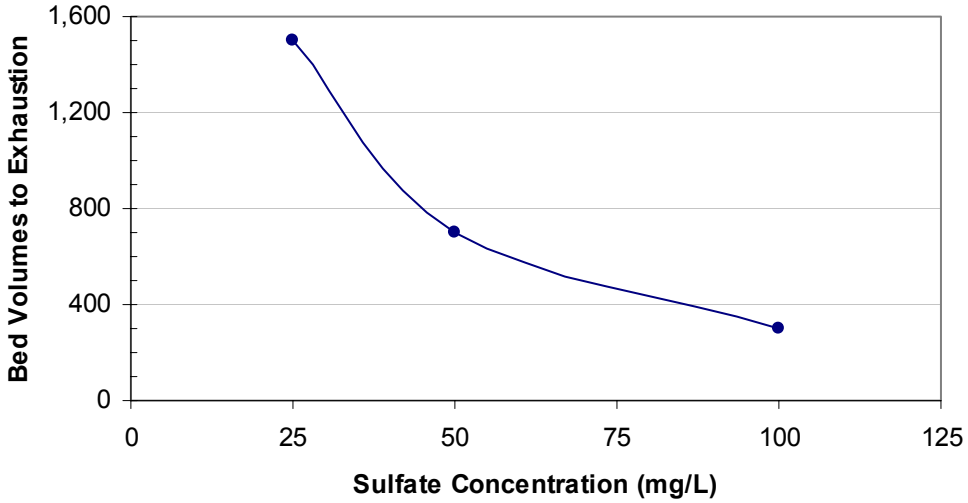


FIGURE 10: Effect of Sulfate on Ion Exchange Performance (Clifford, 1999).

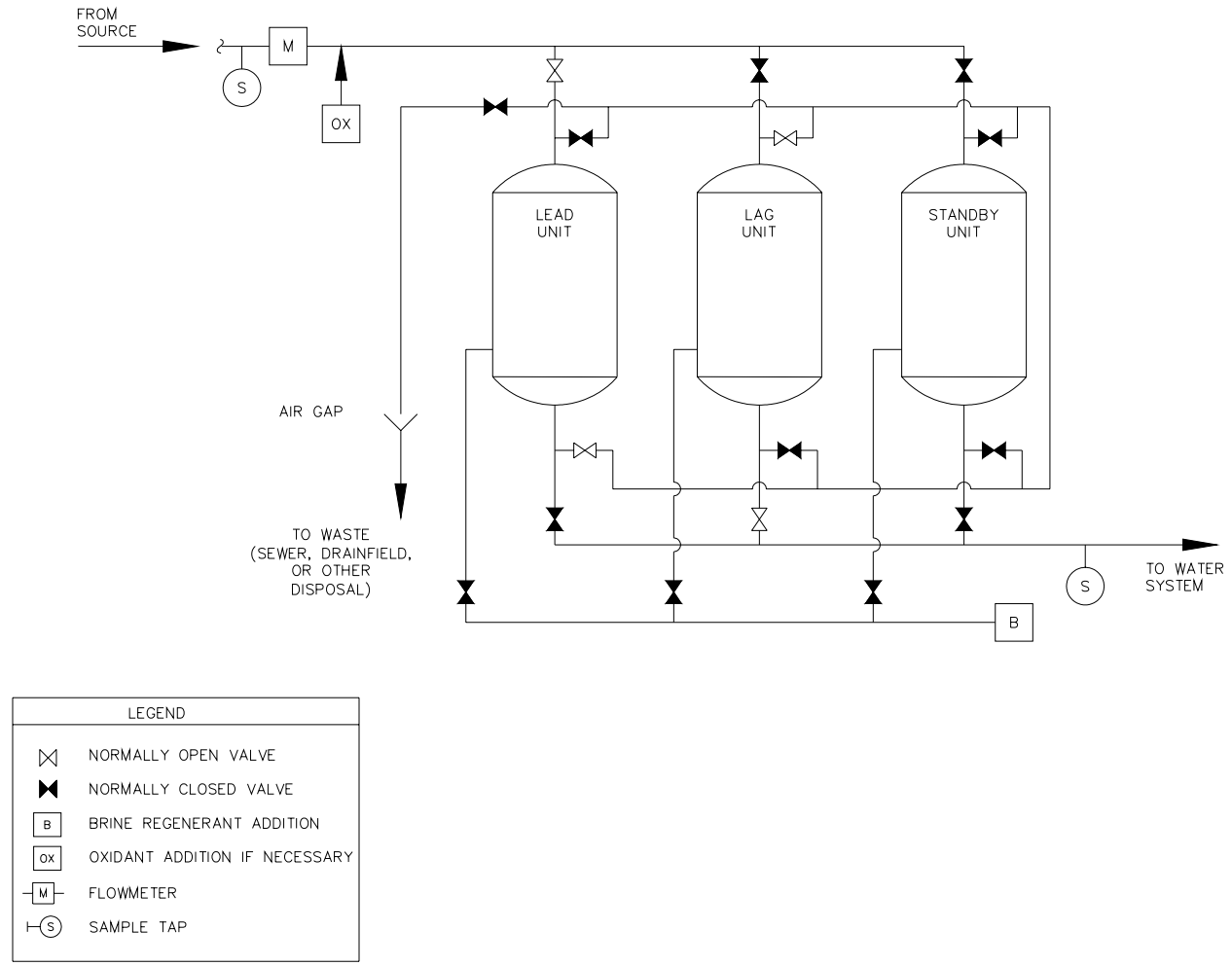
As shown on Figure 11, preoxidation of As(III) to As(V) is required prior to the ion exchange column, since only As(V) can be effectively removed by ion exchange. Following treatment, pH adjustment of the treated water may be required since carbonate ions bind to the resin decreasing the pH of the treated water following startup of a freshly regenerated ion exchange column.

Typical design parameters for ion exchange systems are included in Table 5 and cost information is provided in Appendix B.

Table 5:
Ion Exchange Design Parameters

Parameter	Value
Media Loading Rate	2-24 gpm/sq. ft.
Empty Bed Contact Time	1-10 minutes
Oxidant	Chlorine, ozone – may require dechlorination or deozonation to protect resin
Media depth	24-40 inches
Regeneration Loading	2-6 gpm/sq. ft (downflow) 0.4-4 gpm/sq. ft (upflow)
Regenerant Brine Strength	1-5 moles/liter (60 – 300 grams/liter NaCl)

FIGURE 11: Ion Exchange Process Schematic



Ion Exchange Wastes

The waste products from ion exchange are the liquid backwash stream and the spent regenerant stream. The backwash stream consists of water with particulate matter that has been filtered onto the resin, while the regenerate stream is a brine solution of high salinity that can also have high levels of arsenic. In most cases, Ecology will require a State Wastewater Discharge Permit for public water systems that employ ion exchange for arsenic removal.

Sorption

The sorption process involves passing untreated water through a pressure vessel containing an aluminum or iron-based material that adsorbs the arsenic. When the sorbent is exhausted, typically after a few months to more than a year, the spent media is replaced.

Activated alumina has been used for arsenic sorption for many years. There are several considerations involved with use of activated alumina. Activated alumina is most effective at pH 5.5-6.0. For most applications, acid addition is required to optimize the process. Subsequent base addition is also usually required to return the water to a pH suitable for potable use after arsenic treatment. High levels of silica and other contaminants can affect the removal efficiency of arsenic and the life of the sorptive media.

Iron-based media systems, such as that shown in Figure 12, have been developed in the past decade specifically for arsenic removal. These systems can remove arsenic at pH levels normally found in drinking water systems. However, the amount of water that can be treated between change-outs is strongly affected by the pH of the water as well as the concentration of phosphate. Phosphate in excess of 0.2 mg/l can affect arsenic removal, with each additional 0.5 mg/l above 0.2 mg/l reducing arsenic removal by 30 percent (EPA, 2002). Similarly, a change in the pH from 7.0 to 8.5 would cause a 400% decrease in the volume of water that can be treated prior to breakthrough.

FIGURE 12: Typical Sorption System Composed of Pressure Vessels with Iron-based Sorption Media Capable of Treating 100 gpm (AdEdge Technologies, Inc., Norcross, Georgia)

As with the other technologies, the sorbent media accumulates solid material, which requires backwashing for removal. The backwash flow with the associated solids is directed to waste. Figure 13 shows a process schematic of a typical sorption process.

Typical design parameters for iron- and aluminum-based sorbent systems are included in Table 6 and cost information is provided in Appendix B.

Table 6:
Sorption Process Design Parameters

Parameter	Value
Activated Alumina:	
Media Loading Rate	2-10 gpm/sq. ft.
Empty Bed Contact Time	0.5-5 minutes
Media Depth	24 inches
Iron Based Sorbents:	
Media Loading Rate	5-8 gpm/sq. ft.
Empty Bed Contact Time	3-5 minutes
Media Depth	32-45 inches
Backwash Rates	5-6 gpm/sq. ft
Approximate Backwash Volume	< 1% of production
Estimated Media Life	6-36 months

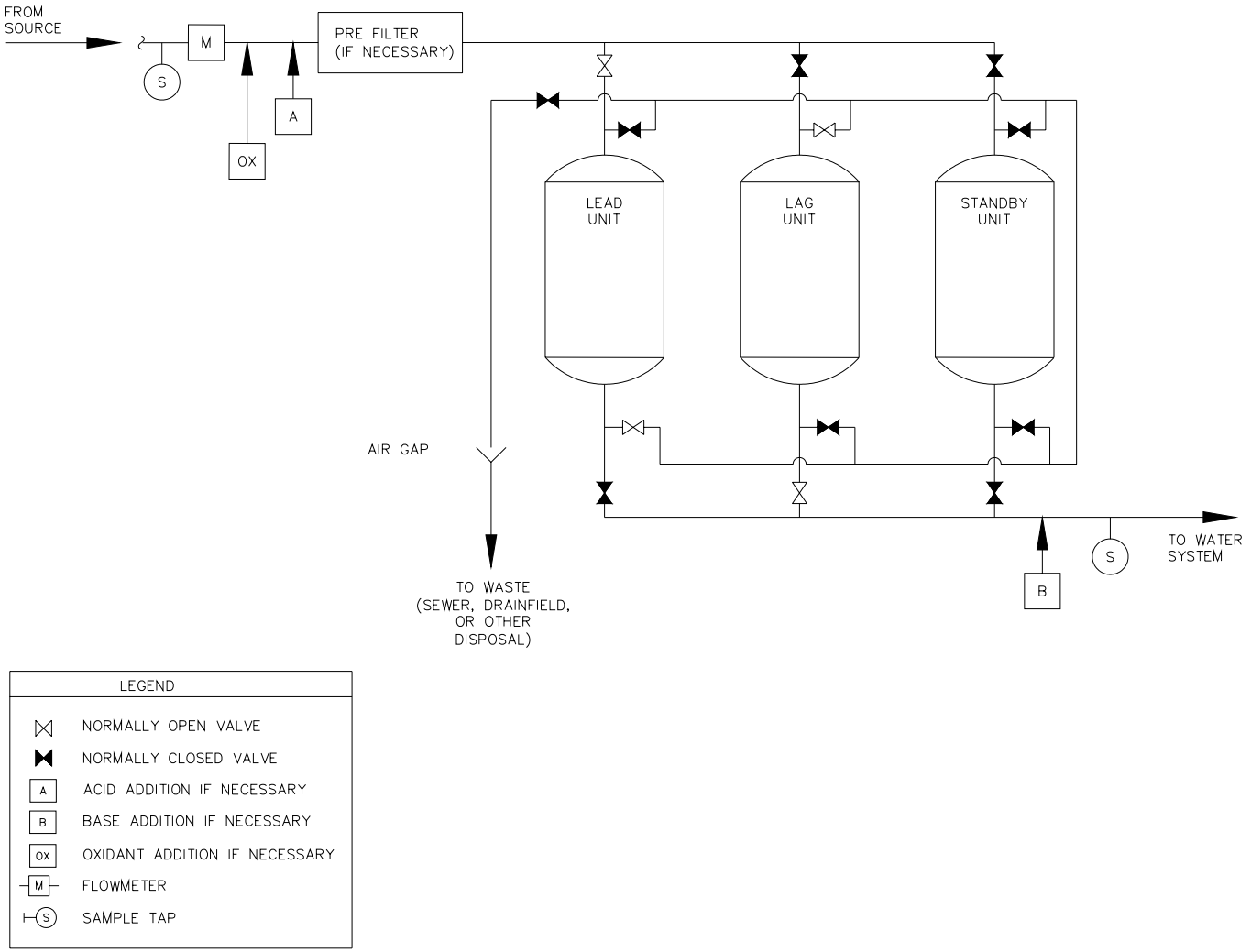
Sorption Wastes
The waste product from sorption treatment is the liquid stream from the backwash of the filtration system and spent media. Previous research has indicated that the spent media is well below the threshold for being considered a hazardous waste. The liquid waste stream generally accounts for less than one percent of the total system production and similarly does not meet the threshold for being considered a hazardous waste. A more thorough discussion of waste disposal is included later in this document.

Waste disposal

Waste disposal must be considered as part of treatment process selection. Arsenic bearing wastes have the potential to be considered a hazardous waste and, as such, are subject to stringent disposal regulations. All operations and cost estimates in this guidance document assume nonhazardous waste disposal. This section provides a brief overview of the water disposal considerations and options for the two general types of wastes that are generated: liquid and solid.

The hazardous waste threshold is called the Toxicity Characteristic (TC), which is 5 mg/L for arsenic. If liquid wastes, such as ion exchange brines, exceed the TC, they are considered a hazardous waste. For solids, the waste is put through a process called the Toxicity Characteristic Leaching Procedure (TCLP). If the liquid extract from the TCLP test exceeds 5 mg/L of arsenic, the solid would be considered a hazardous waste.

FIGURE 13: Sorption Process Schematic



The Ecology publication "Fact Sheet for NPDES General Permit: Wastewater Treatment Plants - Wastewater Discharge" explains how permit conditions were developed, presents the legal basis for permit conditions, and provides background information on water treatment facilities. Ecology should be contacted for additional information or if discharge permit requirements are unclear. You can call the Water Quality Program at 360-407-6400.

Liquid Waste Disposal

The disposal options for liquid wastes include sewer discharge, land application, and surface water discharge. Practical disposal options for ion exchange brines are limited. Both land and surface water disposal of brines requires a permit from Ecology. Sewer disposal is possible only if the waste does not exceed the TC and meets the requirements of the sewer agency.

Backwash disposal from oxidation/filtration and sorbent processes is less restricted than ion exchange brines. Discharge to a surface water would require a National Pollutant Discharge Elimination System (NPDES) permit that meets water quality criteria defined by Ecology. However, land disposal of backwash waters from oxidation/filtration and sorbent processes are conditionally exempt from requiring a discharge permit as long as the following conditions are met:

1. Discharge must be free of additives that have the potential to reach waters of the state;
2. Infiltration ponds/trenches must have sufficient free board to prevent over-topping and be managed so there is no reasonable potential for discharge to surface water;
3. Discharge must not result in unmanaged soil erosion or deterioration of land features;
4. Residual solids that accumulate in infiltration ponds/trenches must be disposed of as necessary to avoid a build up and concentration of these materials; and
5. Disposal of solids must be consistent with requirements of the local health department.

Solid Waste Disposal

Solids that pass a TCLP test can generally be disposed of in a non-hazardous waste landfill. Research by the EPA and other organizations indicates that spent sorbents and the solids from oxidation/filtration backwash water pass the TCLP test.

Pilot testing

The best overall alternative should be pilot tested to verify suitability of the technology given the assumptions used in the alternatives analysis. Pilot testing consists of setting up and operating a small-scale system to determine its performance using the actual field conditions and raw water that will be treated at full-scale. Pilot testing is required by the Department of Health (DOH) for most treatment applications.

In some cases, where the cost of pilot testing would approach the cost of installing the full-scale equipment, the pilot-testing phase may be included in the start-up process for the technology. An engineer should be involved with the pilot testing and can contact DOH if

the piloting will be complicated or overly expensive compared to the overall project costs. In these cases, data from operating the full-scale equipment is evaluated as pilot data useful for treatment process modifications and for specification of operational procedures.

Properly conducted pilot testing can provide valuable data that can help avoid significant mistakes in the application and design of filtration facilities. For a pilot study to be useful, the pilot study should be conducted for long enough to obtain meaningful data. The length of time will vary depending upon the process selected, raw water quality, seasonal changes, and the length of filter runs.

Proposed pilot study protocols prepared by a licensed engineer must be reviewed and approved by DOH. Upon completion of the pilot study fieldwork, a report summarizing the data and results must be submitted to DOH.

Design

Once the pilot study has been completed, the detailed design can be completed. As part of the detailed design, a project report must be completed in accordance with WAC 246-290-110 (Project Report). The project report, as well as the design plans and specifications, must be prepared by a professional engineer licensed in the state of Washington. The project report must include the following information:

- Project Description
- Planning Information
- Analysis of Alternatives
- Water Quality Data
- Water Quantity and Water Rights
- Design Criteria
- Engineering Calculations
- Legal Considerations
- Operation and Maintenance Considerations

Once the project report is completed, design plans and specifications can be completed. These plans and specifications must be reviewed and approved by DOH in accordance with WAC 246-290-120 (Construction Documents) prior to beginning construction. Upon completion of construction, a Certification of Construction Completion form, signed by the project engineer, must be submitted to DOH.

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Appendix A:
Arsenic Publications

Fact Sheet: Guidelines for Water Purveyors
Arsenic in Drinking Water

Questions and Answers: Arsenic in Drinking Water

Arsenic and Clarifications to Compliance and New Source Monitoring Rule:
A Quick Reference Guide (EPA)

Fact Sheet

Guidelines for Water Systems

Arsenic in Drinking Water

November 2005

DOH PUB. #331-166
(updated)

Requirements for Water Systems

In January 2001, the Environmental Protection Agency (EPA) lowered the Maximum Contaminant Level (MCL) for arsenic from 50 parts per billion (ppb) to 10 ppb. The lower federal standard becomes effective in January 2006 for existing Group A Community (serving more than 25 people) and Non-Transient, Non-Community (NTNC) public water systems.

On February 22, 2002, the arsenic reporting requirements for the annual Consumer Confidence Reports (CCR) were changed. After this date, depending upon the level of arsenic detected, community water systems must include the concentration of arsenic reported by the laboratory and possibly an educational or health effects information statement about arsenic in their CCRs.

Consumer Confidence Reports

CCR reporting requirements depend upon the concentration of arsenic reported by a laboratory. Arsenic concentrations within the three ranges described below have distinct reporting requirements. If a laboratory reports an arsenic value of "<10" or "less than 10 ppb" contact DOH for specific information.

Arsenic reported below 5 ppb:
Any arsenic value reported by a laboratory above the method detection limit and below 5 ppb must be included in the CCR water quality data table. There are no additional reporting requirements for results below 5 ppb.

Arsenic reported between 5-10 ppb: (use EPA or DOH's suggested language)

EPA's educational statement – in federal rule:
While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Department of Health's recommended educational statement:
Your drinking water currently meets EPA's revised drinking water standard for arsenic. However, it does contain low levels of arsenic. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most types of cancer and circulatory diseases are due to factors other than exposure to arsenic. EPA's standard balances the current understanding of arsenic's health effects against the costs of removing arsenic from drinking water.

Arsenic reported above 10 ppb:

EPA's health effects statement – in federal rule:
Some people who drink water that contains arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

Financial Assistance for Water Systems

The Drinking Water State Revolving Fund, administered by the Department of Health and the Public Works Board, may be able to help systems move toward compliance with this new standard by offering low interest loans. Information on the State Revolving Fund can be accessed at: http://www.doh.wa.gov/ehp/dw/Our_Main_Pages/dwsrf.htm

In addition, EPA plans to provide funding for the research and development of more cost-effective technologies to help bring all systems into compliance with the new standard. The agency will also work with small communities to maximize grants and loans.

Water Treatment

These treatment technologies are available to remove arsenic from water:

- **Coagulation/filtration:** This method uses conventional treatment processes to coagulate the arsenic. The treated water is then filtered.
- **Activated alumina:** This method removes arsenic from water by adsorption onto alumina.
- **Reverse osmosis:** This technology uses pressure to force water through a membrane filter, leaving arsenic behind.
- **Anion exchange:** Arsenic is adsorbed onto a resin, and the resin is periodically regenerated with sodium chloride solution.
- **Oxidation/filtration:** This technology oxidizes naturally occurring iron, which binds to arsenic followed by filtration.

For More Information

Washington State Department of Health:

Drinking Water Southwest Regional Office	360-664-0768
Drinking Water Northwest Regional Office	253-395-6750
Drinking Water Eastern Regional Office	509-456-3115
Drinking Water Data & Source Monitoring: Jimmy Weber	360-236-3097
Treatment Technology Options: Sam Perry	253-395-6755
Arsenic Health Effects: Jim W. White	360-236-3192

Office of Drinking Water: http://www.doh.wa.gov/ehp/dw
EPA Arsenic Information: http://www.epa.gov/OGWDW/arsenic.html
Agency for Toxic Substances and Disease Registry (U.S. Centers for Disease Control and Prevention): http://www.atsdr.cdc.gov/tfacts2.html

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER WASHINGTON

Questions & Answers

Arsenic in Drinking Water

November 2005

DOH PUB. #331-167
(updated)

What is arsenic and where does it come from?

Arsenic is a naturally occurring element in the earth's crust. Arsenic can be released into the environment through natural processes such as volcanic action, erosion of rock, or by human activities such as mining or smelting of arsenic-containing ores, and orchard spraying. It has been used commercially in wood preservatives, agricultural chemicals, and the manufacture of semi-conductors.

How does arsenic get into drinking water?

Most arsenic in drinking water comes from natural rock formations. Water that encounters these rock formations can dissolve arsenic and carry it into underground aquifers, streams, and rivers that may be used as drinking water supplies. Arsenic deposited on the ground from industrial or agricultural uses tends to remain in the top few feet of soil for a long time and is not likely to have a significant impact on most aquifers. When dissolved in water, arsenic has no smell, taste, or color, even at high concentrations.

How can arsenic affect human health?

Arsenic has been reported to cause more than 30 different adverse health effects including cardiovascular disease, diabetes mellitus, skin changes, nervous system damage, and various forms of cancer. The odds that one or more of these could occur depends upon the amount of arsenic a person consumes, and how sensitive they are to the effects of arsenic. Getting arsenic on the skin when bathing or washing is not considered a major contributor to health risk. There is a small chance that some people who drink water containing low levels of arsenic for many years could develop circulatory disease, cancer, or other health problems. Most cancers and circulatory diseases are due to factors other than exposure to arsenic.

Why was the drinking water standard for arsenic tightened?

For many years, the drinking water standard for arsenic was 50 parts per billion (ppb). The federal Environmental Protection Agency (EPA) established the standard to reduce the amount of arsenic allowed in public drinking water supplies. EPA tightened the standard from 50 ppb to 10 ppb in February 2002. The reason EPA tightened the standard was to lessen people's long-term exposure to arsenic in drinking water to reduce the risk of adverse health effects.

Are some parts of Washington more affected than others?

Elevated levels of naturally occurring arsenic are present in some central and northern Puget Sound counties. These levels of arsenic in groundwater are thought to be attributed to geologic formations rather than human activities.

How does the new standard affect water systems?

EPA's standard of 10 ppb balances the current understanding of arsenic's health effects against the costs of removing arsenic from drinking water. Increased safety comes at a cost; the new arsenic standard will be the most costly of new EPA rules to meet. Affected systems may be able to use an alternative source of water, or design and install new water treatment methods to remove arsenic from water. The new drinking water standard becomes effective in January 2006. In the meantime, customers will receive a Consumer Confidence Report from their water utility each year with information on the level of arsenic (if any) detected in their drinking water.

Is my health at risk if I drink water with arsenic higher than the new standard?

Arsenic present in drinking water, soil, air, and food does pose health risks. The more you are exposed to arsenic over time, the higher the risk becomes for experiencing health effects. Different people may have different responses to the same exposure to arsenic, so there is no way to know exactly what may happen in any given case. Reducing the amount of arsenic allowed in drinking water will lessen people's exposure and reduce risk of adverse health effects.

Can water from private wells also be contaminated with arsenic?

Yes, it can. Local health departments can advise people about how to get private well water tested for arsenic and other possible contaminants.

Are there ways to remove arsenic from water at the tap?

Yes. NSF International is an independent non-profit organization that certifies treatment products and methods. Such certification is not a guarantee of safety, but it may help you make decisions. Call 1-800-NSF-MARK or go to their web site at: http://www.nsf.org/

For more information:

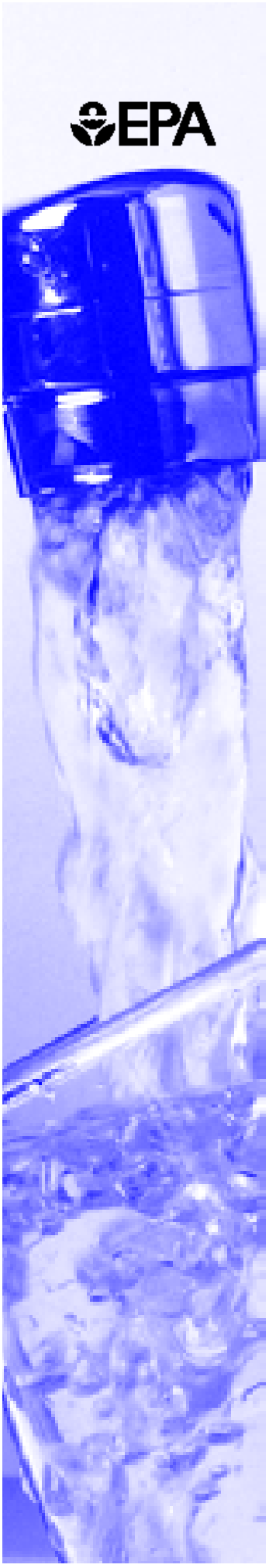
Washington State Department of Health:

- Drinking Water Southwest Regional Office: 360-664-0768
- Drinking Water Northwest Regional Office: 253-395-6750
- Drinking Water Eastern Regional Office: 509-456-3115
- Drinking Water Data & Source Monitoring: Jimmy Weber, 360-236-3097
- Treatment Technology Options: Sam Perry, 253-395-6755
- Arsenic Health Effects: Jim W. White, 360-236-3192
- Office of Drinking Water: http://www.doh.wa.gov/ehp/dw

EPA Arsenic Information: http://www.epa.gov/OGWDW/arsenic.html

Agency for Toxic Substances and Disease Registry (U.S. Centers for Disease Control and Prevention): http://www.atsdr.cdc.gov/tfacts2.html

United States Environmental Protection Agency
Office of Water (4606)
EPA 816-F-01-004
January 2001



Arsenic and Clarifications to Compliance and New Source Monitoring Rule: A Quick Reference Guide

Overview of the Rule

Title	**Arsenic and Clarifications to Compliance and New Source Monitoring Rule 66 FR 6976 (January 22, 2001)**
Purpose	**To improve public health by reducing exposure to arsenic in drinking water.**
General Description	**Changes the arsenic MCL from 50 µg/L to 10 µg/L; Sets arsenic MCLG at 0; Requires monitoring for new systems and new drinking water sources; Clarifies the procedures for determining compliance with the MCLs for IOCs, SOCs, and VOCs.**
Utilities Covered	**All community water systems (CWSs) and nontransient, noncommunity water systems (NTNCWSs) must comply with the arsenic requirements. EPA estimates that 3,024 CWSs and 1,080 NTNCWSs will have to install treatment to comply with the revised MCL.**

Public Health Benefits

Implementation of the Arsenic Rule will result in . . .	• **Avoidance of 16 to 26 non-fatal bladder and lung cancers per year.** • **Avoidance of 21 to 30 fatal bladder and lung cancers per year.** • **Reduction in the frequency of non-carcinogenic diseases.**

Critical Deadlines & Requirements

Consumer Confidence Report Requirements *

Report Due	*Report Requirements*
July 1, 2001	**For the report covering calendar year 2000, systems that detect arsenic between 25 µg/L and 50 µg/L must include an educational statement in the consumer confidence reports (CCRs).**
July 1, 2002 and beyond	**For reports covering calendar years 2001 and beyond, systems that detect arsenic between 5 µg/L and 10 µg/L must include an educational statement in the CCRs.**
July 1, 2002 - July 1, 2006	**For reports covering calendar years 2001 to 2005, systems that detect arsenic between 10 µg/L and 50 µg/L must include a health effects statement in their CCRs.**
July 1, 2007 and beyond	**For reports covering calendar year 2006 and beyond, systems that are in violation of the arsenic MLC (10 µg/L) must include a health effects statement in their CCRs.**

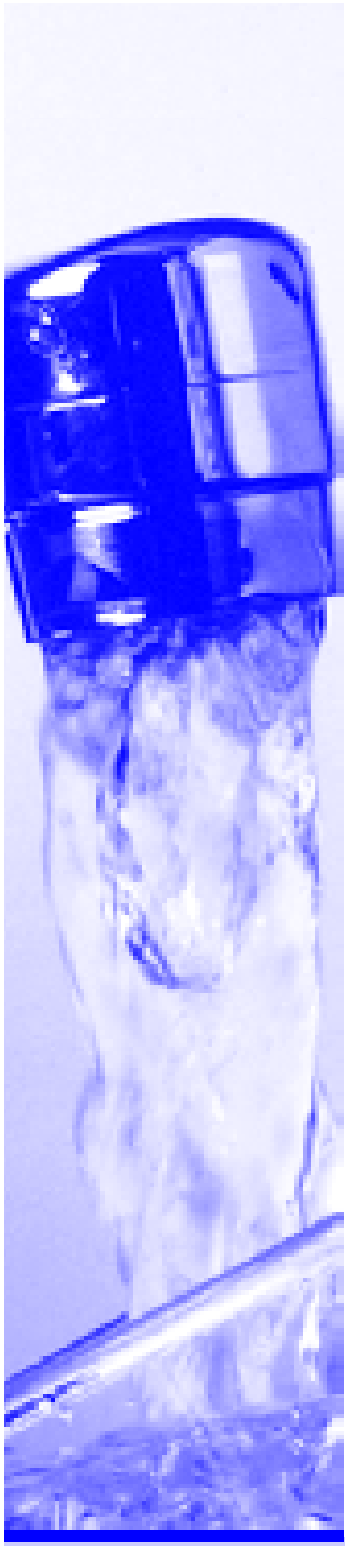
For Drinking Water Systems

Jan. 22, 2004	**All *NEW* systems/sources must collect initial monitoring samples for all IOCs, SOCs, and VOCs within a period and frequency determined by the State.**
Jan. 1, 2005	**When allowed by the State, systems may grandfather data collected after this date.**
Jan. 23, 2006	**The new arsenic MCL of 10 µg/L becomes effective. All systems must begin monitoring or when allowed by the State, submit data that meets grandfathering requirements.**
Dec. 31, 2006	**Surface water systems must complete initial monitoring or have a State approved waiver.**
Dec. 31, 2007	**Ground water systems must complete initial monitoring or have a State approved waiver.**

For States

Spring 2001	**EPA meets and works with States to explain new rules and requirements and to initiate adoption and implementation activities.**
Jan. 22, 2003	**State primacy revision applications due.**
Jan. 22, 2005	**State primacy revision applications due from States that received 2-year extensions.**

* For required educational and health effects statements, please see 40 CFR 141.154.



Compliance Determination (IOCs, VOCs, and SOCs)

1. Calculate compliance based on a running annual average at each sampling point.
2. Systems will not be in violation until 1 year of quarterly samples have been collected (unless fewer samples would cause the running annual average to be exceeded.)
3. If a system does not collect all required samples, compliance will be based on the running annual average of the samples collected.

Monitoring Requirements for Total Arsenic [1]

Initial Monitoring

One sample after the effective date of the MCL (January 23, 2006). Surface water systems must take annual samples. Ground water systems must take one sample between 2005 and 2007.

Reduced Monitoring

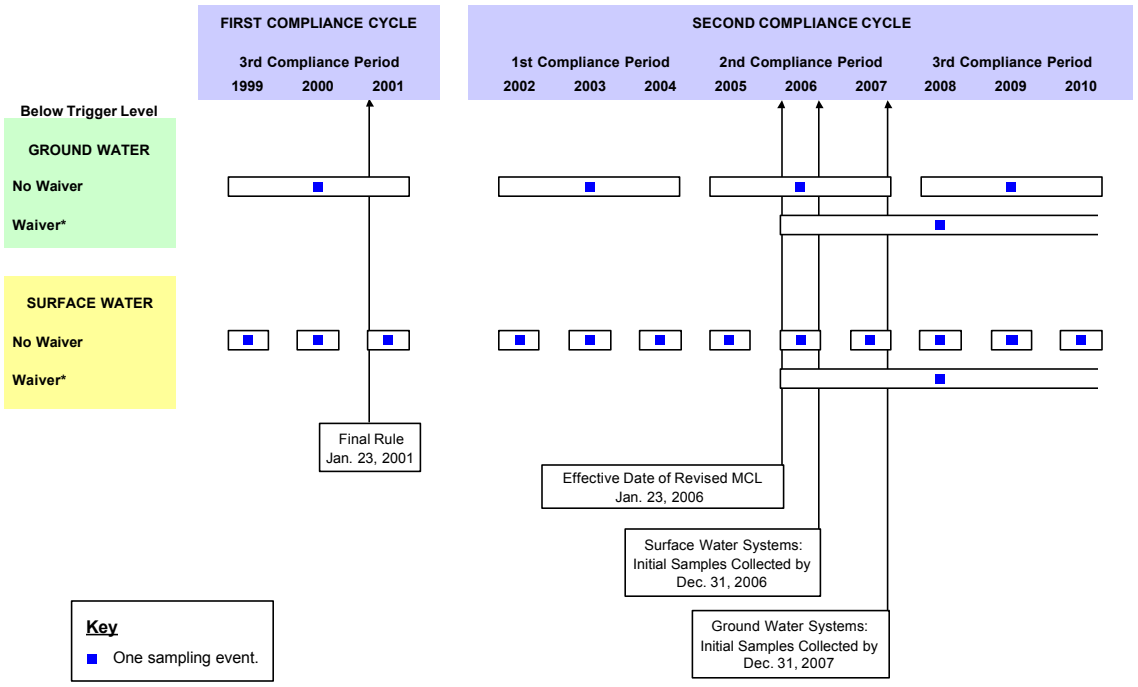
If the initial monitoring result for arsenic is less than the MCL . . .	Ground water systems must collect one sample every 3 years. Surface water systems must collect annual samples.

Increased Monitoring

A system with a sampling point result above the MCL must collect quarterly samples at that sampling point, until the system is reliably and consistently below the MCL.

[1] All samples must be collected at each entry point to the distribution system, unless otherwise specified by the State.

Applicability of the Standardized Monitoring Framework to Arsenic



*Waivers are not permitted under the current arsenic requirements. States may issue 9 year monitoring waivers under the revised final arsenic rule. To be eligible for a waiver, surface water systems must have monitored annually for at least 3 years. Ground water systems must conduct a minimum of 3 rounds of monitoring with detection limits below 10 µg/L.

For additional information on the Arsenic Rule

Call the Safe Drinking Water Hotline at 1-800-426-4791; visit the EPA Web site at www.epa.gov/safewater; or contact your State drinking water representative. EPA will provide arsenic training over the next year.

Appendix B:
Arsenic Treatment Cost Curves and Information

Project Cost Estimation

General

Part of the evaluation process for assessing arsenic removal systems includes estimating costs. Cost estimation must include both capital costs and operations and maintenance costs to accurately reflect the overall or true costs. For example, a relatively inexpensive process to purchase and install may have substantial operations costs that increase the life-cycle cost of using the technology. In other instances an expensive process to buy and install may have such low operations costs that the technology would be less expensive over its operational lifespan.

Capital costs can vary significantly from facility to facility based upon the location, site constraints, system hydraulics, and raw water quality. Capital cost estimates obtained from the cost curves contained in this document are helpful for planning, but they should be refined in light of other variable project costs and updated as soon as adequate data are available. Table B-1 details several of the factors that should be included in the estimated capital cost of a facility.

Table B-1:
Capital Cost Considerations

Item	Includes
Mobilization	Contractor's overhead and profit and costs for bringing equipment to site. Typically 5 - 15% of total construction cost.
Treatment Equipment	Vendor quote with delivery, start-up, training, Operations and Maintenance (O&M) manual, and spare parts.
Pumping Equipment	Cost to modify/add pumping systems to bring raw water to the treatment facility and pump treated water into the distribution system. Vendor quote with delivery, start-up, training, O&M manual, and spare parts.
Installation	Cost for contractor to order, handle, store, install and test equipment. Typically 10 - 50% of the cost of the equipment.
Water Transmission Lines	Cost to construct water lines to bring water to and from the new facility. This cost may be substantial if the site is distant from existing water transmission facilities.
Sitework	Excavation, backfill, compaction, and site grading. Also includes gravel materials required.
Building	Building to house mechanical and electrical equipment. Building should also have space for laboratory and office facilities, chemical feed equipment, and storage.

Item	Includes
Piping	Piping and valves required to interconnect filtration equipment with existing piping and pumping equipment. Typically 10 - 20% of total construction cost.
Electrical, Telemetry and Controls	Electrical wiring and controls required to operate the pumps and filtration equipment. May include new power service and emergency generator. Typically 10 - 20% of total construction cost.
HVAC	Fans, heaters, and exhausters required to keep a building from freezing and minimize condensation.
Sales Tax	Washington State Sales Tax on construction cost.
Engineering Design	Costs to develop plans and specifications for the treatment facility. Even projects to be completed by the owner must have plans and specifications approved by the Department of Health. Typically 10 - 15% of construction cost.
Inspection and Construction Management	Costs to administer a construction contract and inspect the work completed by the contractor. May be reduced or omitted if the Owner has qualified personnel available to perform. Typically 10 - 15% of construction cost.
Land Acquisition	If land must be purchased or leased for the project.
Contingency	Accounts for items and detail not contemplated at the alternatives analysis level. Typically 20 - 30% of construction cost.

O & M cost estimates should also be carefully evaluated for each alternative. Some operations and maintenance cost information is available from equipment vendors including estimated power consumption, chemical usage, and component replacement frequency. These estimates from equipment suppliers should be verified by contacting operators of similar facilities. Labor and power costs can generally be estimated from local conditions. Table B-2 provides some operations and maintenance factors to consider in evaluation of alternatives.

Table B-2:
Operations and Maintenance Cost Considerations

Item	Includes
Labor	The cost of labor to operate and maintain a facility.
Power Consumption	Cost to operate pumps and electrical and mechanical equipment in the facility.
Chemicals	Costs for chemicals used for filtration.
Maintenance	Costs to keep equipment in proper working order including frequently replaced parts.

Capital Cost Information for Arsenic Treatment Systems

The capital costs presented in this section for iron oxidation/filtration and ion exchange were adapted from *Technologies and Costs for Removal of Arsenic from Drinking Water* prepared for EPA in 2000 by International Consultants, Inc., Malcolm Pirnie, Inc., and The Cadmus Group. These capital costs were adjusted for inflation using the Engineering News Record Construction Cost Index (ENR CCI) of 7560.

The capital costs for activated alumina and iron based sorbents were extracted from "Adsorption Treatment For Arsenic Removal: Design, Operation and Cost," a technical article prepared by Malcolm Pirnie Inc., and HDR Inc. in 2002.

The cost estimating curves in this document are presented in 2002 dollars. To adjust for inflation, the following equation, taken from the EPA 2002 *Arsenic Treatment Technology Design Manual for Small Systems*, should be used.

$$P_{current} = P_{2002}(1+i)^{(Y-2002)}$$

Where:

$P_{current}$ = Current Cost
P_{2002} = Year 2002 Cost
i = Annual rate of inflation (~2.5% to 3%)
Y = Current Year

Operations and Maintenance Assumptions

O & M costs for iron oxidation/filtration and ion exchange were adapted from *Technologies and Costs for Removal of Arsenic from Drinking Water* prepared for EPA in 2000 by International Consultants, Inc., Malcolm Pirnie, Inc., and The Cadmus Group. The O&M costs assume the cost parameters shown in Table B-3 below.

Table B-3:
Operations and Maintenance
Cost Assumptions

Parameter	Cost
Electricity	$0.08/kWh
Diesel Fuel	$1.25/gallon
Natural Gas	$0.006/scf
Labor	Large systems: $40/hr Small systems: $28/hr
Building Energy Use	102.6 kWh/ft^2/yr

O & M costs for activated alumina and iron based sorbents were extracted from "Adsorption Treatment For Arsenic Removal: Design, Operation and Cost," a technical article prepared by Malcolm Pirnie Inc., and HDR Inc. in 2002.

All O & M costs assume that none of the waste products will be considered hazardous. Hazardous waste disposal costs could significantly impact the final operations and maintenance costs.

Cost Estimation Curves

Cost estimating curves can be used to develop initial planning level estimates of capital and O&M costs. The capital cost curves include costs for equipment, building, sitework, electrical, piping, and engineering. The cost for a typical system can be found by inserting the system design capacity, in gallons per minute, into the equation shown on the figure.

O & M cost curves can be developed similarly. On an O&M cost curve, find the average annual water system flow in gpm (gallons per minute), then find the correlating annual operations and maintenance costs from the curve. As an alternative, the average annual flow, in gpm capacity, can be entered into the equation on the chart.

Iron Oxidation and Filtration

Capital costs can be estimated from Figure B-1 and O&M costs can be estimated from Figure B-2. The information contained in these figures should be used only as an initial estimate. The actual cost for a specific installation can vary depending on other project specifics.

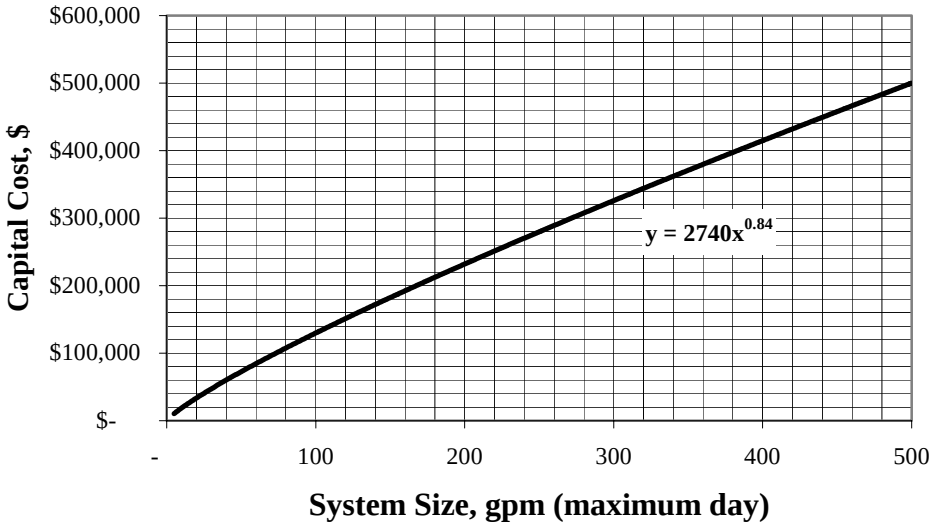


FIGURE B-1: Iron Oxidation/Filtration Capital Costs

(Curve adapted from EPA *Technologies and Costs for Removal of Arsenic from Drinking Water*, 2000 with costs adjusted to 2002 dollars.)

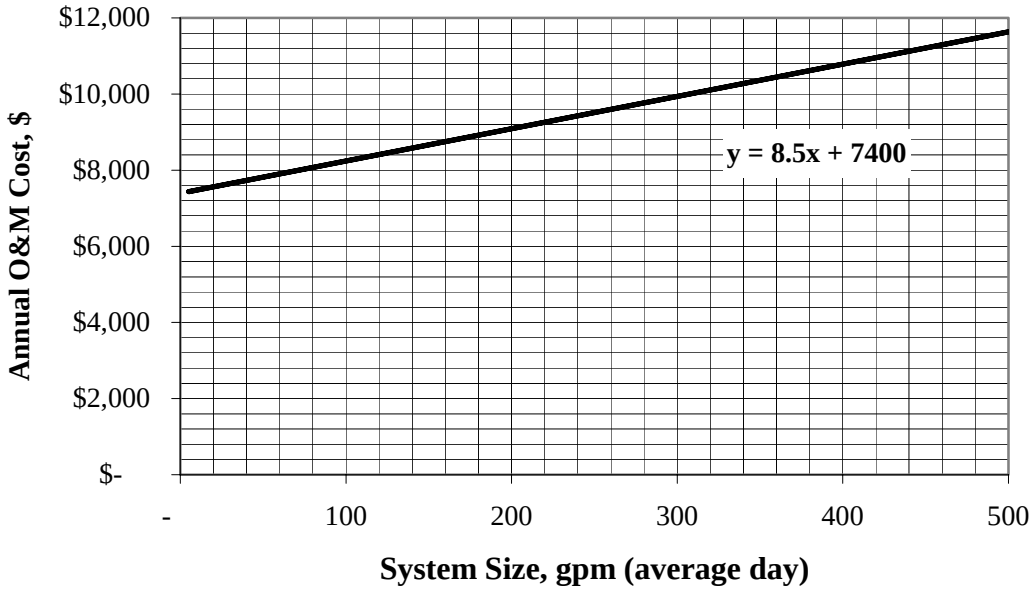


FIGURE B-2: Iron Oxidation/Filtration O&M Costs

(Curve adapted from EPA *Technologies and Costs for Removal of Arsenic from Drinking Water*.)

Ion Exchange

Capital costs can be estimated from Figure B-3. O&M costs can be estimated from Figure B-4. The information contained in these figures should be used only as an initial estimate. The actual cost for a specific installation can vary depending on other project specifics.

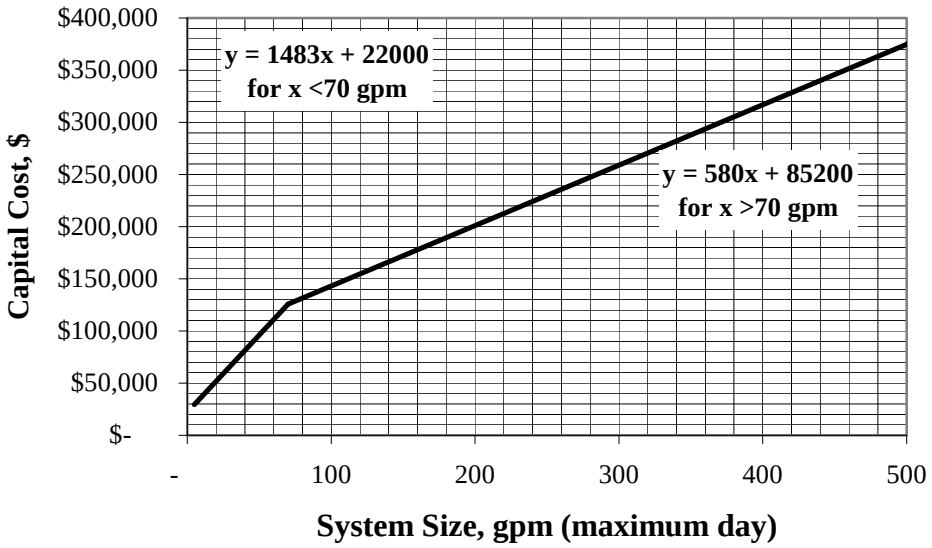


FIGURE B-3: Ion Exchange Capital Costs

(Curve adapted from EPA *Technologies and Costs for Removal of Arsenic from Drinking Water*, 2000 with costs adjusted to 2002 dollars.)

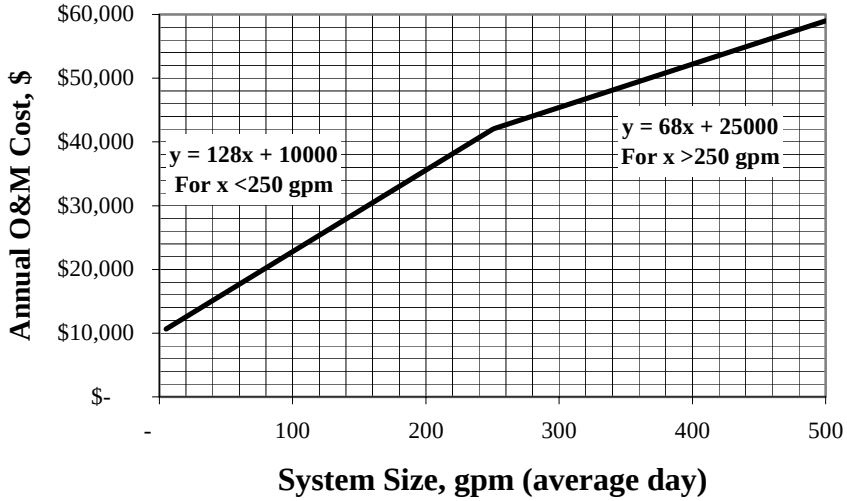


FIGURE B-4: Ion Exchange Annual O&M Costs

(Curve adapted from EPA *Technologies and Costs for Removal of Arsenic from Drinking Water*.)

Sorption

Capital costs for iron-based sorbent systems and activated alumina can be estimated from Figure B-5 and Figure B-6 respectively. O&M costs can be estimated from Figure B-7 and B-8. The information contained in these figures should be used only as an initial estimate. The actual cost for a specific installation can vary depending on other project specifics.

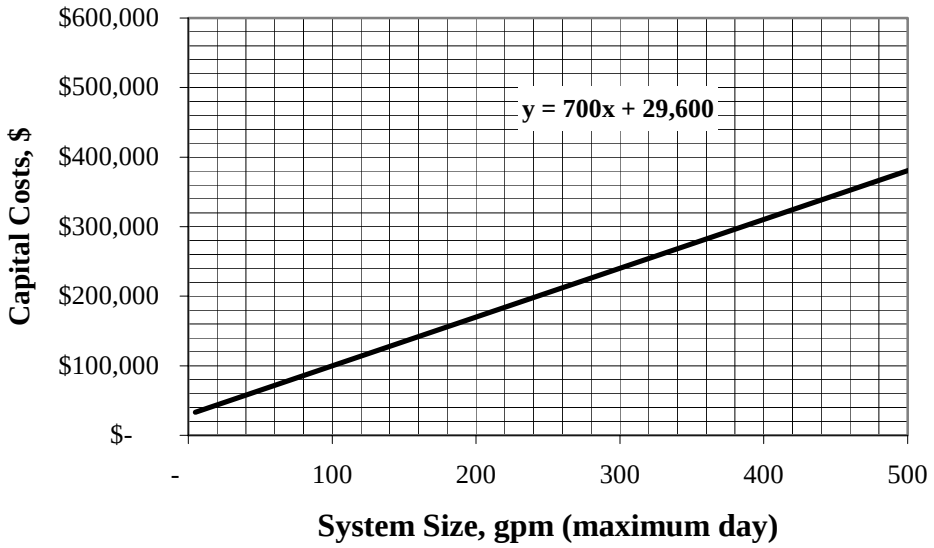


FIGURE B-5: Iron-based Sorbents Capital Costs – Natural pH 7.5
(Curve adapted from *Adsorption Treatment For Arsenic Removal: Design, Operation and Costs*. Costs in 2002 dollars.)

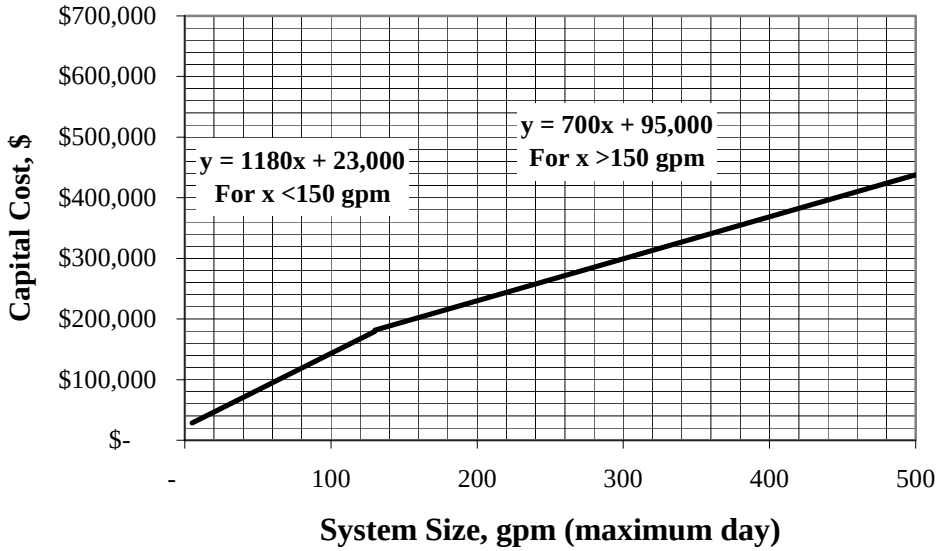


FIGURE B-6: Activated Alumina Capital Costs – Natural pH 7-8 with Equipment Sized for Quarterly Media Replacement
(Curve adapted from *Adsorption Treatment For Arsenic Removal: Design, Operation and Costs*. Costs in 2002 dollars.)

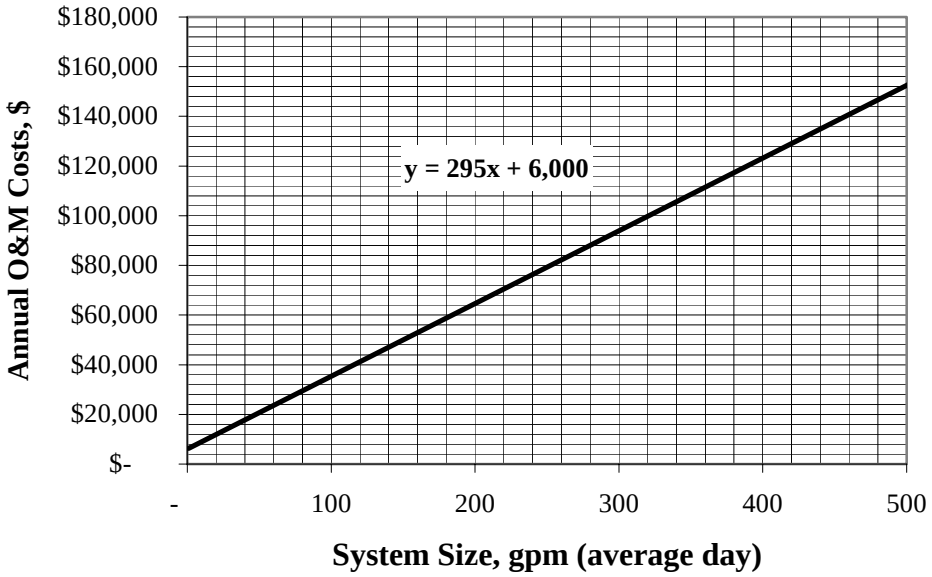


FIGURE B-7: Iron-Based Sorbents Annual O&M Costs - Natural pH 7.5
(Curve adapted from *Adsorption Treatment For Arsenic Removal: Design, Operation and Costs*. Costs in 2002 dollars.)

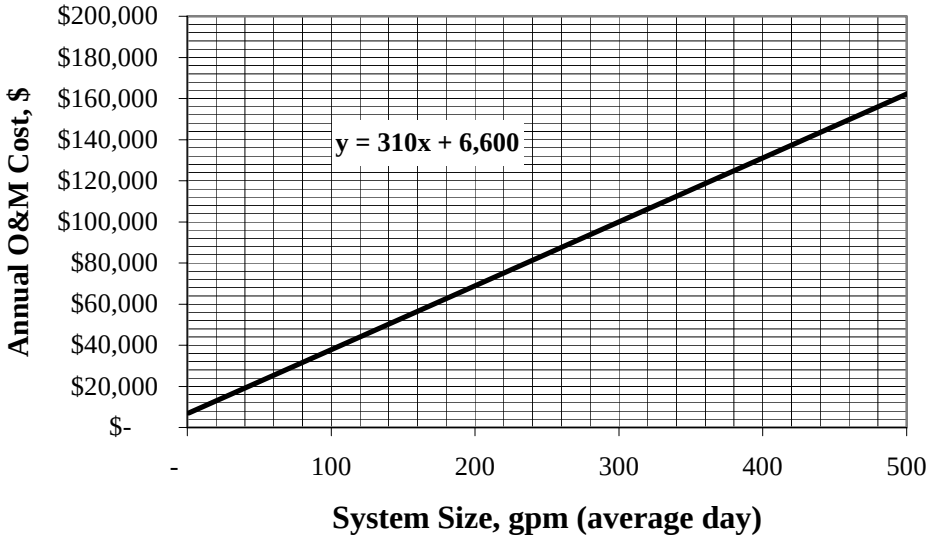


FIGURE B-8: Activated Alumina Annual O&M Costs - Natural pH 7-8 with Equipment Sized for Quarterly Media Replacement
(Curve adapted from *Adsorption Treatment For Arsenic Removal: Design, Operation and Costs*. Costs in 2002 dollars.)

Appendix C:
Iron and Aluminum Based Sorbent Manufacturers

List of Manufacturers

Iron-based Sorbents

AdEdge Technologies, Inc.
50 Technology Parkway South
Norcross, GA 30092
(678) 221-2034

ADI International, Inc.
1133 Regent Street, Suite 300
Fredericton, NB E3B 3Z2 Canada
(506) 452-9000

US Filter
600 Arrasmith Trail
Ames, IA 50010
(515) 232-4121

Activated Alumina

Alcan Chemicals
3690 Orange Place
Cleveland, OH 44122-4438
(800) 321-3864

Kinetico
10845 Kinsman Road
P.O. Box 193
Newbury, OH 44065
(800) 944-9283

Zip line

After receiving an orientation and safety gear, participants can choose to soar over fields with sweeping views of our property. The adventure begins at the top of our 75 foot climbing tower. While in a harness and helmet, you are clipped to a cable trolley by a trained staff member. You walk off the tower into a gentle thrill ride for 1000 feet until you reach the landing tower.

High Ropes Circuit

Students climb elements constructed of wire cable, logs, and rope that have been built from ground level to 20-30 feet high in the trees. There are several parts to the circuit, each one providing a different physical challenge. The elements are connected forming a circular shape up in the trees. Students can participate by climbing up the tree with a traditional dynamic belay or completing the course through a more advanced static method. All participants use safety equipment: helmets, belay lines, harnesses, and other climbing safety gear. These activities, while very safe, provide a sense of perceived risk for those who choose to take on this challenge. Each participant requires steady support from a partner while moving through the High Ropes Circuit. Afterwards, staff facilitate a debriefing discussion to help students process their experience and express their feelings. *Please note that the High Ropes Circuit has a minimum age of 7th-grade and requires two class periods to run*

Giant's Ladder

In the Giant's Ladder, participants use teamwork to climb to the top of a ladder made for a giant. Three people must use each other to make the climb from one rung to the next. All participants use safety equipment: helmets, belay lines, harnesses, and other climbing safety gear. Staff also take care to minimize the physical and emotional risks inherent in these activities, allowing the activity to provide a sense of perceived risk for those who choose to take on this challenge. Each participant requires steady support from the rest of the group. Afterwards, staff facilitates a debriefing discussion to help students process their experience and express their feelings. *Please note that the Giant's Ladder requires a minimum age of 7th grade and requires two class periods to run*

Sea Kayaking

Schools and groups may also choose to have students explore the unique environment of the Salish Sea by kayaks. With participants working together in our fiberglass double-kayaks, staff guide the group in the process of getting ready to go out on the water, followed by an adventure in Orkila Bay. Groups can expect to be on the water for about 1-1.5 hours in an environment where they will likely get a little wet—shoes and synthetic clothing (i.e. no jeans or cotton sweatshirts) are a must in order to stay relatively comfortable! *Please note that sea kayaking has a minimum age of 7th grade and requires two class periods to complete. It also involved some moving and cleaning of gear before and after the program. It also has an added fee associated with it. *

Hiking

An off-site hike could be another way to add adventure into the programming you choose for your schools or group. Orcas Island has many beautiful trails to hike—Moran State Park being the best options for larger groups. Depending on your group and its goals you can choose to participate in a half-day hike around Moran State Park's Mountain Lake or Cascade Lake or pack a sack lunch and spend the full-day hiking up to the highest point in the San Juan Islands— the challenging Mount Constitution! *Please note that off-site hiking involves an additional cost if Orkila transportation is needed*

EVENING PROGRAMS

Ork-Fire

This exciting campfire is usually done outside under the stars with a fire to keep warm. The Orkila staff leading this activity may arrange songs, stories, cheers, and skits and many more activities for your school to enjoy. There is no limit on size for this activity, which lasts an hour.

Combi-Fire

This campfire allows for students to shine as they perform their own skits either in cabin groups or class groups. Camp Orkila staff are there to announce for the students as well as perform a couple of their own skits. There is no limit on group size for this activity, which lasts an hour.

School-led Campfire

Your school group runs this campfire. A Camp Orkila staff member will light our gas fireplaces for you and then you are on your own to perform skits with your students, sing songs, and tell stories. This activity should last no more than an hour and a half.

School-led Trivia

Host a trivia night for your school! A Camp Orkila Staff member will set up the projector for you to use in the lodge and then you can lead your students through a fun packed trivia night! This activity can be any length you choose, most last for around one hour.

School-led Activity

Does your school have an Orkila Tradition or looking to start one? What about a fun game or something new and exciting for the students. Use this time to lead your school through any wild and fun idea you have. Orkila Staff can assist with set up.

School-led Dance

Have your students put on their craziest outfits and join the Camp Orkila staff as we lead your group in fun dances that get the whole group involved. Staff call the dances and use recorded music. Any size group can enjoy this activity. This is an activity that occurs in a covered space and is very active.

Orkila-led Astronomy Class

Orkila Staff will take your students on a journey through the stars. Using telescopes, star guides, and our large open fields students can explore the night skies and hear stories about humans' connections and use of stars across different cultures and times.

Orkila-led Wreckage (Dodgeball)

Wreckage Ball is an Orkila staple! Orkila Staff will lead your school though many variations and twist on this classic camp game. This evening program is very active and can be adapted to different energy levels.

Orkila-led Life in the Forest (Late May and June)

Just like the class "Life in the Forest" is an advanced hide-and-seek game. Students role-play plants, herbivores, omnivores, and carnivores foraging for nutrition. After the game, there is a debriefing session to recognize and evaluate students' animal-like strategies, their adaptations, and human impact in the food chain and forest.

Orkila-led Avengers Academy

Take your students on a quest throughout Camp Orkila as they seek to obtain the necessary skills needed to become a full-fledged Avenger. Throughout the program, students, teachers and Camp Orkila staff are all in character as groups work together to complete their adventure. This is a very active evening program.

Orkila-led Night Watchers (March, April, Early May)

The emphasis of this activity is for students to learn about nocturnal nature, to explore their own perception of darkness, to learn how senses are affected, and to take part in activities that have to do with all of these. This is a wonderful activity to get kids excited about exploring the night in a very fun and safe manner. Flashlights are not allowed in this activity.

Orkila-led Color Competition

Blue, Yellow, Green, Red! Students will start the Orkila Color Competition with team cheers, face paint, and coordinated clothing that represents their specific color-based teams. Your school's teams will compete against each other to be the first to accomplish tasks at different stations. This is a high-energy evening program with obstacle courses, trivia, mind-teasers, and silly games. All teams will have opportunities to be challenged and opportunities to shine as students learn sportsmanship and friendly competition.

Orkila-led Amazing Race

Each cabin or study group will have less than an hour to race around camp completing different teamwork, physical and mental challenges to earn points for their group. Tougher challenges will earn them more points, while simpler problems will be faster to solve. When time's up, the group that has the most points wins! Active participation from cabin leaders/chaperones is needed in order for all challenges to be run.

Students discover the importance of salmon within the food chain and be able to describe the predator and prey relations involving salmon
Students discuss human impact and its effect on the spawning grounds and home streams of Pacific salmon

Possible Activities:
Students have the opportunity to learn about salmon development at different stages of their lives. Through active role-playing and lessons, students experience the life cycle of the salmon, learn of salmons' physical adaptations, and understand salmons' role in the food chain. Students can become more involved and informed in the lives and experiences of salmon.

Main Vocabulary And Concepts:
Life Cycle
Physical Adaptations
Food Chain

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5SL 4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5SL 6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5L 1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Birds of the Pacific Northwest

Location: The Forest and the Lagoon

Possible Learning Outcomes:
Students explore a healthy bird habitat
Students identify different species of birds found during exploration
Students discuss bird adaptations and behaviors
Students investigate predator/prey relationships

Possible Activities:
Students will examine characteristics of a healthy bird habitat at the lagoon and the forest and will observe birds in their natural habitat to discuss their behavior. Students will discuss the interdependence of birds and other species in the ecosystems they observe. They will explore adaptations through games, observation, and discussion. Students may also have the opportunity to investigate predator prey relationships through a dissection of an owl pellet.

Main Vocabulary And Concepts:
Diversity
Interdependence
Habitat health
Adaptations

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5SL 4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5SL 6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5L 1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.
4-5 LS1B Plants and animals have different structures and behaviors that serve different functions.
4-5 LS1C Certain structures and behaviors enable plants and animals to respond to changes in their environment.
4-5 LS2A An ecosystem includes all of the populations of living organisms and nonliving physical factors in a given area. Living organisms depend on one another and the nonliving physical factors in their ecosystem to help them survive.

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Forest Ecology

Location: Forested Areas

Possible Learning Outcomes:
Students learn some basic botanical identifications and plant anatomy.
Students are exposed to the cycle of the forest succession as a process of a healthy forest
Students analyze how species function as individuals and as part of a larger system in the forest community

Possible Activities:
Students explore Colman's forests and woodland ecosystems to learn about different forest communities. Students will study examples of competition and adaptation to discuss cycles of forest succession. Along with seeing the forest as a whole, interdependent, ever-changing community, students play games and participate in activities to learn about the concepts of food chains, tree functions, and animal adaptations.

Main Vocabulary And Concepts:
Biodiversity
Forest Succession
Human Impact and Disturbances

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.

5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST 3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
6 NS5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

Plant Exploration

Location: Forested Areas

Possible Learning Outcomes:
Students learn some basic botanical identification.
Students explore historical and common uses of individual species.
Students sharpen sensory awareness of forest community.

Possible Activities:
Students explore Colman's forests, exploring both native and non-native species. Students have the opportunity to be the expert through the Each-One-Teach-One curriculum. Students participate in sensory activities, allowing them the opportunity to experience the forest individually through imaginative instructions. Students will study examples of competition and adaptation to discuss cycles of forest succession.

Main Vocabulary And Concepts:
Native and Non-native species
Plant Identification
Sensory awareness

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Micro-Forest

Location: Forest

Possible Learning Outcomes:
Understand the importance of decomposition in the ecological processes of the forest.
Explore the roles played by other inhabitants of the forest floor such as insects, slugs, amphibians, and small mammals.
Identify and differentiate between fungi, lichen, and moss.

Possible Activities:
Students may spend time exploring the forest floor and exploring found insects, slugs, amphibian, and fungi under magnifying glasses. Student may discuss the process of soil formation. Students may play a tag game to illustrate the roles of decomposers, producers, and consumers. Students may examine various aspects of the soil and undergrowth by building mini-national parks then "guide" other students through their park explaining the feature, habitats, and niches that exist there.

Main Vocabulary And Concepts:
Decomposition
Decomposer, Consumer, Producer
Habitat, Community, Niche, Ecosystem
Soil Formation

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.
4-5 ES2D Soils are formed by weathering and erosion, decay of plant matter, transport by rain through streams and rivers, and deposition of sediments in valleys, riverbeds, and lakes.
4-5 ES2E Soils are often found in layers, with each layer having a different chemical composition and different physical properties.
4-5 LS2A An ecosystem includes all of the populations of living organisms and nonliving physical factors in a given area. Living organisms depend on one another and the nonliving physical factors in their ecosystem to help them survive.
4-5 LS2B Plants make their own food using energy from the sun. Animals get food energy by eating plants and/or other animals that eat plants. Plants make it possible for animals to use the energy of sunlight.
4-5 LS2C Plants and animals are related in food webs with producers (plants that make their own food), consumers (animals that eat producers and/or other animals), and decomposers (primarily bacteria and fungi) that break down wastes and dead organisms, and return nutrients to the soil.
4-5 LS2D Ecosystems can change slowly or rapidly. Big changes over a short period of time can have a major impact on the ecosystem and the populations of plants and animals living there.
4-5 LS2F People affect ecosystems both positively and negatively

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate

volume, and clear pronunciation.
6 NS5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

Circle of Life

Location: Forested Areas

Possible Learning Outcomes:
Students discover how food chains and food pyramids are constructed
Students experience a predator-prey relationship and animal feeding patterns and strategies through role playing an herbivore, omnivore, or carnivore
Students understand human impact on animal habitats in terms of pesticide use and appropriation of territory
Students understand the key concepts of habitat

Possible Activities:
"Life and Death in the Forest" is an advanced hide and seek-style game that provides a fun venue for examining population dynamics. Students role-play herbivores, omnivores, and carnivores foraging for food and water to better understand predator-prey interactions. After the game, there is a debriefing session to recognize and evaluate students' animal-like strategies, their adaptations, and human impact in the food chain and forest.

Main Vocabulary And Concepts:
Interdependence
Adaptations
Food Web
Habitat

5th Grade Common Core Learning Targets:
5 G2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
6 NS5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6 NS8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.
6 SP4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6 SP5 Summarize numerical data sets in relation to their context.

Geology

Location: Beach and Forest

Possible Learning Outcomes:
To identify three main categories of rock: Sedimentary, Metamorphic, and Igneous
Learn about plate tectonics and the formation of Mt. Rainier and the Cascade and Olympic mountain ranges.
To understand the concept of geologic time.
Talk about different types and formation of shorelines.
Discuss ways in which humans impact the local and global geology.

Possible Activities:
Students may spend time on the beach observing various types of rocks and geological formations visible from camp (the Olympic Mountains!). Students may do an activity with a geologic time line included important historic events. Students may act out various geologic concepts such as the layers of the earth or plate tectonics.

Main Vocabulary And Concepts:
Geologic Time Line
Igneous, Sedimentary, and Metamorphic Rocks
Layers of the Earth (Inner and outer core, mantle, crust, atmosphere)

Plate Tectonics
Cascade and Olympic Mountains

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
5 RI4 Determine the meaning of general academic and domain-specific words and phrase in a text relevant to a grade 5 topic or subject area.

6th Grade Common Core Learning Targets:
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 WHST7 Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
6 NS5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

Outdoor Education

Orienteering

Forest, and Map and Compass Sites

Possible Learning Outcomes:
Students identify the essential elements of a map and a compass
Students complete an orienteering courses at Camp Colman
Students use a compass to set bearings, travel distances, and find markers

Possible Activities:
Students learn to identify the parts of a compass. Students use the compass to move to different locations. To familiarize students with these materials, they will use compasses in playing games and hands-on activities.

Main Vocabulary And Concepts:
Cardinal directions
Degrees
Dial
Direction of travel arrow
Magnetic needle
Orienting arrow

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

6th Grade Common Core Learning Targets:
6 RST 3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
6 RST4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.
6 NS5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6 SP5 Summarize numerical data sets in relation to their context.

Canoeing

Location: The Lagoon
*Please select an alternative class if selecting canoeing. This is a weather dependent class.

Possible Learning Outcomes:
Students learn about water, paddling, and safety and technical skills
Students connect their marine ecosystem knowledge to canoeing
Students practice the importance of communication and team-oriented tasks

Possible Activities:
After learning about canoeing and water safety skills, instructors will give students a chance to independently paddle around the lagoon to explore with their canoe group while instructors lifeguard. Along the way, students ask questions about what they see on and around the water; instructors will answer these questions and pose others to students. Through this activity, students practice pod traveling and how they, as a group, need to be safe and are interdependent. Please note that this class is weather dependent and may need to be called off for safety reasons if there is inclement weather. If the weather appears to be uncooperative, instructors will move to the alternative class that the teachers have previously selected.

Main Vocabulary And Concepts:
Parts of the Paddle
Technical Skills
Safe Boating

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

6th Grade Common Core Learning Targets:
6 RST 3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.

Outdoor Wilderness Living Skills

Location: Beach and Forest

Possible Learning Outcomes:
Students learn the 10 essential things to bring for wilderness travel
Students learn basic outdoor skills such as fire building, setting up shelters, and wild edibles etc.
Students explore ways to reduce their impact on the land while hiking and camping

Possible Activities:
Students play games and participate in practicing outdoor living skills. This class helps to inform students about what materials they need in order to be safe while camping outdoors and how to experience the outdoors with minimum impact on their environment. Students may work in teams to build shelters and fires. If indicated beforehand, this class could be combined with map and compass skills.

Main Vocabulary And Concepts:
Ten Essentials
Shelter/Fire-Building
Leave No Trace
Human Impact

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

6th Grade Common Core Learning Targets:
6 RST3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Challenge Education

Challenge I (Teambuilding/Initiatives)

Location: Field Initiatives

Possible Learning Outcomes:
Students will develop group cooperation and group communication skills by facing challenging activities
Students will practice constructive group problem solving skills
Students will debrief these activities

Possible Activities:
In these classes, students work together to solve physical and mental problems. The group starts with simple problems requiring basic communication and problem solving skills. Activities range from non-prop and prop initiatives (use of physical items to facilitate the activity) to group efforts on a low element initiative course. Progression through the elements is dependent on the group's ability to work together safely.
The program director will be happy to work with you on this to define goals for the groups and the instructors are trained to help the group achieve those goals by using sequenced activities and lesson plans specific to the groups needs. The Colman staff is ultimately responsible for the logical progression of activities the students will encounter and may not attempt some elements if the team is not physically, emotionally or socially ready for it. There are several factors that determine a groups" readiness to progress to more challenging activities and the instructors will attempt to meet the groups" needs while also making sure that all students are safe at all times.

Main Vocabulary And Concepts:
Listening
Problem Solving
Cooperation
Challenge by Choice

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

6th Grade Common Core Learning Targets:
6 RST3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Challenge II (Teambuilding/Initiatives)

Prerequisite: Challenge I
Location: Low ropes

Possible Learning Outcomes:
Students will continue to develop group cooperation and group communication skills by facing challenging activities on low ropes elements
Students will practice constructive group problem solving skills
Students will debrief these activities

Possible Activities:
In these classes, students work together to solve physical and mental problems. Groups will build upon skills gained throughout Challenge I. Groups will move to more difficult problems requiring trust and strong reliance on each other. The course is composed of obstacles that require the groups to cooperatively problem solve and devise safe and effective solutions. Progression through the elements is dependent on the group's ability to work together safely.
The program director will be happy to work with you on this to define goals for the groups and the instructors are trained to help the group achieve those goals by using sequenced activities and lesson plans specific to the group's needs. The Colman staff is ultimately responsible for the logical progression of activities the students will encounter and may not attempt some elements if the team is not physically, emotionally or socially ready for it. There are several factors that determine a groups" readiness to progress to more challenging activities and the instructors will attempt to meet the groups" needs while also making sure that all students are safe at all times.

Main Vocabulary And Concepts:
Listening
Problem Solving
Cooperation
Challenge by Choice

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

6th Grade Common Core Learning Targets:
6 RST3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Climbing Tower

Capacity: 16 students maximum
Location: Climbing Tower

Possible Learning Outcomes:
Students are exposed to a challenging experience where they will gain insight into their abilities and self-perception
Students understand that all individuals have different challenges and goals
Students practice supporting one another by helping each other reach goals and providing encouragement in their endeavors regardless of the outcome.
Students relate their skills and process use in the climbing wall to other areas of their lives

Possible Activities:
Students climb an outdoor climbing tower consisting of various hand and foot holds. This activity, while very safe, provides a sense of perceived risk and generates a great feeling of accomplishment for those who choose to accept the challenge. The climbing wall, for some students, is a physical challenge. The climber is in a harness and belayed by a team of participants or an instructor. Each participant requires steady support from the rest of the group. Afterwards, staff facilitates a debriefing discussion to help students process their experience and express their feelings.

Main Vocabulary And Concepts:
Challenge by Choice
Helmet and Harness
Belaying

5th Grade Common Core Learning Targets:
5 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
5 SL4 Report on a topic or text or present an opinion sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.
5 SL6 Adapt speech to a variety of contexts and tasks, using formal English when appropriate to task and situation.
5 L1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

6th Grade Common Core Learning Targets:
6 RST3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
6 SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly.
6 SL4 Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.

Catwalk Log

Capacity: 16 students maximum
Location: The High Ropes Course
*This class can take up to 2 ½ hours to complete. Please consult with OEE Director before electing this class for students. Please note the suggested minimum age is 7th grade.

Possible Learning Outcomes:
Students are exposed to a challenging experience where they will gain insight into their abilities and self-perception
Students understand that all individuals have different challenges and goals
Students practice supporting one another by helping each other reach their goals and providing encouragement in their endeavors regardless of the outcome.
Students relate their skills and process use in the climbing wall to other areas of their lives

Possible Activities:
This activity, while very safe, provides a sense of perceived risk and generates a great feeling of accomplishment for those who choose to accept the challenge. Students climb a tree to a height of 35 feet where they have the opportunity to walk across a 25 foot log suspended between two trees. Students set their own goals can choose to climb partially up the tree, across the log, go blindfolded, or even backwards. Students are in harness and belayed by two teams. Each participant requires steady support from the rest of the group. Afterwards, staff facilitates a debriefing discussion to help students process their experience and express their feelings.

Main Vocabulary And Concepts:
Challenge by Choice
Helmet and Harness
Belaying

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Vertical Playpen

Capacity: 16 students maximum (grades 7-12)
Location: High Ropes Course
*Please note the suggested minimum age is 7th grade.

Possible Learning Outcomes:
Students can work together to practice supporting one another by helping each other reach their goals and providing encouragement in their endeavors regardless of the outcome
Students can be exposed to a challenging experience where they can gain insight into their abilities and self-perception
Students can understand that all individuals have different challenges and goals
Students can relate their skills and process use in the high ropes course to other areas of their lives

Possible Activities:
All participants use safety equipment: helmets, belay lines, harnesses, and other climbing safety gear. This activity, while very safe, provides a sense of perceived risk for those who choose to

take on this challenge. Each participant requires steady support from the rest of the group. Afterwards, staff facilitates a debriefing discussion to help students process their experience and express their feelings. At least two adult chaperones are required for this activity.
A team of three students will collaborate as a team to climb a vertical jungle gym, which is hung in between two trees. While one team is climbing, staff supervises the other students as they work together in teams to belay their classmates. This activity pinpoints and stresses the necessity of cooperation, communication, and problem solving skills to accomplish a task.

Main Vocabulary And Concepts:
Challenge by Choice
Helmet, Harness, and Belaying
Group Work

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The Beast

Capacity: No student maximum
Location: Campfire Pit or Morris Room

Possible Learning Outcomes:
Students will realize the importance of clear, concise communication
Students will learn to use descriptive language
Students will practice having patience while communicating
Students will work together in teams

Possible Activities:
This communication workshop challenges students to explore different methods of conveying and receiving information. Participants are split into smaller groups and assigned differing roles that limit and focus their ability to communicate with each other. In one activity, they must construct an exact replica of a hidden Lego "Beast" that only one team member can see. In another, students are using their visual and listening skills to recreate an intricate drawing. This is an active, inclusive, hands-on class that deals with relationships between people and adapting to help others communicate. This is a class that can enhance group communication and team skills, providing an opportunity for students to examine communication barriers, and to create an avenue for developing solutions

Main Vocabulary And Concepts:
Listening
Speaking

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