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WONDERING WATERS

creating a sensory experience that strengthens
an appreciative bond with water

Wondering Waters:

creating a sensory experience that strengthens
an appreciative bond with water

by
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Water is a vital, precious force that sustains all life. In some parts of the world, water is treasured because a community may face shortages. In many other areas where the water supply is plentiful, people in communities may take water for granted. People open their taps and water pours out. With modernizations in society, the reverence for water has been lost. If we can re-engage an appreciative relationship between water and the community, then conservation action can naturally follow.

In the Treasure Valley, there is a major conflict between abundant water resources and the desert climate. Given this, residents take water for granted, forgetting the reality of living in a desert. Environmental education is one existing strategy that seeks to increase people's awareness and promote conservation action. However, it focuses on content and presumes appreciation, interest and the motivation to learn. Fostering appreciation and interest becomes a prerequisite to environmental education. Many of our decisions and informed actions are driven by emotional responses.

Creating landscapes centered on fostering positive emotional experiences with water can re-connect people with its power and stimulate an appreciative interest. Sensorial experiences can trigger emotional responses like appreciation. This project investigates introducing sensorial landscape elements that create opportunities for playful, exploratory interactions with water. The design focuses on creating elements that strengthen the visitor's appreciation of water to inspire water conservation action.

The research includes a cross-disciplinary literature review exploring concepts from environmental psychology, experiential learning and conservation action. In addition, it incorporates case studies and precedent studies that present design implications and inspiration. The project objectives, research and site analysis are synthesized to design a place that inspires water conservation action. The project design proposes a schematic plan representing the orchestration of spaces in the garden and illustrates in detail the exhibits throughout the garden.

In addition to creating a garden where people can develop an appreciative bond with water, the final design creates a new outdoor space for the community to enjoy. This project demonstrates the how creative thinking in the field of landscape architecture can address community issues like conservation. Recognizing that emotions affect interest and motivate action, the landscape becomes a powerful setting fortifying appreciation and interest in conservation action.

INTRODUCTION

RESEARCH QUESTION

What types of landscape elements can strengthen an appreciative bond with water and how can these be introduced into a public space in Boise that is accessible to a broad range of people to promote more sustainable use of water by interacting with the space regularly?

PROBLEM STATEMENT

This project addresses how to improve the impact of environmental education by focusing on water conservation awareness among the general public through the use of landscape architectural design of public space. The primary goal is to redesign an existing open space so that it elicits affective response and promotes conservation behavior. By interacting with a range of sensory and educational elements focused on water as a resource and as a vital constituent of the environment, people will develop an appreciation of water in their community and be inspired to take action conserving water used in daily life at home.



'Exhale' by Mikyoung Kim

Source: <http://www.townofchapelhill.org/Home/Components/News/News/9228/>

BACKGROUND

The multitude of ways water is used daily is an inevitable fact of modern life. Since water is conveniently provided as part of the basic infrastructure of our cities, it is easy to overlook how much water we use, the source and how fortunate we are to have fresh water in our community and homes.

Environmental education is an approach that seeks to reinforce the awareness of human consumption of natural resources and its impact on the environment. By educating people about the environment, people can become more connected to their environment and knowledgeable about the impacts they have and become motivated to alter their habits. However, environmental education typically focuses on content and is evaluated in terms of knowledge gained. In contrast, this project considers previous research that acknowledges and promotes the value that experience and affective response have in revealing the formerly unknown and providing opportunity for conservation action.

PURPOSE AND NEED FOR THE PROJECT

This project explores how to successfully design an open space that provides the benefit of promoting conservation of an element vital in our daily life. It is well understood that water is one of the most important substances on earth because all forms of life depend on its quality and availability. In order to promote conservative use of water, it is important to develop a better appreciation and attachment to it as a natural resource and its value as a life-sustaining resource. It is convenient and easy for people in the Treasure Valley relying on municipal water sources to turn on their faucet without thinking about its

journey from source to tap. Wasteful irrigation systems, such as those at the Boise Capitol, that water the sidewalk excessively provide a simple example of how we can overlook the value of water as a natural resource. This project aims to open peoples eyes and begin develop appreciation for this simple luxury in our daily life.



Source: <http://jablab.deviantart.com/art/water-splash-people-163505950>

“If there is magic on this planet, it is contained in water... its substance reaches everywhere; it touches the past and prepares the future; it moves under the poles and wanders thinly in the heights or air. It can assume forms of exquisite perfection in a snowflake, or strip the living to a single shining bone cast up by the sea.” - Loren Eiseley (Starke & Simmonds, 2006)

THE ROLE OF WATER IN OUR LIVES

Water plays the most important role for sustaining all life. All life requires water to survive. When used wisely, water and water bodies can benefit many who live in its presence. Water creates habitat. It shapes places for life to reside, fertile valleys, or algae in a stream. Water provides transportation. It provides exchange between the our lungs the air and plants. We depend on water to breathe. Water is used to migrate across water bodies. Water provides comfort. It cools us when we are hot and can warm us when we art cold. Water provides nourishment. It allows all life to grow and thrive. Water also entertains us. Water wears many disguises and has the ability to move our emotions. Water is everything.



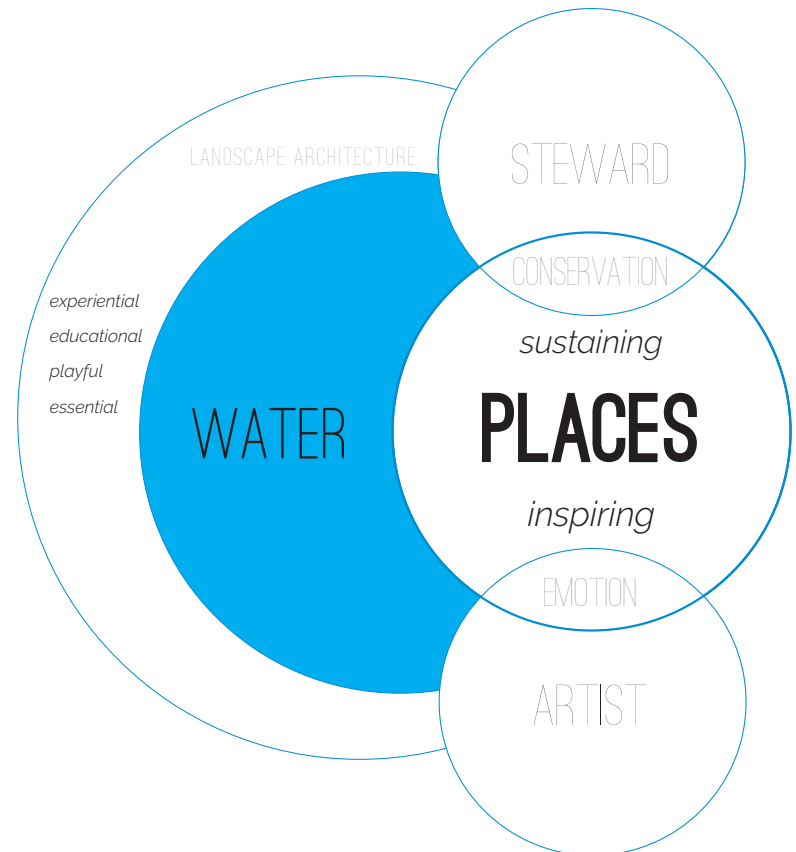
Kiryat Sefer Park

Photo Credit: Ram Eisenberg. (With permission)

CONTRIBUTION TO LANDSCAPE ARCHITECTURE

This project demonstrates the ability of landscape architects to manipulate an environment so that it not only synchronizes with peoples' preferences, but also becomes an outlet and instrument for environmental stewardship. It creates unique opportunities in open space for the public with elements that have the ability to trigger appreciation for water as a resource, and foster conservation response and action.

In the discipline of landscape architecture, we strive to design landscapes that conserve water. We are equipped with the benefit of a diverse palette of materials, methods and elements that have the capacity to engage multiple senses and inspire. Designing an open space that not only teaches people how to conserve water, but has the ability to elicit affective responses, opens the door to environmental stewardship for people in the community using water everyday. This project builds on the body of work landscape architects have been leading as pioneers of water conservation. For decades landscape architects have developed green infrastructure, whether it be the community park functioning as a shared backyard, or the green roof that innovatively harnesses rainwater for indoor and outdoor uses, for the health and function of people and the environment. This project contributes to the field through a holistic approach of promoting water conservation through art, landscape and education. Taking this approach means designing a place that inspires and educates people to become stewards of water, which is fundamental to their health and well-being.



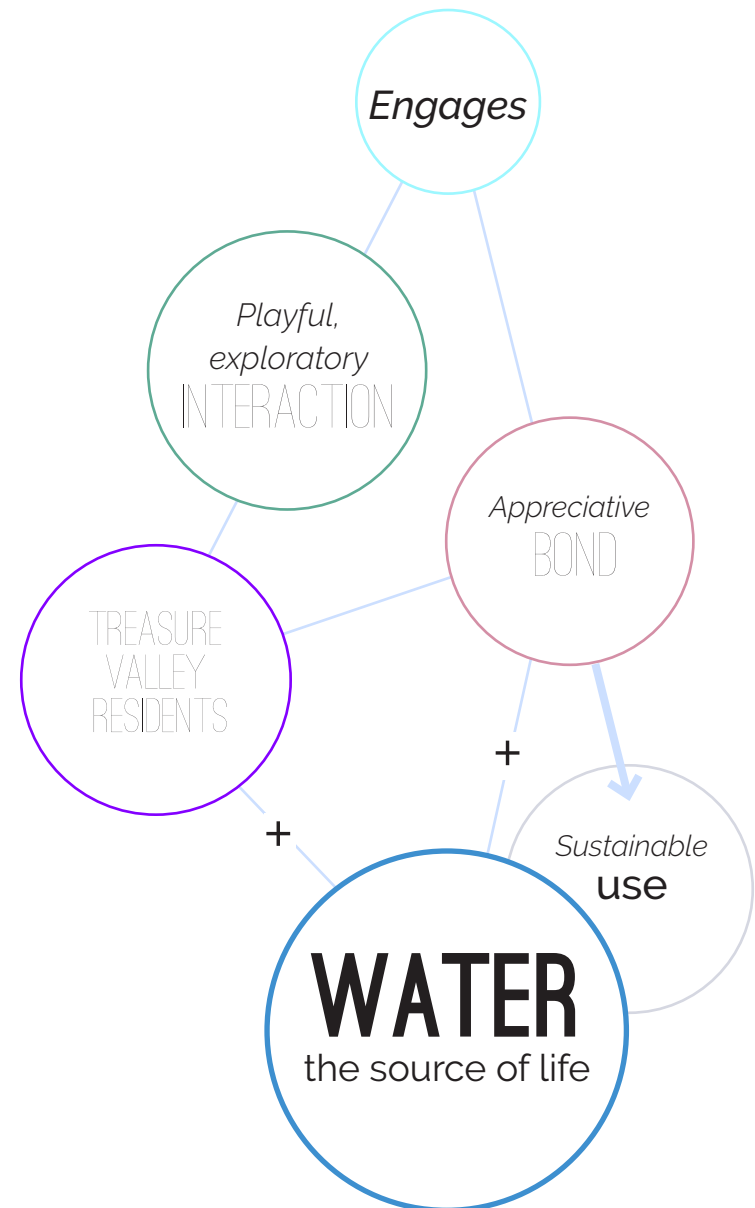
SCOPE

The scope of this project is to develop a design with detailed areas and elements and that will provide insight for spaces that seek to promote water conservation. Although the scope of this project is limited to the design, it is important to consider the factors that are necessary for it to come to life. Bringing this design to life will require strong partnerships to form within the community. This is important not only for initial implementation, but in addition, to successfully maintain the space over time in order to promote conservation in the community. While these factors are discussed in the literature review of this project, the scope of work focuses on the successful project design.

This project will incorporate a program and develop a schematic design for the chosen site. It will also develop designs for exhibit spaces throughout the site. In addition, sections and perspectives will be included to communicate the design intention of each space. This design will meet the goals established in the problem statement, and informed by research.

GOALS

- **Embraces** the natural patterns and processes that are unique to the site and Treasure Valley by showcasing their roles
- **Stimulates** an appreciative bond between Treasure Valley residents and water, promoting more sustainable use of water in an arid region with abundant water resources
- **Invites** a diverse group of users to playfully interact with and manipulate water in it's various forms and settings
- **Narrates** a story about water as an essential force in the Treasure Valley that sustains all life
- **Excites** continuous visitation from local users & visitors



CONTEXT - REGIONAL

In the Treasure Valley, there is a major clash between climate and water. Despite the desert character of the region, there is an abundant supply of water. The monumental Snake River aquifer and its associated watersheds underlying the area and the river has allowed the region to grow since its beginnings. Unlike communities sharing similar climates the Treasure Valley has not endured a severe drought.

It is common for communities who do experience prolonged droughts to develop an appreciation of water as a precious resource. Because the aquifer is hidden out of sight and mind, it consequently becomes a forgotten privilege. This causes “drought blindness” among residents throughout the region and many take for granted the luxury of having access to as well as the abundance of water.

The abundance of water has been the double edged sword for the Treasure Valley since its beginnings. Pictured is a historical birds eye view of Boise in 1890. Today, development encroaches on this river corridor and the lifeblood of the community.

Looking north



Boise, Idaho (Present)

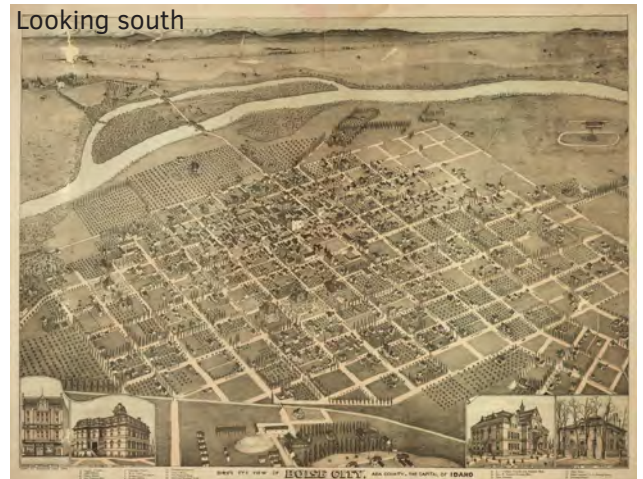
Source: http://www.buildidaho.com/home/boise_idaho/



State Capitol, Boise, Idaho

Photo Credit: Author

Looking south



Boise, Idaho (1890)

Source: <https://riverstreethistory.wordpress.com/author/mahr2010/>

SIGNIFICANCE OF SCALE

Designing at the human-scale is one way of stimulating stewardship at a broader, regional scale. This project strives to stimulate stewardship in the local region, the Treasure Valley. This project addresses broader landscape management and landscape planning issues at the site level. It is important to note how scale matters in this project and the overarching impact it can stimulate. Richard Stiles emphasizes how the definition of landscape design, which is “concerned with the conservation and enhancement of landscape resources for the benefit of current and future generations at site level” is distinguished from landscape management, “as an ongoing process, usually at the level of one or many sites.” This is distinct from landscape planning, which is at a “strategic level and usually over long time scale” (‘Ecology, Community and Delight’, Ian Thompson, 3). These definitions are valuable in understanding the importance of scale in this project.

By dialing in at the site level and focusing on the human-scaled elements in this design, this project creates outward impact over time and place. It will capitalize on visual connections to regional features while providing opportunities that foster memorable and meaningful experiences at the human scale.



Photo Credit: Author

PROJECT CONTEXT - SITE

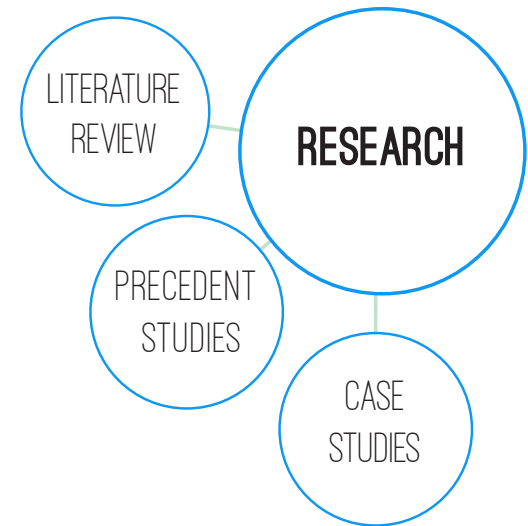
The ideal site chosen for this project is a 3.5 acre area that is currently occupied by a softball field. The site abuts the foothills and located minutes away from the downtown. This unique location in a transitional ecotone between the city and nature provides the site with many natural attributes, which include dynamic topography offering borrowed views of regional features, native vegetation, a nearby creek and hidden geothermal activity. As well, the site is in the backyard of many community services, one being the Veterans Administration. The site offers the surrounding daily users with convenient access. In addition to its accessibility for frequent visitors, its close proximity to the downtown provides high potential to draw guests and new visitors.



RESEARCH METHODS

A number of methods were used to inform the project design and to address the project goals. The research methods in this project included a combination of literature reviews, case studies, and precedent studies.

Literature reviews provided a body of knowledge with theories and concepts that relates to the project and the design application. Case studies are used to highlight existing gardens that demonstrate various ways to promote water conservation action. In addition, a number of precedent studies are included to provide examples of features that create unique sensorial experiences. Part of this research involved visiting over half of these studies in order to directly experience the featured elements. Together, the precedent studies and case studies present important implications and considerations for the project.



CONCEPTUAL FRAMEWORK

The conceptual framework of ideas underlying this project are understood through three relationships. First is the relationship between the physical design and our perceptions. Perception is seen through a holistic lens. This lens functions through physical, spiritual and mental/cognitive layers. The first layer, our sensorial response, is directly connected to design elements and physical stimuli in our environment. On the other hand, the spiritual and cognitive layers of this lens are more or less indirectly influenced. These include intersubjective differences that are unique to the individual such as memory and experience. In contrast, common experiences are part of the general contemporary culture. Both common and individual responses have a role in how a place is experienced by visitors. The physical and environmental conditions are what will be manipulated through design.

Making these manipulations theatrical and dramatic provides the opportunity to enhance certain impressions. In the conceptual framework, this falls under the category of environmental psychology, which focuses on the interplay between people and environments (“Environmental Psychology,” 2016). These environments can be social, natural, learning and built (“Environmental Psychology,” 2016). This design has the advantage of using elements with ephemeral and permanent qualities. Water is especially powerful in enhancing impressions because it is flexible and the only element on earth existing in three states of matter: as solid, liquid and vapor. This provides the opportunity to shape multiple cognitive meanings over time and place. This is how we develop memory and attraction to the physical world.

The next relationship in the framework looks at the relationship between education and experience. Because this project seeks to promote behavior, it needs to be integrated with the sensorial experience, which is the active part of gathering information in time and place. Social interaction is also key to how we understand because our exchanges with others, and sharing of thoughts are producing experiences outside of our personal lenses. The sensorial experience represents how our personal lenses impact interpretations as they differ from person to person. These are critical to informing the recipe for actions.

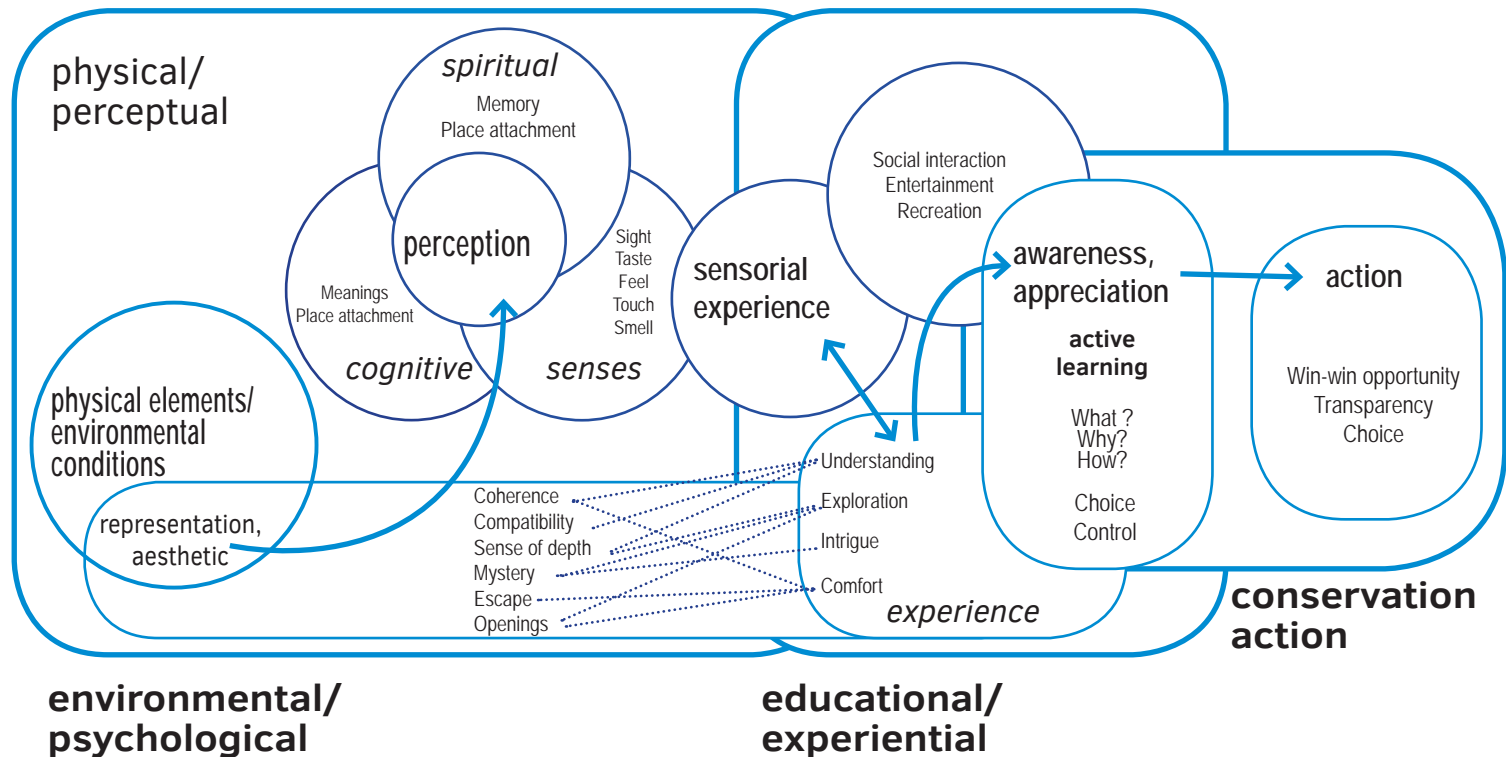
This design seeks to promote water conservation. “To promote” is defined in Merriam-Webster dictionary in one of three ways: as ‘to help (something) happen, develop or increase, to move (a sports team to a high position in a league, to change the rank or position of (someone) to a higher or more important one (Merriam Webster). In other words, ‘Promoting’ connotes the quality of providing an opportunity to visitors. Therefore, it is critical for people to know how, what and when to do things they may otherwise have not seen, heard, smelled, touched or tasted. Visitors need choice and control over these interpretive elements. Control means that they are a complement to the design, that engagement is up to the visitor’s discretion, and that they have a degree of variability in options. This project aims to engage the general public, so it is reaching a diverse group that is highly variable in their lifestyles, habits and views.

The final relationship in the framework looks at environmental psychology, which focuses on how we are affected by our surroundings. This is important because this design seeks

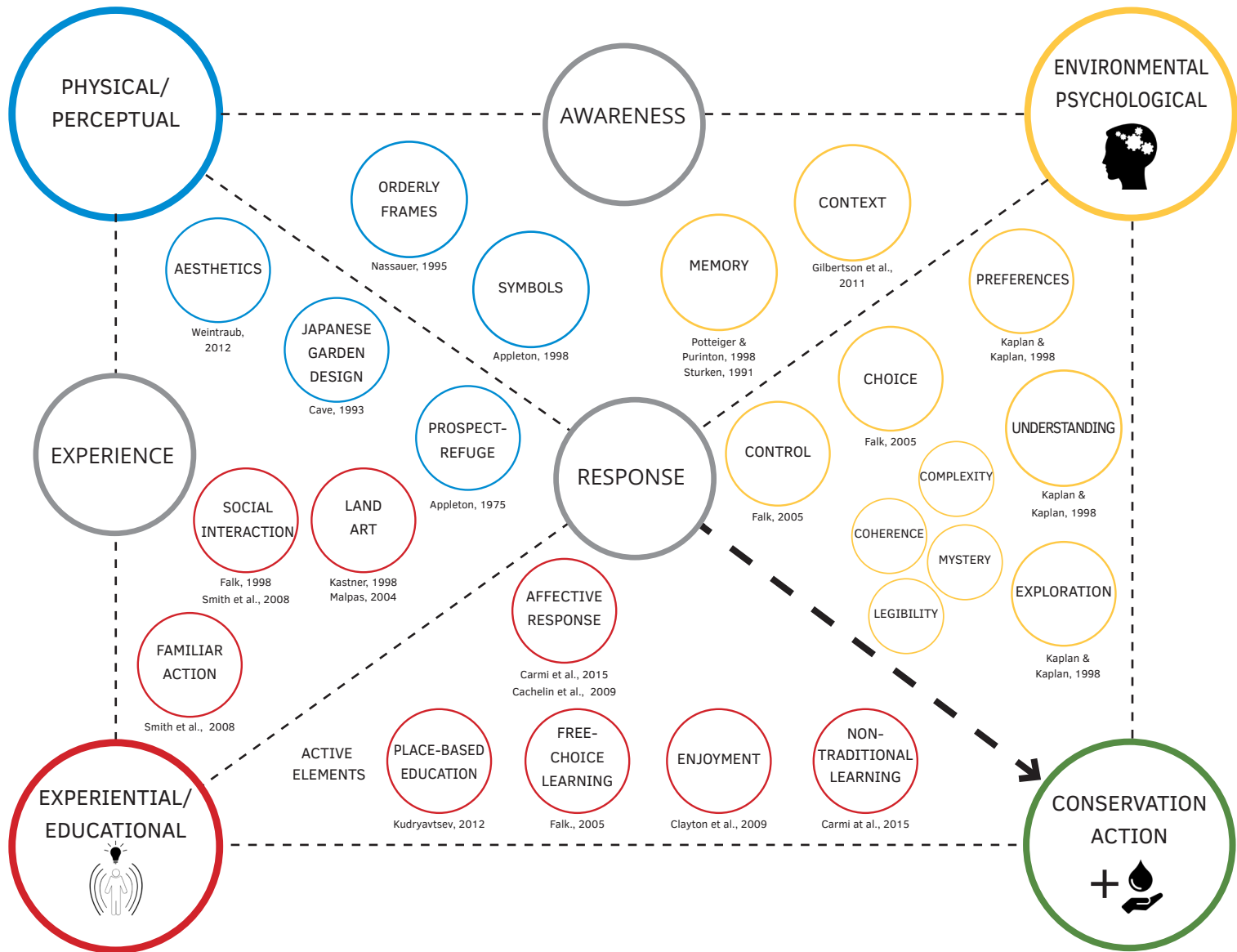
to induce understanding, intrigue, exploration, comfort as responses in the short term and long term scheme. This means that people respond with those reactions during the visit, and still feel the responses after they have left.

The three relationships are fundamental to how the design performs as a place that visitors experience, and as a result, triggers response that promotes conservation action. Response

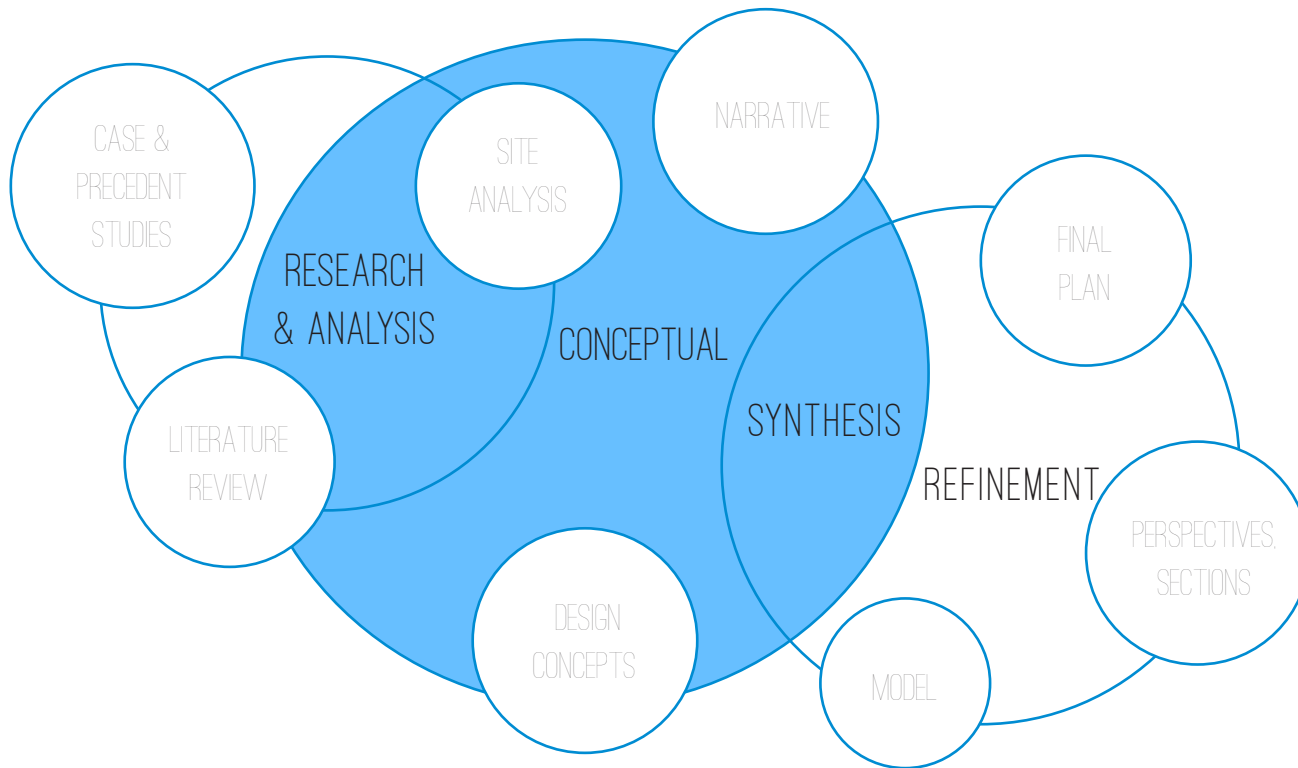
is the biggest opportunity in this design because it focuses on the experience and the take- home message for visitors.



LITERATURE FRAMEWORK

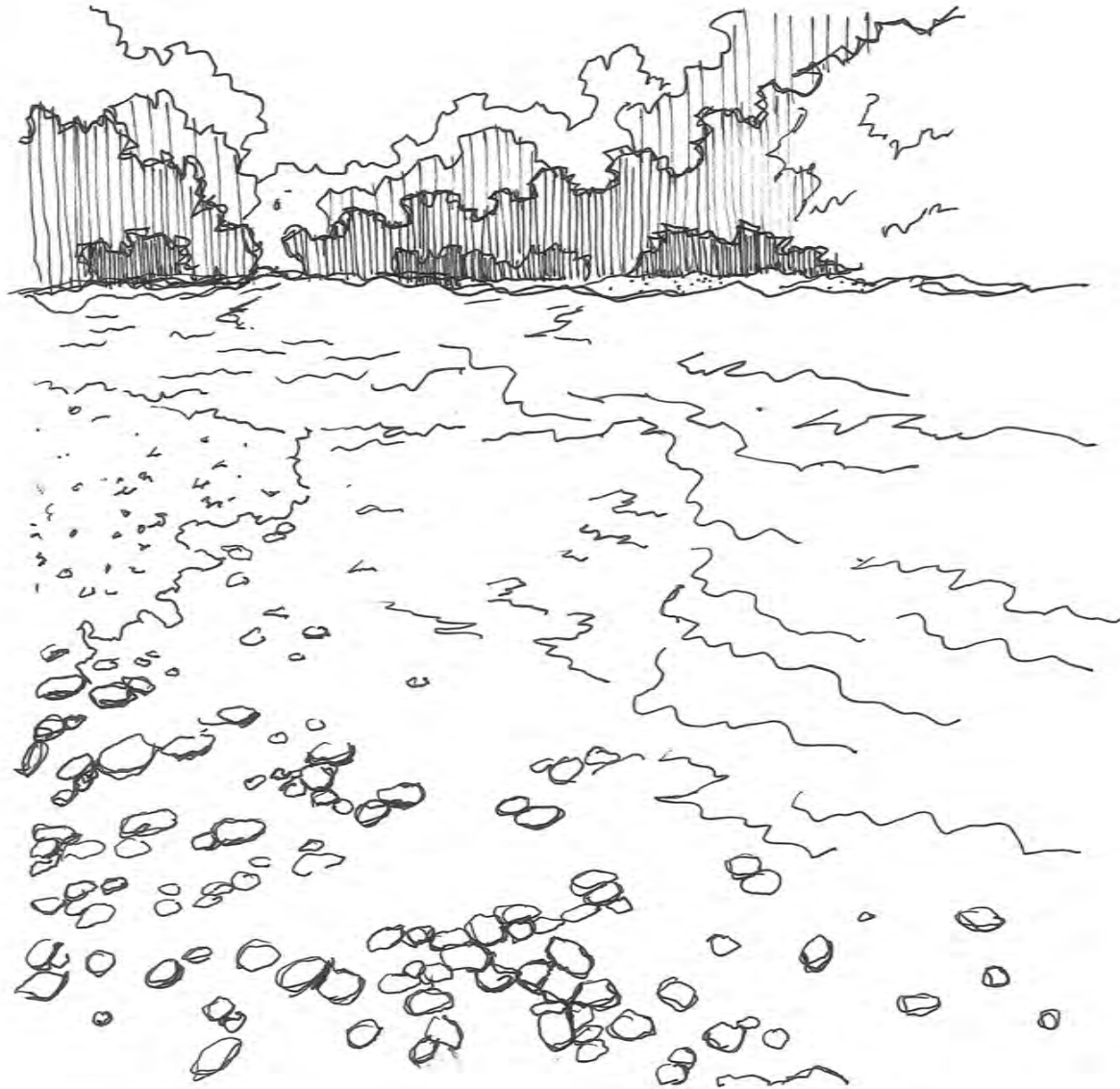


DESIGN PROCESS



Design Application: products to conceive, synthesize and refine

- Site Analysis
- Design Concepts
- Final Plan
- Perspectives
- Sections
- Construction drawings of elements



Burbling Boise River (sketch by Author)

Designing an open space that promotes appreciation of water in the community requires a holistic foundation of knowledge. This literature review explores the topics introduced in the conceptual framework that support the vision for the project. The breadth of topics provide valuable insight needed to inform the project design.

TOPIC 1: PHYSICAL / PERCEPTUAL

How we gather information from the landscape

TOPIC 2: EXPERIENTIAL / EDUCATIONAL

Strategies for integrating education and experience

TOPIC 3: ENVIRONMENTAL / PSYCHOLOGICAL

Strategies for promoting conservation behavior as an ongoing function in the design

TOPIC 1: PHYSICAL / PERCEPTUAL

How we gather information from the landscape

One topic critical to this project is the relationship between the physical environment and how it is perceived. This falls into the environmental psychology topic, which encompasses how we perceive social, learning, built and natural environments (“Environmental Psychology, 2016). Aesthetics is a concept that applies to our perception. Aesthetics is commonly defined as the study of the mind and emotions in relation to beauty (Weintraub, 2012). This is important because this project manipulates physical elements to achieve a particular response. These physical elements can be perceived in diverse ways among different people. However, it is important to know how we gather information from the environment and how impressions can develop.

Prospect Refuge Theory

British geographer, Jay Appleton suggests that the human condition develops spontaneous and immediate awareness of physical environment. This involves perceiving objects as symbols. The shapes and arrangements are the properties that symbolically suggest function, meaning and associations we perceive (Appleton, 1975).

Appleton uses the prospect-refuge theory to explain our preferences for landscapes that provide the ability to see without being seen. Seeing and hiding opportunities not only provide immediate aesthetic satisfaction, but provide advantages in survival. People respond positively to environments that provide a combination of prospect and refuge. Even though people do not consciously know why they are drawn towards these environments, they instinctively like these environments

because they provided a survival advantage earlier in our evolution.

PRINCIPLES FOR ACHIEVING AESTHETIC SATISFACTION THROUGH PROSPECTS AND REFUGES:

1. Vary objects that symbolize prospect and refuge
 2. Vary manner and intensity of symbols
 3. Vary spatial arrangement of symbols
 4. Vary equilibrium of prospect and refuge symbols
 5. Vary physical media
- (Appleton, 1975).

In this project, aesthetics will be applied with a focus on water. Appleton’s principles including the symbols can be modified to speak to modern identity. Water is a very flexible element, which provides the opportunity to showcase it in various ways to create unique experience. In regards to the opportunities of water in Japanese garden design, Phillip Cave notes , “water has interesting and special properties: it takes the shape of any vessel or container into which it is put, and is present everywhere- in humans, animals, plants in the soil and the atmosphere”(Cave, 1993, 98). Given it’s natural character, water can be symbolized in countless forms by borrowing the principles Appleton suggests.

In order to simplify the complexity of information in our world, we attach symbols and meaning to the physical world. Appleton suggests that both natural and man made objects can create ‘symbols of opportunity’ (Appleton, 1998, 263). A natural object, like a mountain and a man made object like a clock-tower can equally convey meaning as powerful ‘indirect prospect symbol’ (Appleton, 1998, 263).

While there may be natural symbols that do not necessarily depend on humans attributing symbols to elements in nature, our context and an individual's 'personal lens' certainly shapes how an individual perceives them. Appleton notes the ambiguity of symbols as they rely on personal perceptions. Since symbols serve as cognitive mechanisms to simplify information, they do not instruct us how to act (Appleton, 1998, 255). Thus, it is critical that this design fills this gap by activating peoples' emotions and providing instructional bonuses.

There is also a spiritual lens that impacts our perceptions, which involves an individual's attraction to the physical environment over time and place. Responses to water conservation based on personal experience and context have been studied. Gilbertson et al. conducted a study exploring how geographical locations and water context influences water conservation response and behavior differences and find that residents who face water scarcity have a higher level of awareness towards water conservation (Gilbertson et al., 2011). This study confirms that context influences differences in water conservation behavior (Gilbertson et al., 2011).

This can be demonstrated in the case study, The Water Conservation Garden, and precedent studies: The Springs Preserve and Water Conservation Park, which represent contexts facing water scarcity and demonstrate higher level of conservation experience.

Context and memory can contribute to differences in awareness, which raises the question of how design can effectively incorporate shared memory. However, there are ways to incor-

porate multiple impactful meanings and shared experience in design. Matthew Potteiger and Jamie Purinton introduce memory landscapes, which are places that serve as the tangible locus of memory, both public and personal. As these authors point out, these landscapes raise the question of what constitutes collective memory in contemporary culture. They suggest that one strategy for developing memorable meaning is by creating "multiple and ambiguous readings that encourage different points of view rather than one correct message" (Potteiger & Purinton, 1998, 17). Therefore, war memorials are examples of places that demonstrate how memory is constructed in public landscapes and their potential to capture sentiment without attending or catering to a specific group.

A strong example of a memorial that activates shared memory is the Vietnam War Memorial. Since its construction in 1982, the memorial has demonstrated how memorials can cause debate over how wars should be remembered, and who should be remembered (Sturken, 1991, 119). The memorial is composed of a series of black granite walls that sink into the ground. On these walls are the names of soldiers who died in the war. Each name evokes a story for visitor regardless of their memory (Potteiger & Purinton, 1998, 17). The memorial is powerful because it is minimalistic and does not try to control interpretation for visitors (Potteiger & Purinton, 1998, 17). A critical aspect of this shared memory is that the interpretations can range across the audience. Reaction to a more minimalistic representation approach typically creates controversy. The Vietnam War memorial was modified when a group protested and lobbied for a more realistic memorial. This reaction required modifying the memorial by adding a sculpture of three soldiers

posing during a moment in the war (Potteiger & Purinton, 1998, 17). It is valuable to consider memorials which demonstrate how landscapes can be platforms for shared memory and sentiment. This is not very different from how people react to art.

Cultural expectations also influence our perceptions and common experiences in the landscape. Joan Nassauer emphasizes that we are deeply attached to beautiful landscapes, and have strong cultural conventions for how an attractive landscape should look. Landscapes that are described as beautiful tend to conform to aesthetic conventions for the scenic, but they are relatively rare (Nassauer, 1997, 67). Nassauer points out how the scenic landscape aesthetic which emerged in the 18th century as picturesque as an aesthetic that has taught us to see and appreciate nature as beautiful when it is controlled (Nassauer, 1997, 68). Picturesque landscapes that arrange features for human enjoyment can distract us from the dynamic ecosystems that operate in the landscape. Our cultural expectations for how scenic landscapes should look results in misleading perceptions of natural landscapes.

Through design these cultural expectations for the landscape can be adapted so landscapes can be experienced through new lenses. Nassauer points out the complications of fixing our attention on scenic landscapes, “If we invest only the scenic with aesthetic quality, we construct a very coarse filter that leaves only rare places for examination and fails to capture the aesthetic experiences and aesthetic conventions that shape the larger landscape matrix” (1995, 163). A strategy that Nassauer introduces that relates to this filter in which we place our expectations involves the cues for care concept as an adaptive

design strategy that can imply expressions of neatness and control that align with our cultural expectations while functioning as ecologically rich, messy ecosystems (1995, 167).

One way to achieve this greater ecological quality while using vernacular language that meets our expectations is by designing what Nassauer terms as orderly frames. An example of an orderly frame Nassauer brings up is the Phalen Wetland Amenity Park, where bands of meadow plants pour out from a lawn to a wetland, which constructs a culturally expected framework that meanwhile enhances the ecological quality (1995). Enhancing this ecological quality provides multiple ecological benefits while also expanding opportunities for sensorial experience.



Scampston Walled Garden. Piet Oudolf.

Source: Scampston-Walled-Garden-website.jpg

TOPIC 2: EXPERIENTIAL / EDUCATIONAL

Strategies for integrating education and experience

This project asks to a critical question: What types of experience promote a better understanding the value of water in our lives? What is necessary to trigger response and provide a take-home message? Designing an open space that supports learning in traditional and non-traditional ways can allow it to have a transformative impact. Environmental education can be looked at through a wider lens when applied to landscape architecture, especially when designing to promote water conservation. We learn best through experience and doing. More often than not, the richest experiences activate multiple senses. Landscape architecture has the capacity to invite sensorial experiences. This supports learning in more non-traditional way that is instinctive.

Supporting learning in a non-traditional way involves integrating sensorial elements that activate affective responses. Research to date confirms the power of affective response in environmental education. In one study, Carmi et al. assess students' objective knowledge and find that affective decision making has a more dominant role on decision making than the cognitive analytical systems that makes decisions based in examination of objective knowledge (Carmi et al., 2015). This suggests the importance of emphasizing emotion over cognition. This means addressing environmental issues so they can activate people's "emotional frames," which reference the unconscious structures guiding our thinking (Carmi et al., 2015).



Source: Author.

A common thread running through environmental education is the potential zoos have in promoting sentiment for animals and wildlife based on visitor experience. In a study examining visitor emotional and social experiences at a zoo, Clayton et al. finds that is more common for visitors to claim they visit the zoo for enjoyment rather than motivation to learn (2009).

Other studies have explored how to successfully foster conservation behavior among visitors. A study by Smith et al. investigates the actions zoos should take to address the gap between zoos' ability to influence visitor behavior and desire to successfully foster conservation behavior. They find that while visitors easily recall unfamiliar actions, it does not result in subsequent behavioral change. Therefore, the study provides more insight into impacting behavioral intentions by presenting action that is already familiar to the visitor. In the design, it will be necessary to target simple and familiar activities in daily life. As well, the study demonstrates that interpretive media have a greater impact on visitor attitudes and behavior if designed around one theme (Smith et al., 2008).

Social interaction among visitors is also critical to optimizing visitors' educational experience. A study from Ross et al. investigates how visitors use educational opportunities within a zoo setting to explore effective conservation education while at the same time meeting visitors' expectations. Expectations that are usually cited by visitors include recreation and entertainment (Falk et al., 'The Effect of Visitors Agendas on museum learning', 1998 cited by Ross et al., 2009). By conducting a timing and tracking study to evaluate visitors experience based on their use of the building and educational components, authors

find that age group and social group were factors that create differences in the duration of exhibit visit. Visiting groups with children spend more time interacting socially and less time engaging with interpretive signage, while groups who did not have any children engage more with signage. As well, visitors who interacted more socially spent shorter durations of time reading signage (Ross et al., 2009).

Providing supplementary interpretive signage requires several qualities that contribute to visitor understanding. These implications are outlined by Kaplan and Kaplan.

Design implications for supplementary information elements:

1. Understandable information

- Provide information that is readily understood to encourage meaningful participation

2. Why should I read this?

- The more user friendly brochures and materials are, the more likely they will be read

3. Labels and symbols

- Maps are more helpful when located in the most appropriate area

4. Mapping for the mind's eye

- Maps are more memorable when they avoid accuracy

5. Paths and signs

- Paths and signs help visitors through journey

6. Which way is north?

- Orient maps with viewers perspective

(Kaplan and Kaplan, 1998)

Active element implications:

This more non-traditional form of learning in the landscape goes beyond content and knowledge because we seek places for enjoyment. Kudryavtsev et al. highlight place-based education and suggest that through direct place experience and instruction together, environmental education can influence sense of place (2012).

Further research supports the value that affective connections have in environmental education. In a study, Cachelin et al. assess the outcomes for students experiencing an educational visit to a Nature Conservancy program at a wetland compared to students learning in the classroom (2009). They find students who visit the wetland express a positive conservation sentiment characterized by feelings of safety, happiness, as well as a desire to learn (Cachelin et al., 2009). This self-directed desire to learn more is fundamental to the positive impact this project seeks to achieve.

While these more non-traditional approaches work with the emotions that guide our behavior, the more traditional elements are necessary for this design to promote particular actions. Learning the relevance and use allows the learner to exercise choice and control. After all, this project is seeking to promote water conservation, so these tools are a necessary component. Traditional elements that help provide understanding include signs, brochures, and maps (Kaplan and Kaplan, 1998).

In order to be successful, it is critical for visitors to have a recipe to take home from their visit. In a discussion about free-choice learning, which is a self-directed approach, Falk et al.



Source: <https://www.calacademy.org/for-members>



Source: http://www.photobj.com/wp-content/uploads/2009/07/woodland_zoo_penguin.jpg

notes the importance of learning what, how, why while allowing the learner to exercise choice and control (2005). However, personal emotions have the most influence over the “why?” component (2005).

Social interaction spaces design implications

It is important for socially interactive spaces contribute to visitor self-directed learning and discovery. William H. Whyte from the Project for Public Spaces studied the social interactions among urban plaza visitors and found some common traits among plaza elements that correlate with the quality of social use and interaction (“The Social Life of Small Urban Spaces: William H. Whyte”, 1980). Whyte’s findings relate to the idea of providing choice in various elements.

ELEMENTS THAT CAN PROVIDE VISITOR CHOICE:

- Diversity of seating
 - Moveable seating
 - Flexible seating arrangements for individuals and/or groups
 - Seating in sun
 - Seating amongst tree for enclosure, cooling, protection
- Water
 - Provide water that people can see and feel
- Sculpture
 - Helps stimulate social interaction between people through shared interest



Source: http://archive.boston.com/yourtown/news/downtown/2012/07/armenian_heritage_park_hold.html



Source: <http://tclf.org/landscapes/greenacre-park>. Author: Sasaki Associates

TOPIC 3: ENVIRONMENTAL / PSYCHOLOGICAL

Strategies for promoting conservation behavior as an ongoing function in the design

Many ideas fundamental to environmental psychology about peoples’ preferences are useful to informing this design, because it seeks to promote conservation behavior. Understanding how the physical elements can produce particular responses is critical in the development of the series of spaces the design incorporates to promote water conservation awareness and action.

Environmental psychologists Kaplan and Kaplan introduce recommendations that are significant to understanding the elements in the landscape that people prefer. They note that manipulating elements effectively supports the mind and body (Kaplan & Kaplan, 1998).

Coherence is one preference that has a positive impact because we can easily understand and make sense of how things fit together based on the repetition of material, form and function. Examples of mechanisms include paths, fences, texture and material changes (Kaplan & Kaplan, 1998).

Another important concept key to our preferences is the idea of mystery. Promising more information makes the experience more intriguing for people, which is important in this project because it should intrigue people who are both new to and familiar with the landscape alike. This means that the landscape can manipulate peoples’ perspective as Appleton emphasizes with his prospect-refuge concept (1975). As Appleton suggests, prospect implies manipulating an unimpeded oppor-

tunity to see, while refuge is providing the opportunity to hide (Appleton, 1975). Various mechanisms including fog, mist, gates, windows, winding roads, vegetation layers can be used to create this result (Kaplan & Kaplan, 1998).

The idea of promising more information is fundamental to making the design most impactful for all visitors regardless of familiarity with elements. This references a concept Kaplan & Kaplan present called, ‘being away’ which involves providing endless qualities of interest (Kaplan & Kaplan, 1993). This concept resembles the idea of refuge, which reinforces the idea of hiding while suggesting a new dimension of creating a place where people feel the quality of “being in a different world,” and “distraction from routine” (Kaplan & Kaplan, 1993). This can be created through mystery as well as our preference for a sense of depth. Kaplan and Kaplan explain mystery and complexity work together to provide exploration opportunities.

Complexity entails having enough variety to provide new learning opportunity and allowing surprises to unfold (Kaplan & Kaplan, 1998). This quality of the unexpected is especially critical for this design, which can be most impactful with dramatic effects like a form of theatrical performance. In this design, the visitors are envisioned as both as audience and actors

PREFERENCE MATRIX

	UNDERSTANDING	EXPLORATION
2-D	COHERENCE	COMPLEXITY
3-D	LEGIBILITY	MYSTERY

(Kaplan & Kaplan, 1998).

during and following the performance. Fences and screens also contribute to this degree from the viewer (Cave, 1993, 72). These elements can effectively frame significant views beyond.

Japanese garden design can also effectively provide devices that facilitate the idea of prospect that Appleton introduces. The Japanese Garden Design principle shakkei, which literally means “borrowed scenery,” entails capturing a view or element outside the garden to become part of the composition (Cave, 1993, 84). This design device can foster appreciation beyond the immediate, making it impactful and effective (Cave, 1993, 84). a critical device to this principle is that a simple wall or clipped hedge with well defined horizontal top frame the view. This is illustrated in the stunning design at Entsu-ji, Kyoto where the clipped hedge immediately behind the rocks and punctuation of the tree trunks capture Mount Hiei in the background (Cave, 1993,84). Devices such as this create impact through contrasts in the vertical planes.

The principle of contrasts in Japanese garden design heightens the impact of surprise for visitors. This happens regardless of the viewers level of understanding the design or appreciation of the gardens philosophic underlings (Cave, 1993, 78). Application of this concept is illustrated by the stepping stones path at Hatura Imperial Palace in Kyoto, which create a contrast with the hill backdrop and heightens viewers expectations (Cave, 1993, 78).

Principles of Japanese Garden Design help to facilitate exploration for the visitor. Sima Eliason highlights various ways that Japanese design can maximize the illusion of depth similar to how artists maximize depth in 2-D works of art (Kaplan and Kaplan, 1978).

MECHANISMS TO CREATE ILLUSION OF DEPTH:

- Foreground – larger trees and vegetation with larger foliage
- Background – small trees and finer foliage



“Shakkei” (“borrowed scenery”)
Image: Shakkei at Entsu-ji, Kyoto

1. Simplicity

- Design elements nearby in detail and distant element simply using:
 - Rocks
 - Water
 - Plants

2. Asymmetry

- Asymmetrical arrangements create interest

3. Divide garden into portions

- Meander paths to achieve distance
- Features placed at angles in a rectangular space give effect of greater distance including:
 - Pools
 - Garden beds



Asymmetry, Bloedel Reserve Japanese Garden

Source: Author.



Enclosure



Contrast, Stepping Stone Path at Katsura Imperial Palace

Source: Author: William Corey



Divide garden in portions

Source: Author.

- Paths

What opportunities does land-art offer to enhance exploration in the design?

Connections over time and place can promote exploration. Land Art provides such opportunities as an artistic response that began in the 1960's driven by the desire to take art and connect it with the earth in time and place (Kastner et al., 1998). In other words, land artists such as Andy Goldsworthy seek to go beyond representing the natural process to a fixed 2-D painting and allow the natural process to become the piece of art itself.

This is evident in multiple works from Goldsworthy, who explores the passing of time in site-specific works using a range of materials, forms and processes that embrace the changes (Malpas, 2004). Celebrating this passing of time provides opportunities to celebrate the ephemeral qualities in the landscape, which in turn open opportunities for exploration and mystery.

Andy Goldsworthy has created a number of works that respond to the change in time on a daily basis. 'Clay Wells' showcases how daily rhythms in clay, precipitation and heat produce artful effects. The work is an installation in New Mexico composed of three square wells with stone walls. Raw clay covers the bottom of each well. Within each well, Goldsworthy has included a modified concrete subbase which incorporates a high relief circle in one, a concentric circular edges in another and a domed middle in the third well.



Clay Wells. Andy Goldsworthy. Raw clay, stone.
Installed July-August. 2008.

(Donovan et al., 2010)

Using simple materials and allowing the land to shape the work, the three wells create a work that references hydration and dehydration. Exposed to the heat and rainfall, these wells, are able to embrace the effects of elements like the sun and rainfall. The areas with shallow clay crack in extremely dry conditions. In the areas where clay is deeper, the slower drying action produces deep fissures. In addition, the clay wells collect water, causing the former images seen in the clay to wash away and then reappear again once the well water repeats the drying process. Influenced by precipitation, clay, and heat, 'Clay Wells' creates an ongoing cycle of appearance and disappearance (Donovan et al., 2010).

What is the impetus for promoting conservation action?

Conservation action is promoted among various different sectors today. Review in this ways that companies and programs invites people to action holds value from this project seeking to promote conservation behavior. Driving forces that invite support for causes in several drivers are identified here: transparency, choice and providing mutual win-win opportunities. These provides insight for how the design invite people to take action.

One driving force that lies at the forefront of conservation action is transparency. Patagonia is a company that provides their customers with many opportunities to build awareness and take action. As a clothing brand, they have had numerous practices, campaigns and activities that promote more sustainable uses of materials and their information about products lifespan. One effort the company has made to foster interest

and raise awareness is their Footprint Chronicles. Each product on their website includes a link to the Footprint Chronicles page which lists each factory that manufactures Patagonia products, the profiles of their suppliers and mill manufacturers. In addition, their interactive Footprint map represents farms, where commodities like the cotton used for products are born or consolidated. By sharing this information with the public the company is working towards maximum transparency so customers can conveniently understand the origins and value of the products ("Patagonia Environmental and Social Initiatives," 2015).

Another driving force for conservation action is providing win-win opportunities between the programs and supporters. The Shedd Aquarium has a number of conservation and sustainability programs that invite guests and scientists alike to become involved in conservation action. The Great Lakes Badging Program is a win-win program that works between

BEST CHOICES	GOOD ALTERNATIVES	AVOID
Abalone Arctic Char (farmed) Bass: Striped (US hook & line, farmed) Catfish (US) Clams, Mussels, Oysters Cod: Pacific (US) Crab: Dungeness & Stone Halibut: Pacific (US) Lobster: Spiny (CA, FL & Mexico) Sablefish/Black Cod (AK & Canada) Salmon (AK) Sardines: Pacific (Canada & US) Scallops (farmed) Shrimp: Pink (OR) Tilapia (Ecuador & US) Trout: Rainbow (US farmed) Tuna: Albacore/White canned (Canada & US troll, pole) Tuna: Skipjack/Light canned (US troll, pole) Tuna: Yellowfin (US troll, pole)	Basa/Pangasius/Swai Cod: Atlantic (imported) Cod: Pacific (imported) Crab: Blue Crab: King (US) Flounders, Soles (US Pacific) Grouper: Red (US Gulf of Mexico) Lobster: American Mahi Mahi (US) Monkfish (US) Pollock: Alaska (US) Salmon (CA, OR & WA wild) Scallops (wild) Shrimp (Canada & US wild) Squid (US) Swordfish (US) Tilapia (China & Taiwan) Tuna: Albacore/White canned (US longline) Tuna: Skipjack/Light canned (imported troll, pole and US longline) Tuna: Yellowfin (imported troll, pole and US longline)	Abalone (China & Japan) Caviar, Sturgeon (imported wild) Cod: Pacific (imported) Crab: Red King (Russia) Lobster: Spiny (Brazil) Mahi Mahi (imported) Orange Roughy Salmon: Atlantic (farmed) Sharks Shrimp (imported) Snapper: Red (US) Squid (imported) Swordfish (imported) Tuna: Albacore/White canned (except Canada & US troll, pole and US longline) Tuna: Bluefin Tuna: Skipjack/Light canned (except troll, pole and US longline) Tuna: Yellowfin (except troll, pole and US longline)

Source: <http://aqua.org/-/media/BlogImport/seafoodwatchpng.png>

the aquarium and students as well as educators. It provides the educators with a free, continuous learning opportunity that allows educators to receive a badge upon completion. The Aquarium benefits from this program by hearing about the participants experience including their enthusiasm for science (“Great Lakes Science Teacher Badging,” 2016).

Providing supporters with choice is another impetus for conservation action. This is highlighted by the Monterey Bay Aquarium who advocates for sustainable fisheries and aquaculture through their Seafood Watch program. This program invites consumers and businesses to support healthy oceans be part of the sustainable fisheries and aquaculture solution. Their program share this information and provides various choices of wild and farmed fish. The program outlines three simple ways people can be part of the solution (“Sustainable Fisheries and Aquaculture,” 2016).

Ask – Seafood Watch suggests consumers begin asking businesses if they sell sustainable seafood to express their concern.

Buy – Seafood Watch program offers a consumer guide that provides consumers with choices. The Seafood Guide Consumer Guide includes a “Best Choices” list with species of fish that are more sustainable for consumption as well as “Good Alternatives” and “Avoid” lists (“Consumer Guides,” 2016).

Choose – Seafood Watch includes a list of partners through their website and mobile app providing consumers with a resource for finding sustainable seafood. The Partnership

categories include restaurants, businesses, and conservation partners (“Our Partners,” 2016).

What are the opportunities for partnerships in the community?

The diverse array of groups and people within Boise affords this project with various opportunities to build strong partnerships. Teaming up with these partnerships is essential to supporting the successful use, management and maintenance of this project design. Forming these partnerships will create endless number of win-wins for the Boise community.

The Student Conservation Association

This program would be a strong potential ongoing maintenance partner for this design. The association partners with land agencies of at various different scales and partners with non-profits at a local level (Student Conservation Association). As well, this would be an excellent opportunity for young adults from a broad range of disciplines to explore their careers and exercise their training through education and maintenance. This project can provide an outlet for students to share,



Source: <http://www.foothillsschool.org/page.cfm?p=352>

exercise and develop their learning and career exploration.

Boise Urban Garden School

Management of this project could create an opportunity for The Boise Urban Garden School to expand their educational opportunities. As a program centered in community gardening and environmental stewardship, this designed place that promotes conservation of water could be a complimentary extension of their program which is primarily focused on gardening. Providing a space for activities, projects and installations would optimize use of the space with educational partners like the Boise Urban Garden School and Foothills School.

Foothills School

There is also opportunity to involve schools in the area that seek opportunities to take learning beyond the walls of the classroom. The Foothills School, a private school in Boise, has a program that emphasizes local service learning as well as projects based learning outside of school ("Project Based Learning," 2016). The designed space could become a setting and platform for the student learning opportunities. Students can use the space for testing, implementing and exploring their projects.

Idaho Master Gardener Program

Another potential partner in the community is the Idaho Master Gardener Program. Master Gardeners are passionate about plants, and learning, giving, teaching and receiving opportunities ("About Idaho's Master Gardeners"). This design project would provide the strong outlet to keep expanding these activities in a setting involved with the community at large. As well,

Master Gardeners must complete a minimum volunteer hours and training practicum to receive certification ("About Idaho's Master Gardeners"). This would be a potential partnership to support the ongoing maintenance of the space while also providing community outreach opportunities.

How can exhibit and landscape design elements be balanced and serve intended uses?

There are many opportunities for integrating landscape and exhibit design so they work together mutually and provide a unique user experience. Evaluating the case studies and precedent studies to follow provides insight to how these can be balanced in design while fulfilling their intended uses.



Source: <http://web.cals.uidaho.edu/hortmagic/master-gardeners/>

CASE STUDIES



WATERWORKS GARDENS
Renton, WA



WATER
CONSERVATION GARDEN
El Cajon, CA



AUSTRALIAN GARDEN
Melbourne, Australia

The following pages include research highlighting several gardens which demonstrate how water conservation can be promoted in public space. The three case studies were chosen because they demonstrate a range of approaches to promoting conservation based on their elements, narrative and overall goal. The three case studies are evaluated based on the following questions:

- What types of elements promote learning?
 - EXPERIENTIAL- interactive
 - ACTIVE - outcome-based, educational
 - PASSIVE - intriguing
- How do these designs promote water conservation and what are the take- home messages?
- What makes the place engaging for visitors?
- How do these designs balance exhibit design with the landscape while serving their intended uses?

WATERWORKS GARDENS

PROGRAM SUMMARY

Location: Renton, Washington. King County South Treatment Plant.

Date Designed/ Planned: 1996

Cost: \$1.6 million

Size: 8 acres

Landscape Architect: Jones and Jones Architects and Landscape Architects

Artist: Lorna Jordan

Client: King County

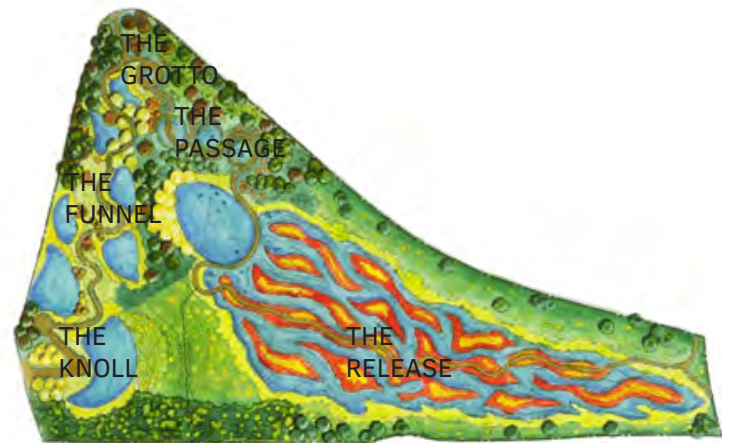
Consultants: Brown and Caldwell Consulting Engineers. Jack Warburton (consultant team lead engineer); Bill Burwell (treatment plant manager), King County Department of Natural Resources Wastewater Treatment Division

PROGRAM

Waterworks Gardens is an example of a public space promoting water conservation that successfully integrates art, education and infrastructure in public space. The gardens demonstrate how art can effectively educate visitors about the journey of stormwater treatment given the experiential, didactic and eco-conscientious qualities of the garden (Gonzalez, 1998). The garden provides the public with numerous benefits including 5 “rooms” that allow visitors to observe water natural processes and the opportunity to connect with the cycles of water (Gonzalez, 1998). This experience is heightened by the backdrop of the gardens, which includes a business park, quarries, a heron rookery and shipping companies (Gonzalez, 1998). The gardens in 2016, twenty years after opening, are in disrepair and overgrown. Although the original design intent was creative,



The Knoll



Illustrative Plan of Planting Plan

this has been diminished and lost due to poor maintenance.

EXPERIENTIAL & PASSIVE ELEMENTS

Visitors experience five unique rooms at Waterworks Gardens. Artist Lorna Jordan explains that “the progression of five garden rooms intimately engage visitors and follows the story of water’s cycle: impure, working, mysterious, beautiful and life-sustaining” (Gonzalez, 1998).

Each room demonstrates the successful choreography of unique experiential elements. The first garden is the Knoll, which showcases stormwater splashing into a series of ponds. Ten standing basalt columns frame forced perspective of the first pond in the sequence. Here, visitors can hear the sound of water rushing underground, which leads them to the next element. This is followed by an outlook at the culmination point of the wetlands (Gonzalez, 1998).

This is followed by The Funnel, where a series of terraced ponds emphasize the role of plants in the journey of water purification. This is followed by The Grotto which is a fertile, moist room signifying the cleansed stormwater passing through at this stage. Its seed pod shape represents this fertility. This symbol, along with the gardens as a whole, represent a flowering plant (The Forester). A path passing thorough The Passage evokes a sense of calm as Lombardy poplars and three circular ponds symbolize fruit (Gonzalez, 1998).

Visitors experience the continuation of stormwater along the journey through the fifth room, The Release, where water



The Release



The Grotto

passes from a pond to a wetland. Following this, it passes to a nearby creek.

ACTIVE ELEMENTS

Although the garden is composed of mostly experiential and passive elements, there are active elements that are supplementary to the gardens. Active elements in the garden include docent-led tours that partner with the South Plant Wastewater treatment operations to inform visitors about multiple forms of water treatment ('School Programs').

COMMUNITY PARTNERSHIPS & MANAGEMENT

From the start of the project, artist Lorna Jordan was active in leading collaboration across agencies and disciplines to support an adequate budget for the gardens. The wastewater treatment plant originally allocated a \$650,000 art budget for the gardens, but through Jordan's creative team collaboration, the county budget for the detention ponds and wetland restoration budget were combined to pay for the gardens collectively ('Water Works Gardens', 2004)

Management of the Waterworks Garden is made possible by the King County Wastewater Treatment Division ("Waterworks Gardens, 2016).

In addition, The King County Wastewater Treatment Division partners with volunteers and, businesses, organizations and local community groups providing numerous stewardship opportunities. The program invites the community to volunteer in docent opportunities to lead tours for kindergarten through 2nd grade school groups ('School Programs').



Tours

"This is an example of how one can take a very difficult necessary function in a city or a region, which is usually considered some sort of blight on the landscape, and turn it into a great work of art." - Lawrence Halprin (Gonzalez, 1998)

USE ANALYSIS

Waterworks Gardens functions as a space that purifies water for community, but the gardens have become a popular destination as a public space for the community. Free and open to the public year round, the gardens seek to promote education about water treatment in the community (“Waterworks Gardens, 2016).

Mark Sakagami, the senior gardener at the South Treatment Plant, who spends the garden’s most frequent visitor says the project is 100% successful in one are being public approval (‘Water Works Gardens’, 2004). Sakagami states, “when I tell people we spent \$ 1.1 million on this project, they say it was worth it,” explaining that visited use the park mostly between 10 am and 3 on the weekdays. Many visitors include employees at neighboring office buildings who stop by for a walk or impromptu outing (‘Water Works Gardens’, 2004).

PROJECT SIGNIFICANCE

This case study is significant to this design project because it demonstrates how a garden successfully educates through the form of public art. The series of experiential elements and natural materials that are used to tell the story of water through abstract language is effective in telling the story and educating visitors about the journey of water. In addition, Waterworks demonstrates how exhibit design can be balanced with the landscape and serve intended purposes. As part of a water treatment plant, the gardens expose the public to systems the public overlooks on a daily basis. As Lorna Jordan emphasizes, projects like this allow people to take home a better

understanding of water, “People need to make contact and understand the mysteries of water” (‘Water Works Gardens’, 2004). At Waterworks Gardens, visitors have a deeper understanding of water cycles by following its journey in an engaging experience.



East entry to 3rd garden room, The Grotto

THE WATER CONSERVATION GARDEN

PROGRAM SUMMARY

Location: El Cajon, California

Date Designed/ Planned: 1991

Cost:

Size: 5 acres

Landscape Architect: DPA Design

Client: East San Diego Count

Consultants:

PROGRAM

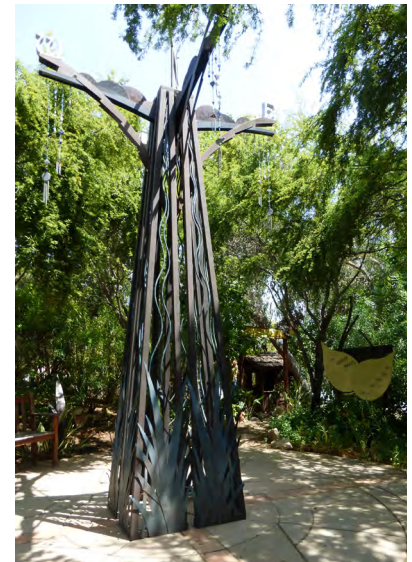
The Water Conservation Garden at Cuyamaca College is a garden that provides the community of east San Diego with an outdoor classroom for avid gardeners, a passive landscape and a venue space (“Mission”, 2016). Proposed by East San Diego County as a conservation tool, the garden is primarily focused in education, with a mission to, “educate and inspire through excellent exhibits and programs that promotes water conservation and the sustainable use of related natural resources” (“Mission”, 2016). The garden incorporates various themes that showcase water conservation including a vegetable garden, native plant garden, how-to displays, as well as exhibits demonstrating use of drought-tolerant plants from around the world (“Mission,” 2016).

EXPERIENTIAL & PASSIVE ELEMENTS

Passive elements in the garden include sculptures. The landscape architects, DPA Design, designed these site-specific sculptures for the garden to enhance the story (“Water Conservation Garden”, 2016). By using sculptural elements that are familiar to the casual visitor, such as a house facade, pruning clippers, and concrete pipes, the sculptures invite visitors to explore exhibits that demonstrate applications in everyday life.



Pathways & Sculptures



Garden Sculptures

ACTIVE ELEMENTS

The garden features many active elements ranging from interpretive signage and demonstration gardens to tours and classes that help fulfill the garden's educational mission.

Active elements include interpretive signage that draws in visitors' attention. Interpretive signage in the shape of leaves provides quick captions for visitors to get the ideas and basic understanding ("Water Conservation Garden", 2016). The designers' goal was to make the messages accurate, entertaining, fun and easy to read ("Water Conservation Garden", 2016).

A series of demonstration gardens in the Water Conservation Garden are designed to provide visitors with practical take-home messages. Introducing drought tolerance is one of the factors that is demonstrated throughout these gardens ("Exhibits", 2016). The garden showcases groundcover alternatives with simple captions highlighting the name, water usage, and applications in low water alternatives for turf ("Low Water Alternatives for Turf", 2016). In addition to signage and demonstration gardens, the garden holds tours, field trip activities that further the mission of promoting water conservation ("Garden Tours", 2016).

COMMUNITY PARTNERSHIPS & MANAGEMENT

Support for the garden management and maintenance is made possible through various partnerships. The garden is owned by Six Joint Powers, which contracts management with non-profits including the Friends of the Water Conservation ("Partners & Supporters", 2016). The Garden is supported financially in various ways including water district dues, memberships,



Interpretive Signage



Mulch Exhibit



Low Water Alternatives for Turf Exhibit

donations and grants (“Mission”, 2016). Special events maximize the financial support for the Garden opens to the community and rents the space for venues such as weddings. As well, the sales from the gift shop provide additional funding (“Mission”, 2016).

USE ANALYSIS

As a space geared towards education, the Garden provides a range of learning opportunities for users. The garden offers self-guided tours as well as guided tours (“Garden Tours”, 2016). Each Saturday, the garden holds free, docent-led tours open to the public (“Classes & Workshops”, 2016). According to Pam Meisner, Director of Education and Outreach at the garden, one of the most well-attended educational programs is the Smarty-Plants program. In the fiscal year of 2015-2016, this program was attended by over 80,000 adults and children (personal communication, August 22, 2016).

The programs offered by the garden target a range of users ages. Programs offered included youth school field trip , adult classes for avid and beginner gardens. There are many new learning opportunities as the garden offers several classes per month that are open to the general public (“Garden Tours”, 2016). These classes usually fill up with 20-30 attendees per class.

The garden is also an exceptional example of community outreach. The general public can make appointments for landscape design consultations, which mutually benefits the designers and community (‘Landscape Design Consultations’,



Garden Tours



Design Consultations

2016). According to Pam Meisner, these hour-long consultations are extremely popular and in high demand. The garden schedules have a designer for the full day on two Saturdays each month (P. Meisner, personal communication, August 22, 2016).

PROJECT SIGNIFICANCE

This case study is significant to this design project because it demonstrates how a space successfully incorporates a range of elements that target water conservation. The garden provides an exceptional example of various active elements that promote water conservation. In the design project these will be incorporated as supplementary elements, so this model provides an example of their effective application. In addition, the Water Conservation Garden demonstrates how a space promoting water conservation can effectively be used not only as an educational space, but as a space that is enjoyed by the public ranging from passive outings to special events.



THE AUSTRALIAN GARDEN

PROGRAM SUMMARY

Location: Royal Botanic Gardens, Melbourne, Australia

Date Designed/ Planned: 2005

Construction Completed: 2012

Cost: \$30 million +

Size : 25 hectares

Landscape Architect: Taylor Cullity Lethlean & Paul Thompson

Client: Royal Botanic Gardens

Consultants: Paul Thompson, Edwina Kearney, Greg Clarke, Mish Eisens

PROGRAM

The Australian Garden is an example of a garden that successfully integrates narrative, art and education. The garden is meant to education people about their place in the Australian environment and to learn about native plants. The garden, which covers 61 acres(25 hectares) and set within the Cranbourne Gardens, integrates art, architecture, Australian flora and the landscape in an immersive and inspiring display ("The Australian Garden", 2016). In addition to being an inspiring landscape, the Australian Garden provides visitors with active elements as well. The Garden provides visitors with information in how to use plants in their home garden ("The Australian Garden", 2016). As a garden that aims to be truly didactic, the garden goes beyond displaying native flora and shows diverse landscape typologies of Australia to showcase the flora as closely to its natural habitat as possible (Penn, 2014).



Melalueca Spits

Photo Credit: Taylor, Cullity Lethlean & John Gollings

Visitor
Center
Red Sand
Garden
Exhibition
Gardens
Amphitheatre
Gibson Hill
Cultivar
Garden



Melalueca
spits
Gondwana
Garden
Kiosk
Display
Gardens

EXPERIENTIAL & PASSIVE ELEMENTS

Visitors can experience a number of unique spaces within the Australian Garden. The garden is designed to take visitors in a conceptual journey of water through Australia with different areas that represent a range of Australian landscape typologies (Penn, 2014).

Along this journey, the paths are not intended to follow a linear sequence, rather, they provide a flexible experience open to discovery (Hobson, 2013). As part of the designer's intent, Scott Adams says, "You go there and make your own journey and your own discoveries and take home your own findings," providing insight for making the design provide endless exploratory opportunities (Hobson, 2013).

ACTIVE ELEMENTS

Active elements in the Australian Garden include display gardens that provide visitors with take-home messages. The five Exhibition Gardens are one example. These domestic scale gardens provide examples of using Australian native flora in gardens for visitors, which allows the garden to increase its impact (Penn, 2014). Designer, Scott Adams of Taylor Cullity Lethlean emphasizes that the garden goes beyond the display of native plants and takes them to another level by "celebrating the qualities and properties of them" (Hobson, 2013).

In order to increase visitors sense of discovery in the garden, the number of signage elements in the garden is limited (Hobson, 2013). This was part of the designer's intention, which is for visitors to form their own experience rather than



Display Gardens

Photo Credit: Taylor, Cullity Lethlean & John Gollings



Red Sand Garden

Photo Credit: R. Reeve

telling them what they are experiencing through signage (Hobson, 2013).

Active elements providing practical take-home messages for visitors can be found in the display gardens (“The Australian Garden”, 2016). One of the display gardens include, ‘The Home Garden, which emphasizes design opportunities while taking visitors on a trip through Australian garden design history, demonstrating options for using native plants (“The Home Garden”, 2016). Another display garden includes the “How To Garden”, which provides visitors with an outlet for practical advice and hands-on gardening demonstrations with Garden Ambassadors (“How To Garden”, 2016).

In addition the demonstration gardens, there are many educational classes and programs that promotes conservation. One of the most popular programs, ‘Conservation Matters,’ provides a hands-on experience that educates visitors about how to create impact at a local level and provides visitors with take-home strategies.

By designing themed experiences for visitors, the Australian Garden seeks to inspire visitors to see Australian flora in new ways (“The Australian Garden by Taylor Cullity Lethlean and Paul Thompson,” 2013). ‘The Diversity Garden’ is a display garden that represents distinct plants from each bioregion in a series of planted strips. Each ‘bioregion’ strip has its own unique mulch and soil (‘The Australian Garden,’ 2009).



The Home Garden



The Diversity Garden



The Home Garden

COMMUNITY PARTNERSHIPS & MANAGEMENT

Community partnerships and garden membership are key to the garden's successful management and maintenance. The Friends of Cranbourne, patron donations, community groups and Maud Gibson Trust are central to the ongoing management and maintenance.

The garden is maintained by small team of hired qualified horticultural staff. As well, some volunteers help the staff maintain the garden. Volunteers at the garden called Garden Ambassadors are trained to give walking tours and provide visitors with native plant advice in the garden seven days a week.

USE ANALYSIS

Not only is the garden free and open to the public, but it serves a range of user ages as well. The garden leads many after-school programs, learning programs, professional development seminars and school partnerships that help optimize the impact of the garden.

PROJECT SIGNIFICANCE

The Australian Garden provides an example of a garden that emphasizes education through a sensory, experiential approach and successful narrative. The designers' intent to showcase the unique qualities of the plants implies that there are opportunities for a similar approach in this project, which seeks to show water to the public in new ways that captures their attention. This garden is a great example that takes an approach geared towards the emotional, physical and sensory experience making it a popular space among a range of users.



Photo Credit: Taylor, Cullity, Lethlean



Garden Tours

Photo Credit: Elizabeth Barton

DESIGN IMPLICATIONS

PROMOTING LEARNING

- Support a range of user interests, needs and interpretations
- Design elements that are accessible to range of ages and abilities
- Create opportunities that engage all sense
- Design space through narrative about water
- Use sculptural elements that are simple, unique and familiar
- Provide continuous opportunities for exploration throughout the year
- Create elements with simple, durable materials

PROMOTING WATER CONSERVATION

- Design themed exhibits that feature familiar subjects
- Showcase the unique properties of water
- Incorporate simple supplementary take-home messages that promote simple changes in behavior &/or routine that provide a step-wise approach

BALANCING DESIGN AND EXHIBIT DESIGN IMPLICATIONS

- Seek a location that favors incidental discovery
- Create gathering space for users to enjoy for social activity, relaxation, education, contemplation
- Create non-linear circulation routes/paths that favors a flexible experience
- Ensure space provides access for visitors coming to space as a destination

ELEMENTS & DESIGN CONSIDERATIONS

	Water Conservation Garden	Water Works Gardens	Australian Garden
Sculptures, art	●	●	●
Take-home messages	●		●
ADA Accessible paths	●	●	
Water Features	●	●	●
Parking	●		●
Fence	●	●	
Amphitheatre gathering space	●		●
Circulation alternatives	●		●
Wayfinding Signage	●		●
Interpretive signage	●		●
Planting demonstration	●		●
Neighboring paths/path systems	●	●	●
Rest rooms	●		●
Building/ visitor center	●		●

PRECEDENT STUDIES



'STONE RIVER'
Andy Goldsworthy
Palo Alto, CA



MILL CREEK CANYON EARTHWORKS
Herbert Bayer
Kent, WA



'EXHALE'
Mikyoung Kim
Chapel Hill, NC



'RAIN DRUMS'
Dan Corson
North Bend, WA



SEATTLE CENTER WATER WORKS
Seattle, WA



KIRYAT SEFER PARK
Ram Eisenberg
Tel, Aviv, Israel



CORNERSTONE
GARDENS
Sonoma, CA



AQUA MAGICA PARK
Agence Ter
Bad Oeynhausen & Lohn,
Germany



CONSERVATION GARDEN PARK
DPA Design
West Jordan, Utah



SPRINGS PRESERVE
Las Vegas, NV



JOHNSON PIT #30
Sea Tac, WA

The following pages present a number of projects that provide inspiration and insight for this project. Whereas the case studies are evaluated based on their elements, these precedent studies have been selected for their distinguishing features that inspire potential for this particular project based on their unique expression and exciting sensory experiences.

The precedent studies range in their materiality, form, approach, location and the senses they can captivate. A number of the studies are oriented towards water conservation goals, such as the Conservation Garden Park in West Jordan, Utah and the Springs Preserve in Las Vegas, These examples target conservation in arid landscapes, which is significant to see how elements in these gardens promotes water conservation. Several precedent studies such as 'Exhale' by Mikiyoung Kim, Aqua Magica Park and Kiryat Sefer Park are included as examples with unique and captivating features that do not necessarily target water conservation, but are popular among their users.

Other precedent studies are art-based, including the Water Drums by Dan Corson, The Stone River by Andy Goldsworthy, and Cornerstone Gardens, which demonstrate a successful integration of exhibit and landscape.

AQUA MAGICA PARK

SUMMARY:

Designer/artist: Agence Ter

Location: Bad Oeynhausen & Lohn, Germany

Date Built: 1997

Client: Landesgartenschau (regional garden show)

Size: 35 Hectares (86 acres)

Set within a former spa region in northwest Germany, Aqua Magica Park is a popular park among families that celebrates the spiritual power of water. During the process of designing the park, landscape architect Henri Bava discovered geological structures and healing mineral water at the site. These magical wonders are brought to the surface and showcased with unique elements such as with the giant water crater. Steel and stone gabion walls flank the crater entrances, which frame views of the geyser and entices visitors to enter. Visitors can discover the emotional power of water as they descend to the bottom of the 18 meter deep crater. At the bottom of the spiral, a dark pool of water projects geysers upwards in regular intervals (Parc Aqua Magica - Agence Ter).

DISTINGUISHING FEATURES:

- Showcases water in multiple forms, liquid and vapor
- Visitors experience the crater through touch, sight and sound
- Unique and accessible underground water exhibit

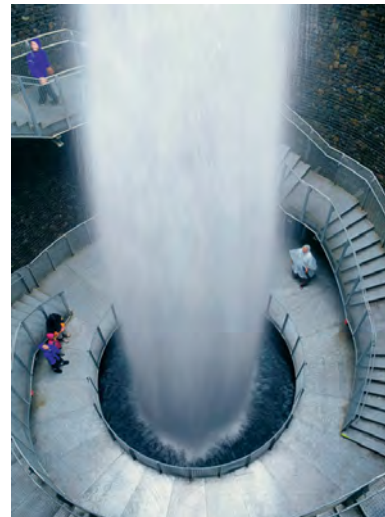


Photo Credit (all): Agence Ter Landscapes Architects, Photographer: Alexandre Petzold.* (With permission)

MILL CREEK CANYON EARTHWORKS

SUMMARY:

Designer: Herbert Bayer

Location: Kent, WA

Date Built: 1982

Client: King County Arts Commission and Department of Public Works

Size: 2.5 acres

Water from Mill Creek is directed through grass berms through the park. Some of the water from Mill Creek is directed to flow through split rings and travels to the center of the double ring pond. Then it travels to the outer ring before returning to flow in Mill Creek.

DISTINGUISHING FEATURES:

- Designed to showcase movement of stormwater
- Free to public 24 hours / seven days a week
- Allows for incidental discovery
- Addresses flooding
- Accommodates broad range of activity

“...My aim with environmental design is to carry art and design from the privacy of the museum to the public realm bringing it closer to a greater majority.”

- Herbert Bayer, 1972



Photo Credit (all): Author

'STONE RIVER'

SUMMARY:

Designer/artist: Andy Goldsworthy

Location: Palo Alto, CA

Date Built: August 2004

Client: The Robert and Ruth Halperin Foundation

Size: 320 feet

'Stone River' is a work of permanent land-art created by land artist, Andy Goldsworthy. This dry-stone sculpture serpentine across three acres near the Cantor Arts Center at Stanford University. Goldsworthy salvaged sandstone from a former building on the Stanford campus to construct the monumental sculpture. Set approximately four feet below the ground, this artwork blends in seamlessly with the surrounding ground and rough area. The sinuous, curving form beckons the casual passerby and tourist alike to explore. Whether the visitor chooses to meander along the its path, study it's construction or simply muse at the shadows its casts, this offers an experiential and passive experience.

DISTINGUISHING FEATURES:

- Free to public 24 hours a day / seven days a week
- Location allows for incidental discovery
- Exceptionally crafted using simple materials
- Appearance changes with shadows
- Invites visitors to explore without using signage
- Simple form creates the effect of flow



Photo Credit (all): Author

"A stone is ingrained with geological and historical memories."
- Andy Goldsworthy

'EXHALE'

SUMMARY:

Designer/artist: Mikyoung Kim

Location: Chapel Hill, NC

Date Built: 2013

Client: '140 West Plaza'

Size: .25 Acres

Set within an urban plaza of downtown Chapel Hill, 'Exhale' engages visitors in various exciting ways. This curved stainless steel sculpture engages visitors while defining movement through the plaza. Visitors are invited to discover its ever-changing that artfully represent the hydrological cycle. 'Exhale' transforms water to gas providing visitors with a cool mist and representing dispersion and evaporation. At night, this mist creates intriguing fog of mist illuminated with a colored effect.

DISTINGUISHING FEATURES:

- Engages the public with a cooling effect
- Expresses the hydrological cycles in public urban space
- Represents dispersion and evaporation of water by transforming water to gas



Photo Credit (all): Mikyoung Kim Design

SPRINGS PRESERVE

SUMMARY:

Designer/artist: DPA Design

Location: Las Vegas, NV

Date Built: 2007

Client: Springs Preserve

Size: 180 acres

Built around the original water source for Las Vegas, the Springs Preserve is an educational destination for visitors. This educational destination promotes sustainable life in a the water scarce desert region through it's various exhibits, gardens and programs. A large wetland area purifies all water that is reclaimed from the buildings at the Preserve before half is reused in the Desert Living Center Gardens and building. Outdoor areas incorporate passive sculptures such as water tanks that inform visitors about various water types such as gray water, reclaimed water and potable water.

DISTINGUISHING FEATURES:

- Highlights scarcity of water
- Legible signage for wayfinding and interpretation
- Uses reclaimed water
- Paving exhibit allows visitors to see and feel surfaces



Photo Credit (all): Author

WATER CONSERVATION GARDEN PARK

SUMMARY:

Designer/artist: DPA Design

Location: West Jordan, Utah

Date Built: 2000

Client: Jordan Valley Water Conservancy District

Size: 6 acres

The Water Conservation Garden has an important role in “inspiring, educating and empowering our communities to be waterwise” (“About,” 2016). Providing an example for more waterwise landscape design is especially critical in Utah which faces pressures of changing climate patterns and population growth. The park targets users including the homeowner, landscape professional and children by showcasing plants that use water efficiently, that are easier to maintain and adapted to the local climate (“About,” 2016). Visitors discover simple ways to save water in exhibits such as the irrigation, mulch, composting, planting techniques and various native plant exhibits.

DISTINGUISHING FEATURES:

- Free and open to the public
- Easy to follow directional & interpretive signage
- Educates visitors on soils with experiential display
- Groundcover exhibit demonstrates plant pairing



Photo Credit (all): Author

PACIFIC SCIENCE CENTER WATER WORKS EXHIBIT

SUMMARY:

Designer/artist:

Location: Seattle, WA- Pacific Science Center

Client: Pacific Science Center

Size: 1/2 acre

The Water Works exhibits greets Pacific Science Center visitors in the central courtyard. This outdoor exhibit invites visitors ranging in age to play with water and discover it's character with active, touchable elements. Some of the interactive elements that invite visitors to learn through participation include the two-ton floating granite ball and the water cannons.

The two-ton granite ball is an exceptional example of a participatory element in the Water Works exhibit. Visitors discover that the deceptively heavy object is easier to move because it floats in water. It allows them to discover through the act of pushing the object itself. This is something that could not be understood or as memorable if visitors were to observe it passively.

The water cannons are another great example that create memorable, participatory experience in the exhibit. Children enjoy exploring how water moves through the cannons, which can be tilted and swung to direct sprays towards the targets. These active cannon elements allow visitors create effects by spinning the targets into action.

DISTINGUISHING FEATURES:

- Hands-on, interactive exhibits
- Engages visitors to explore the properties of water
- Popular for children as well as playful adults



Photo Credit (all): Author

KIRYAT SEFER PARK

SUMMARY:

Designer/artist: Ram Eisenberg

Location: Tel Aviv, Israel

Date Built: March 2013

Client: Tel Aviv Municipality

Size: 12 acres

Set within a residential area of Tel Aviv, Kiryat Sefer Park plays an important role as one of the most used parks in the city. The park transforms a former parking lot into a park that fascinates both locals and guests each day. Kiryat Sefer celebrates the water cycle with a series of natural artful, playful elements. For instance, a water table located in the higher area of the park symbolizes rain as water erupts from the surface once daily in the afternoon. From the water table, water continues its journey seven meters deep underground in a spring. The water emerges from a downstream “spring source” flooding a dry streambed every half-hour (Eisenberg, personal communication, August 17, 2016). This creates a shallow pool for cooling and splashing and creates a routine, daily experience that excites both regular and new visitors. Large rocks and pieces of reused concrete positioned amongst water-purifying ponds, invite continuous exploration, reflection and play for all ages.

DISTINGUISHING FEATURES:

- Ephemeral qualities invite new & returning visitor interest
- Represents the water cycle
- Incorporates flexible gathering space
- Provides water purification
- Adaptively re-uses existing concrete material
- Integrates seamlessly with surrounding community

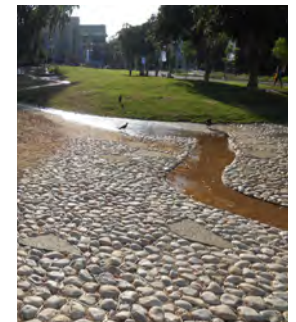


Photo Credit (all): Ram Eisenberg. (With permission)

CORNERSTONE GARDENS

SUMMARY:

Designer/ artist: Various

Location: Sonoma, CA

Date Built:

Client: Cornerstone Gardens

Size: 9 acres

Set in an agricultural, wine-country outside of the town of Sonoma, Cornerstone Gardens provides an exceptional example of balancing exhibit with landscape. About two dozen collaborative designs created between landscape architects and artists create the gardens unique outdoor galleries which are free and open to the public.

Each in the garden explores a different conceptual theme. Some exhibits focus on general themes that are intriguing. For instance, 'Garden Contrasts' designed by Jim van Sweden and Sheila Brady of Oehme, van Sweden & Associates, focuses on ephemeral contrasts by featuring plants with different forms, color, smell and texture that change seasonally. Like most of the exhibits that are framed by clipped hedges, a clipped diagonal of rosemary creates juxtaposition in this particular piece.

Some works in the garden seek to stimulate emotional response. The work, 'Rise' by Roger Raiche and David McCrory at Planet Horticulture aims to juxtapose a garden of interactive play with one of calm contemplation. A human-scaled tunnel has a creates and transition between these difference feelings.



'Red Lantern' Andy Cao and Xavier Perrot at cao|perrot studio



'Garden Contrasts'. Jim van Sweden and Sheila Brady of Oehme van Sweden & Associates

The garden also features works that focus on regional history and culture. The Red Lantern by Andy Cao and Xavier Perrot at cao|perrot studio references migrant workers who arrived in California during the gold rush to build railroads by assembling elements that are inspired by Chinese culture.

Cornerstone Gardens also provides visitors with fresh ideas and inspiration for their home gardens. These are featured in Sunset Test Gardens, which showcase plants in a number of exquisite plantings creating outdoor galleries such as the Backyard Garden, Flower Room and Farm Garden. The bright understory in the Backyard Garden form a riot of purple that is serpentine by a crushed stone path that triggers awe and wonder.

The wide assortment of exhibits attracts visitors daily as well as providing an entertaining backdrop for special events like weddings and parties. The flexible and non-linear arrangement of exhibits in the gardens allows users to explore through curiosity and discovery. While most exhibits are outdoor rooms enclosed with clipped hedges, others function as pass-through galleries, connecting major paths with venue areas.

DISTINGUISHING FEATURES:

- Features exhibits focusing on unique themes such as ecology, culture, emotion, history
- Provides visitors with non-linear experience
- Free and open to the public
- Multiple venue areas for special events
- Includes signage about artists and concepts at each work



'Rise' by Roger Raiche & David McCrory at Planet Horticulture



Sunset Magazine Test Gardens, 'Backyard Orchard'.
Homestead Design Collective

Photo Credit (all): Author

JOHNSON PIT #30

SUMMARY:

Designer: Robert Morris

Location: Sea Tac, WA

Date Built: 1979

Client: Consortium of the U.S. Department of the Interior, National Endowment for the Arts, King County Department of Public Works, and the U.S. Bureau of Mines

Size: 3.7 acres

Johnson Pit is a distinct site that invites contemplation through the sculptural use of topography. The site demonstrates the reclamation of a former gravel pit that might otherwise have been developed into a residential development. Concentric sculptural rings follow the movement of the hillside. The minimalistic use of materials create a might contrast with the forested edges and the industrial development sprawling over the valley. The monumental scale of the slopes and the valley backdrop create a high quality of prospect and the lack of human-scale enclosure have dwarfing effect on the visitor.

DISTINGUISHING FEATURES:

- Celebrates views of Mount Rainier
- Terracing embraces steep topography
- Reclaims former sand and gravel pit, transforming it into public usable place
- Free to public 24 hours a day / seven days a week
- Location allows for incidental discovery



Photo Credit (all): Author

'RAIN DRUMS'

SUMMARY:

Designer/artist: Dan Corson & Jones & Jones Landscape Architects

Location: North Bend, WA at Cedar River Watershed Education Center

Date Built: 1994

Client: Seattle Public Utilities

Size: 200 square feet.

The 'Rain Drums' are a unique example of how water creates interest through sound. They are set within a small courtyard at the Cedar River Watershed Education Center where Seattle metropolitan area residents can learn about stewardship of the local watershed through tours, exhibits, and classes.

While the drums seem to acoustically blend in with the surrounding lush Snoqualmie wilderness, their unique forms create exciting and somewhat exotic sounds that create a quality of surprise. Water drops and splashes in simulated rhythms onto each of the total seventeen drums with a small computer programmed valve. Together, these drops orchestrate music resembling Northwest rain patterns.

DISTINGUISHING FEATURES:

- Invites visitors interest through sound
- Surrounded by stewardship-focused educational center
- Integrates technology with art

"I wondered how to turn the experience of sitting in the watershed's old growth forests and moss covered stands of vine maple while listening to the hypnotic pattern of rain on the leaves into art."

- Dan Corson (Cedar River Watershed Education Center, 2013)



Photo Credit: Wilderness Rim



Photo Credit: Author

PRECEDENT STUDIES: LESSONS LEARNED

The precedent studies in the preceding pages are phenomenal places that provide a body of inspiration for this design project. Each site is unique in function, size, purpose and context and contribute their own distinguishing features. Noting these unique features is worthwhile as there are implications that contribute significant implications for the scope of this design project. These implications are organized into several major significant categories.

ACCESSIBILITY:

- Create a space that is free and open to the public
- Allow visitors to find site incidentally from adjacent path, neighborhood
- Provide ADA and maintenance accessibility
- Accommodate access to site as a destination

FUNCTIONAL USE:

- Incorporate a flexible gathering space
- Integrate exhibit design with landscape
- Incorporate select demonstration exhibits that inspire new behavior, habits, etc.

EXPERIENCE:

- Provide visitors with a non-linear experience
- Design space around a themed narrative
- Incorporate water in various forms to engage the senses
- Create opportunities for ephemeral change (time of day, season)
- Showcase character of the water in natural context

MATERIALS, ELEMENTS:

- Incorporate sculptural elements that invite visitor curiosity, and increase theatrical feeling
- Adaptively re-uses existing materials
- Design elements that encourage hands-on interactive, explorative play and discovery. For instance, allow visitors to fill water vessel through movement
- Incorporate simple signage in most significant areas/elements only
- Create interactive elements that cater to range of sizes, ages, abilities



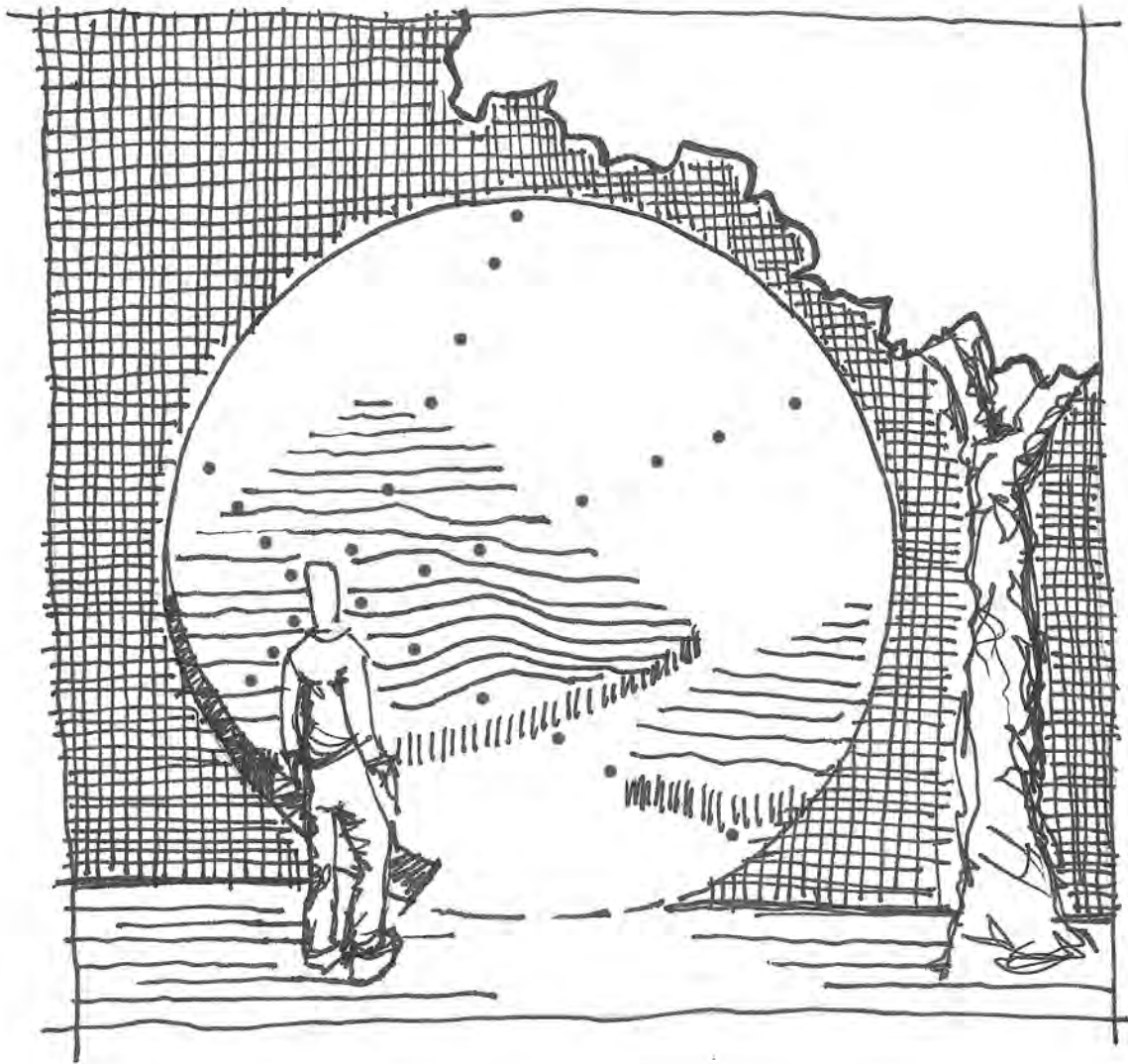
Photo Credit (all): Author

CONCLUSION

DESIGN IMPLICATIONS

- Support a range of user interests, needs and interpretations
- Provide continuous opportunities for exploration throughout the year
- Create opportunities that engage all the senses
- Integrate supplementary interpretive, active information for understanding
- Incorporate take-home messages that provide step-wise approach with choices





Incidental Discovery (sketch by Author)

The following pages include the thinking process involved in selecting the most suitable site for fulfilling the project objectives. All sites that are explored in this process are at either existing or proposed open space that is open to the public. A list of desires for an ideal site are outlined with descriptions. This list represents the locational criteria needed in order to find the most suitable site. Each site option is analyzed using these criteria, which help identify the site with the most potential.

LOCATIONAL CRITERIA

SITE OPTIONS

[MOUND AREA IN ESTHER SIMPLOT PARK](#)

[BERNADINE QUINN RIVERSIDE PARK](#)

[IDAHO STATE TRANSPORTATION PONDSIDE](#)

[FORT BOISE FLOODING PIT/DOG-PARK](#)

[FORT BOISE BALL FIELD](#)

[COTTONWOOD CREEK TRAILHEAD](#)

[MOUNTAIN COVE FIELD](#)

LOCATIONAL CRITERIA

QUALITY	DESCRIPTION
NATURAL WATER SOURCE	<ul style="list-style-type: none"> • Provides water for design and exhibits • Preferably a seasonal stream, creek, which could be ephemeral
ACCESSIBLE LOCATION	<ul style="list-style-type: none"> • Location allows broad range of community users/visitors to discover the site incidentally (Visitors may stumble upon while on a trail, visiting a park, or open space, from the road) • Design synchronizes with existing and surrounding activities by creating a place that is enjoyed by people ranging in age, physical ability, activity, and interest • Location has ability to serve as a destination for some users, which means there is parking available • Location at fringe of urban core with developed as well as natural features
VIEWS OF THE BOISE FRONT, FOOTHILLS	<ul style="list-style-type: none"> • Optimizes visual connection to the origins of water in Boise/Treasure Valley
EXCITING, DYNAMIC TOPOGRAPHY	<ul style="list-style-type: none"> • Terrain helps create a sense of surprise and wonder • Ups and downs in terrain within site lend to visitor excitement

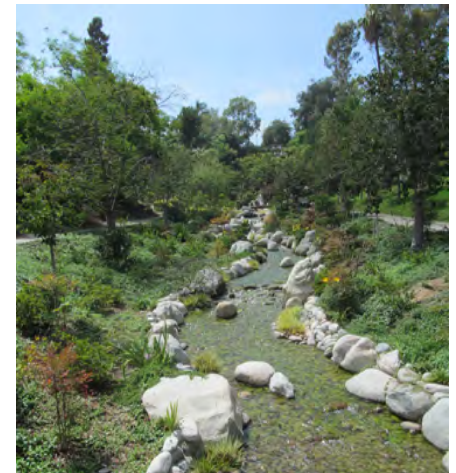
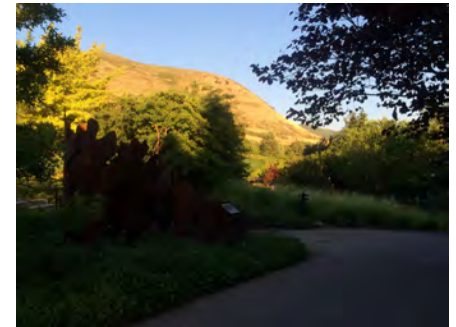


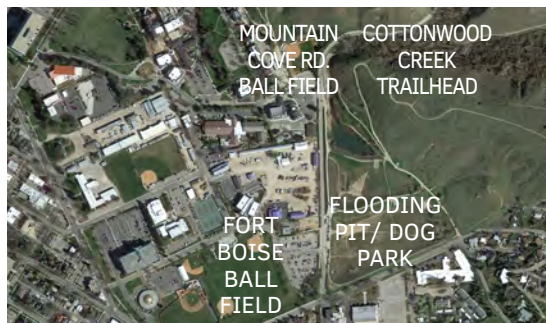
Photo Credit (all): Author

SITE OPTIONS

Sites within two areas of Boise were explored in the site search process. These general areas are current or potential areas that will serve a wide range of people. Both areas are located close to natural features like water and have either visual or physical connection to the foothills.

One major area with several sites is in the west part of Boise near the recently developed Esther Simplot Park. This area has been seeing an extensive amount of recent development. Most of this development is attracting a large amount of visitors, creating a high potential for the design objectives. As well, this area is situated by the river, which can provide a year-round source of water.

The other general area that was explored is within the Fort Boise Area. The area occupies a very unique location within Boise. It is tucked up next to the foothills and located only minutes away from the State Capital in the downtown. The area is an existing hub for the community. The nearby network of Ridge to Rivers trails as well as the various sports fields brings a wide range of passive and active recreation visitors. As well, the Veterans Administration and other medical facilities serve patients, families and employees daily, which creates a year-round community



Site Locations - Fort Boise Area



Site Options Areas



Site Locations - River Area

MOUND AREA IN ESTHER SIMPLOT PARK

OPPORTUNITIES:

- + Newly developed park provides opportunity for incidental discovery and access among a broad population
- + Area is surrounded by a number of water sources
- + Panoramic views of the Boise Front
- + Accessible location from the greenbelt
- + Some topography change in recent site design

LIMITATIONS:

- Adjacent uses, including but not limited to the dog park area, recreational water sports and ponds may create user conflicts
- Future activities may become distractions for the designed setting
- Surrounding activities will bring high amount of traffic and may consequently obstruct the experience of the space



Source: <http://parks.cityofboise.org/parks-locations/parks/esther-simplot-park/>



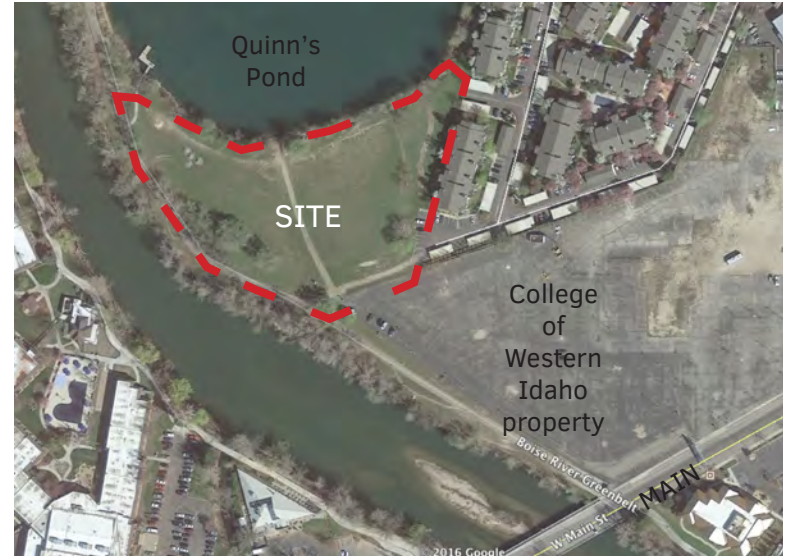
BERNADINE QUINN RIVERSIDE PARK

OPPORTUNITIES:

- + Huge opportunity for very broad range provided by close proximity to Greenbelt and Quinn's Pond, proximity to Esther Simplot Park, neighborhoods, offices and future development for the existing CWI 10- acre parking lot
- + Neighboring Boise River and Quinn's Pond provide existing water sources
- + Outstanding views of the Boise Front

LIMITATIONS:

- Flat area does not lend itself to excitement, which requires altering the space



Area: 2.3 acres

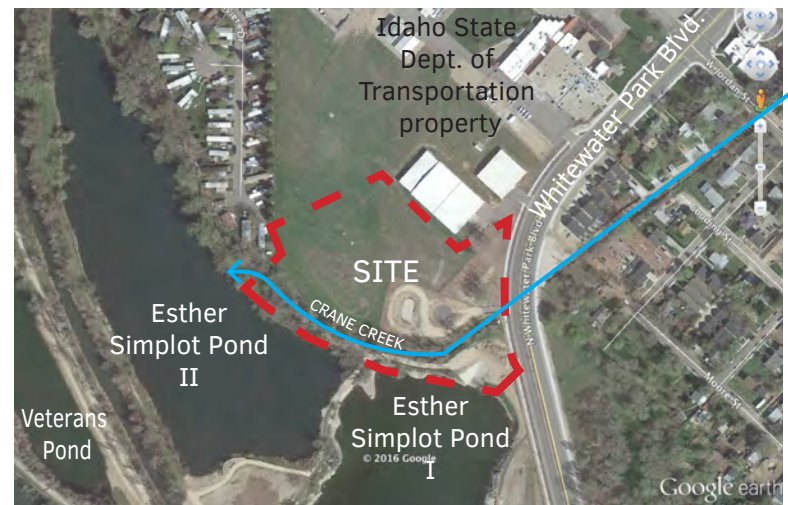
IDAHO STATE TRANSPORTATION PONDSIDE

OPPORTUNITIES:

- + Location provides opportunity for incidental discovery from Esther Simplot Park, Whitewater Park Boulevard
- + Multiple nearby water sources intact (Crane Creek, Esther Simplot Pond)
- + Fabulous views of the Boise Front

LIMITATIONS:

- Topography is flat for the most part, with the exception of retention pond area



Site options

FORT BOISE FLOODING PIT/DOG-PARK

OPPORTUNITIES:

- + Existing topographic change
- + Boise Front is visible from south of pit at the high edge
- + Cottonwood Creek proximity and historic relevance, flooding features

LIMITATIONS:

- Flooding risk
- View of Boise Front not visible at bottom of pit
- Well-loved dog park requires modifying area for off-leash activity
- Connection to water source from upper pond or canal (from across Mountain View) requires substantial alterations



10 acres

FORT BOISE BALL FIELD

OPPORTUNITIES:

- + Central location in Fort Boise serves broad range of users
- + Proximity to nearby historic canal can provide source of water
- + Excellent views of Boise foothills
- + Substantial amount of parking nearby can serve visitors coming to site as a destination

LIMITATIONS:

- Requires moving around existing activities (ballfield and possibly the parking as well)
- Flat land will require modifying the topography quite a bit to make it exciting
- No natural water source intact



COTTONWOOD CREEK TRAILHEAD

OPPORTUNITIES:

- + Trailhead is very popular among nature lovers and mountain bikers, walkers
- + Cottonwood Creek as very natural water feature. Water runs pretty much all-year round

LIMITATIONS:

- Incidental discovery for broad user group, including Fort Boise population(staff, patients, families) more limited because it is about ¼ mile east on Mountain Cove Road
- Very natural area would require major alterations
- Existing parking is well-used by walkers, bikers



3-6 +/- acres

MOUNTAIN COVE FIELD

OPPORTUNITIES:

- + Cottonwood creek can provide natural water source
- + Topography is dynamic with minimal alterations necessary
- + Location provides for incidental discovery by Fort Boise community, as well as bikers and walkers moving to and from the Military Reserve

LIMITATIONS:

- Parking on weekdays, the adjacent parking lot is packed with cars
- Some view limitations of Boise Front with hills nearby to east and north



3.20 acres





The final site choice is the existing softball field at Mountain Cove Road. This site is chosen for its accessible location close to a range of users using nearby services everyday throughout the year. This site offers convenient access for users while providing a peaceful retreat. The site's position in the ecotone between the city and the foothills contributes this unique character. As well, the site has diverse topography in a setting that transitions from a more developed character near the Veteran's Administration to the more natural foothills.



Military Reserve



Hull's Gulch (sketch by Author)

CONTEXT

- HISTORIC CONTEXT
- SURROUNDING FUNCTIONS & USERS
- ACCESS

ON-SITE FEATURES

- ACCESS & CIRCULATION

NATURAL FORCES

- MICROCLIMATE
- SLOPES
- WATERSHED

PERCEPTUAL CHARACTERISTICS

- SIGNIFICANT VIEWS TO SITE
- SIGNIFICANT VIEWS FROM SITE
- NOISE

SYNTHESIS

- OPPORTUNITIES & CONSTRAINTS

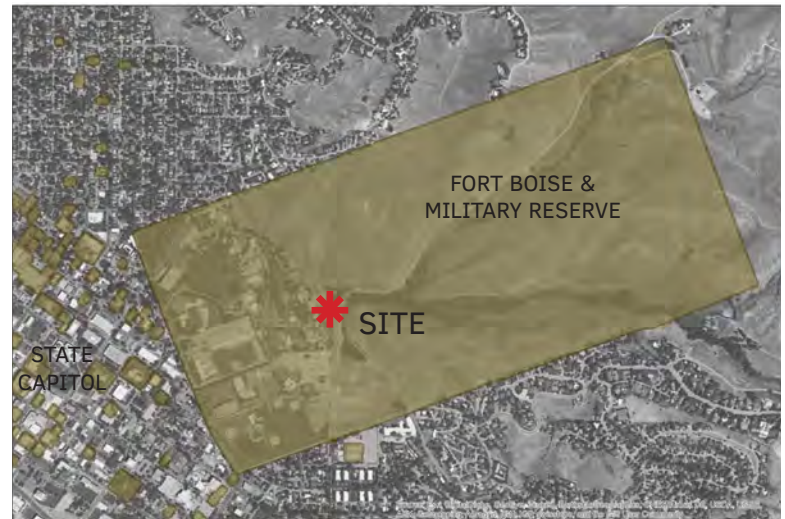
CONTEXT

HISTORIC CONTEXT

The site is located within an ecologically and historically significant part of Boise. It is located within one of Boise's largest historic landmarks, Fort Boise, where some of the city's first settlers set up camp around the mid 19th century, a time when settlers were exploring new frontiers for gold, protection and a new home. Over time, the Fort has had the role of serving Boise with a hub for military training and lodging, community gathering and health services.

Today the Veterans Administration operates the hospital in close vicinity to the site. Buildings near the site are used for services that support the health and well-being of veterans and their families, including a veterans home, behavioral health clinic, and rehabilitation clinic.

In addition to serving Veterans and families with services, this area serves the community with acres of natural land for conservation and recreation. A network of trails connecting to the Ridge to Rivers system begins near the site right across Mountain View Road. Having these amenities near the site provides a huge advantage for visitors to discover the site incidentally.



Historic Landmarks of Boise



Surrounding Trails

SURROUNDING FUNCTIONS & USERS

HEALTH

WHO?: Patients, residents, staff
WHERE?: Veterans Administration
Elks Clinic



RECREATION

MULTIPURPOSE, UNPROGRAMMED

WHO?: Youth, Adult, Senior
WHAT?: Mountain biking, trail walking/
jogging, archery, fishing



ACTIVE, PROGRAMMED SPORTS

WHO?: Athletes, families, visitors
WHAT?: Tennis, baseball



OFFICE

WHO?: Employees
WHERE?: U.S. Bureau of Reclamation
U.S Geological Survey



COMMUNITY

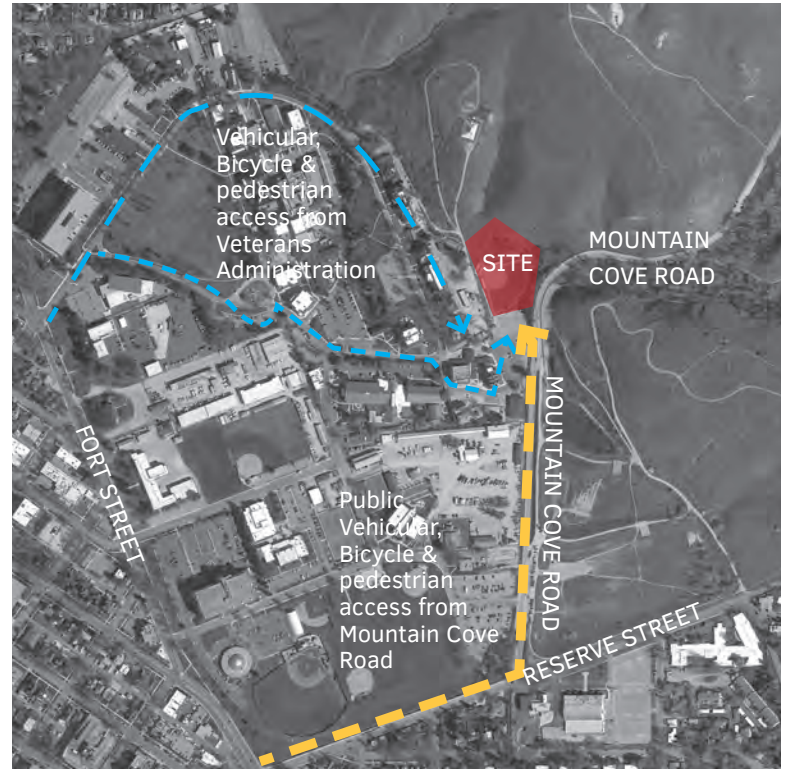
WHO?: Youth, Adult, Senior
WHERE?: Boise Senior Center
Fort Boise Community Center
Girls Scouts Friendship Square



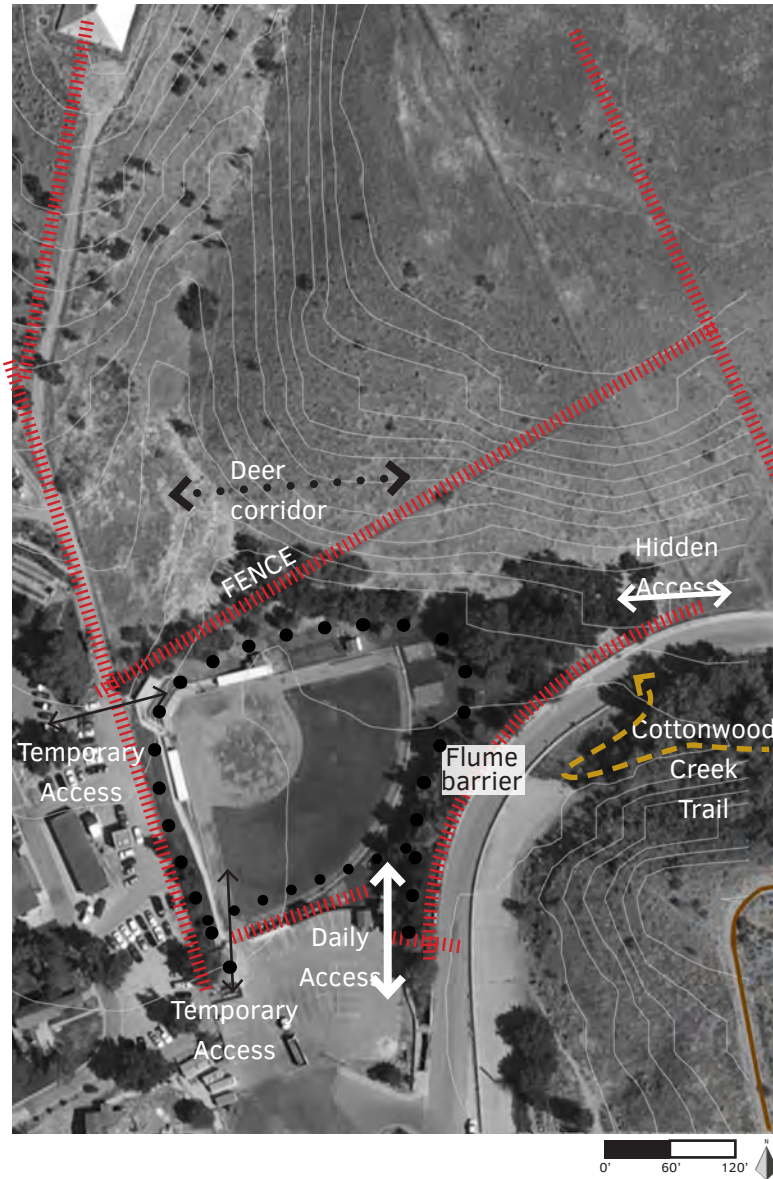
ON - SITE FEATURES

CIRCULATION & ACCESS

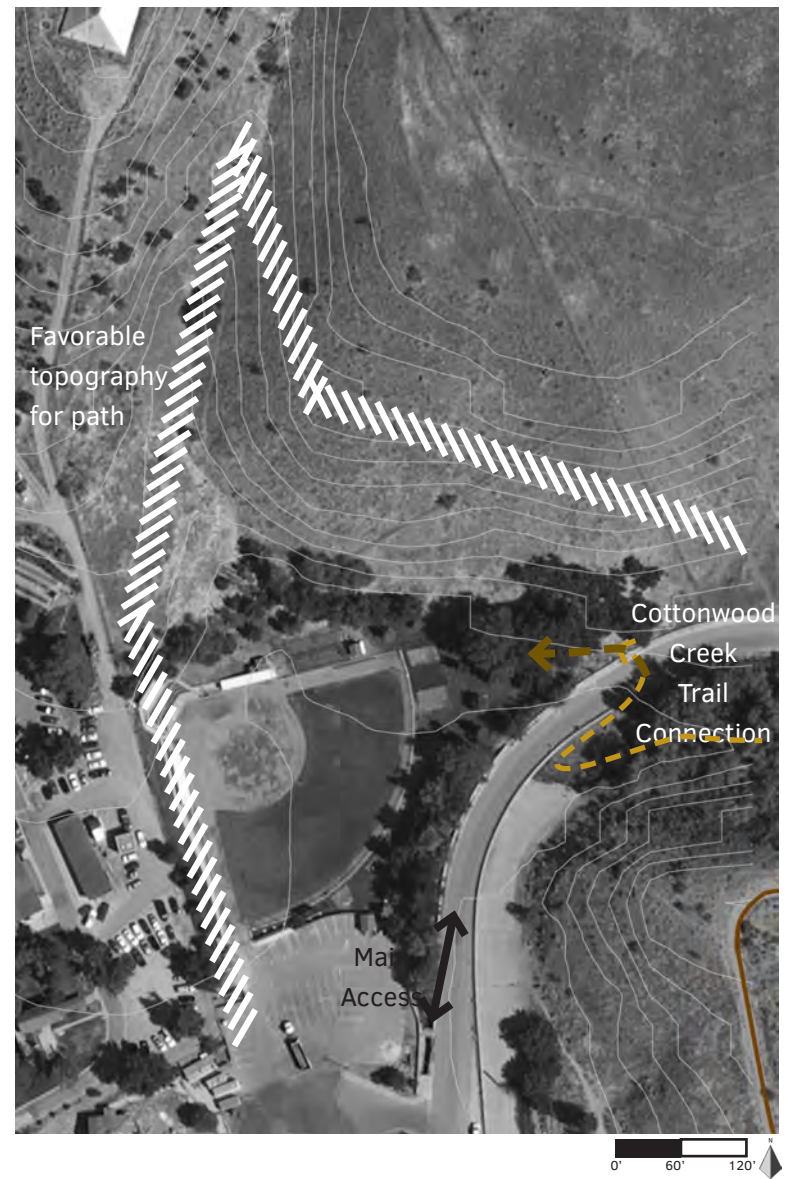
There are various routes that provide access to the site. The primary path for the public to access the area is by Reserve Street and Mountain Cove Road. The alternative path to get to the site is through the Veteran Administration property. However, this route is more limited for vehicular access because the road is not as direct as Mountain Cove Road. It is expected that most people who access the site from the Veterans Administration property will be existing users of the property facilities. In addition, people walking to the site by foot and people riding their mountain bikes through the property to get to and from the trails east of the site.



EXISTING



OPPORTUNITIES



NATURAL FORCES

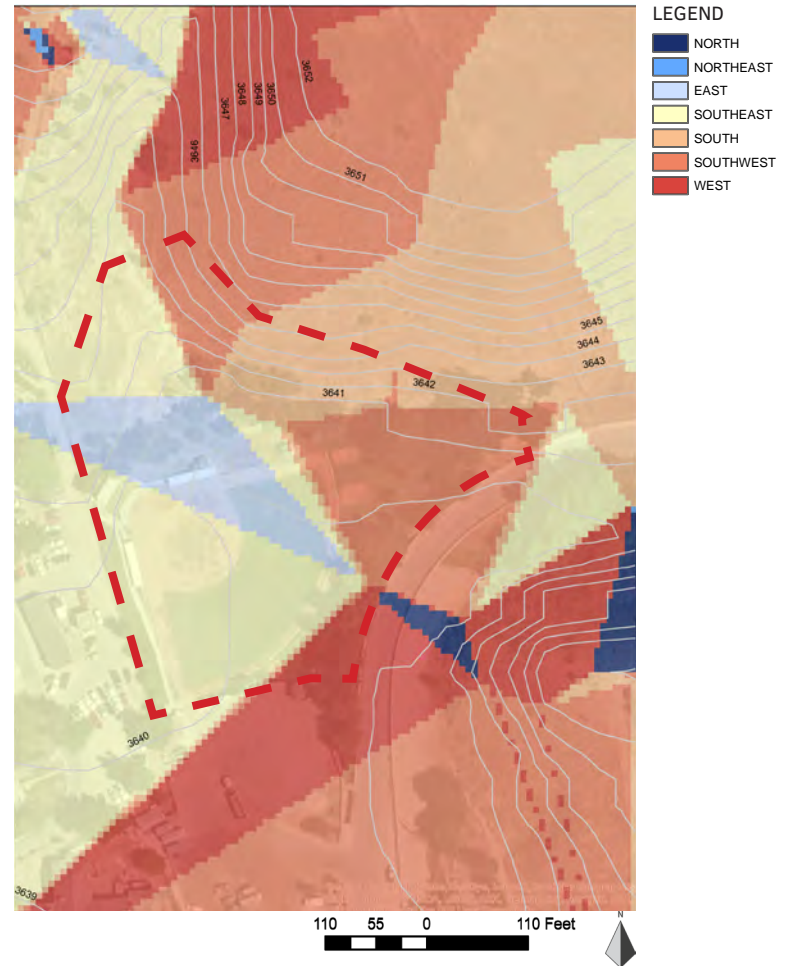
MICROCLIMATE

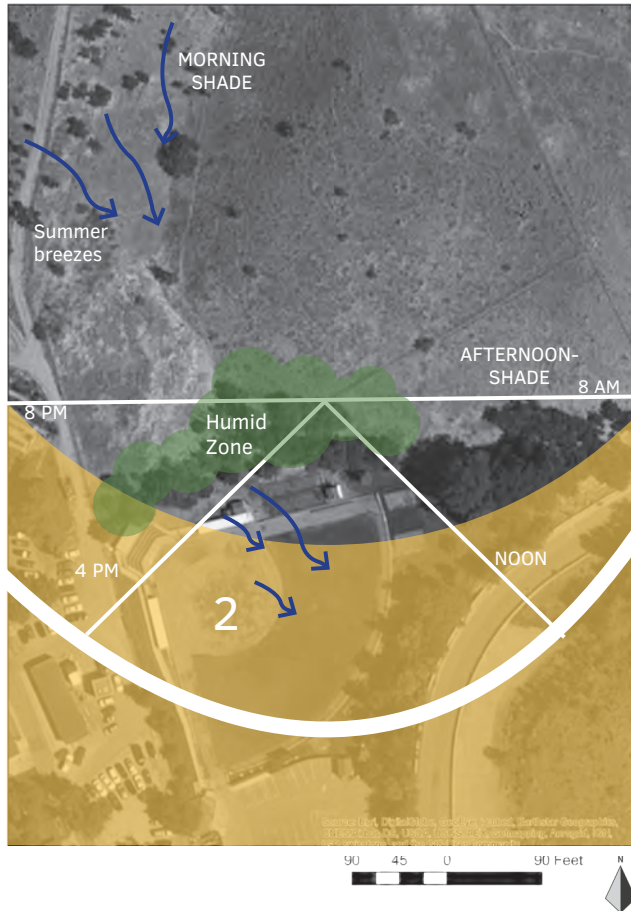
Regional winds play a significant role at the site based on how they interact with the foothills. Typical of the Boise Front and most mountain ranges throughout the west, the site major topography is due south.

In the fall and winter, winds blow primarily from the southeast. Starting early spring in March and particularly in April, these winds start to come from the Southwest. This has an interesting dynamic on the eastern side of the site along Mountain Cove Road. Along this side near the Cottonwood flume, there is a buffer that shelter the winds blowing down from the foothills across the road and east of the site.

It is important to take advantage of the northwest breezes in the summer when it is hot and dry. These breezes can be amplified from the southwest with large plantings, walls or other vertical elements that can channel these breezes through the site during the warm season. These breezes will also cool on their way up the slope.

Due to their orientation towards the prevailing winds throughout the year, the south-facing sloped areas on the site have clusters of native vegetation, where the conditions favor more humidity than the flat areas. As well, the slopes that face the south can get intense solar gain each day. There is an opportunity to incorporate early bloomers that arrive in the springtime to create a riot of color, which can entice visitors to explore the site.

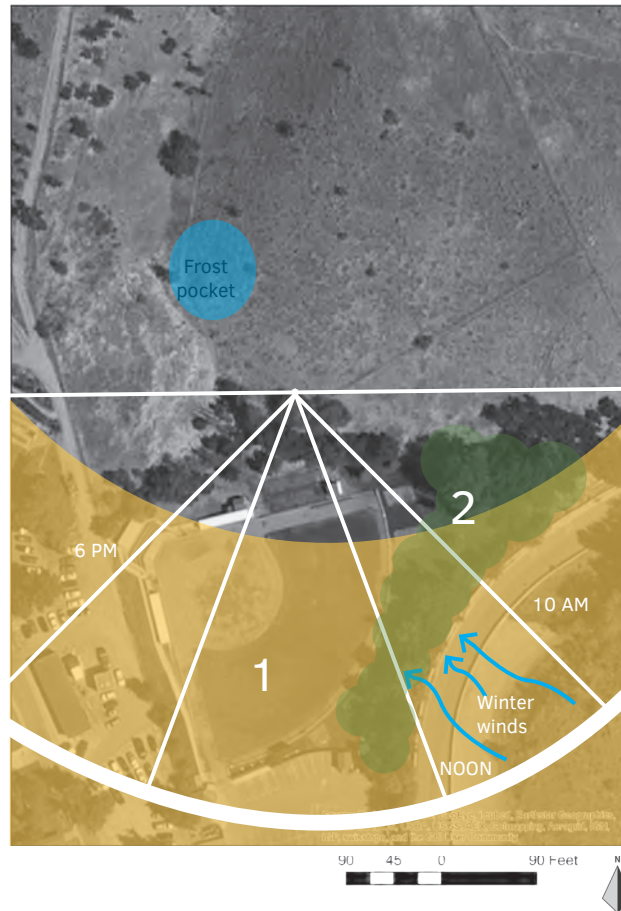




SPRING SOLSTICE (MARCH 20)

Opportunities

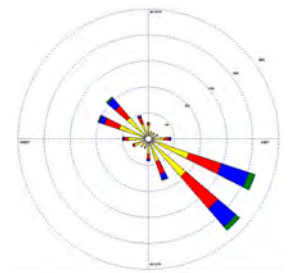
- Enhance effects of cooling summer breezes on south-facing slopes
- Channel cool breezes in flat area at existing ball field



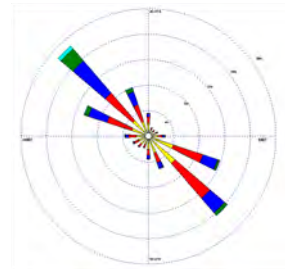
WINTER SOLSTICE (DECEMBER 21)

Opportunities:

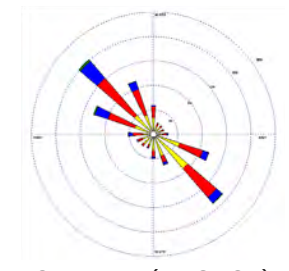
- Take advantage of **solar gain**
- Preserve **buffer** for winter wind chill with the exception of strategic path for upflow effect creating precipitation
- Take advantage of frost pockets in mornings, cold seasons



WINTER (JANUARY)
3.75 M/S



SPRING (APRIL)
4.5 M/S



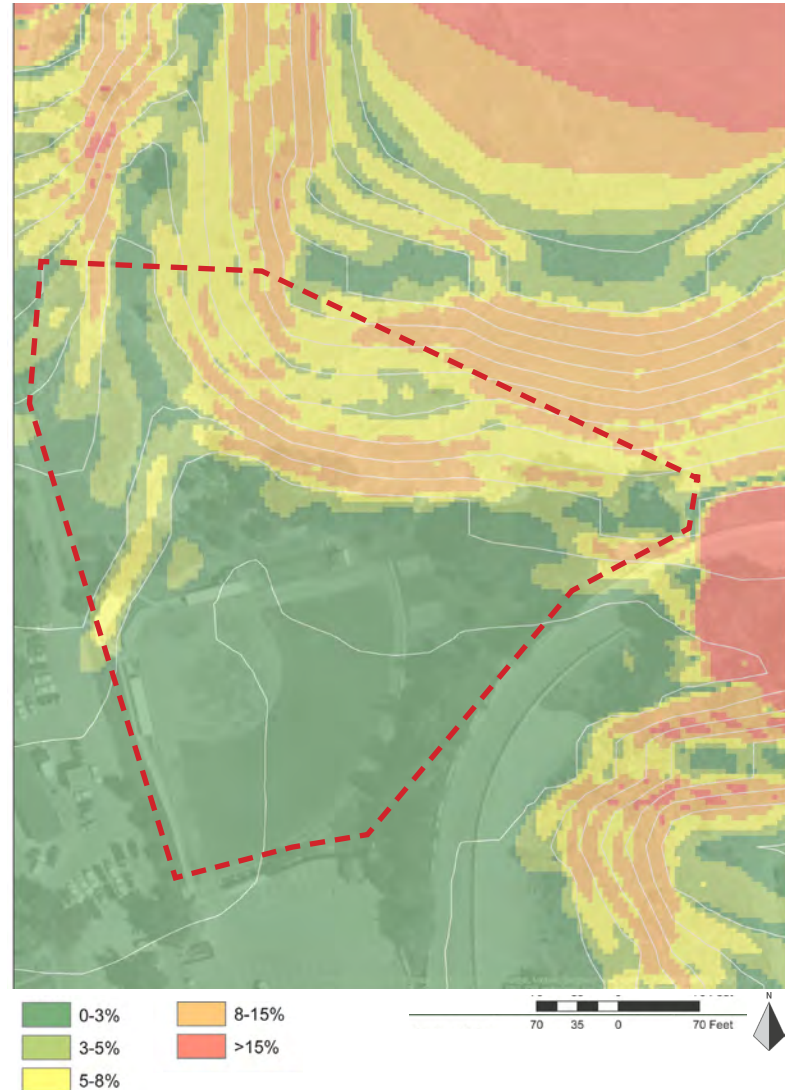
SUMMER (AUGUST)
3.75 M/S

SLOPES

The site has an extensive range of topography that offers potential for exciting exploratory experiences. About half of the site consists of gentle slopes at the base of the valley. This flat valley is hemmed in by hills ranging from gradual 3-5% slopes and steep banks rising steeply into the hills.

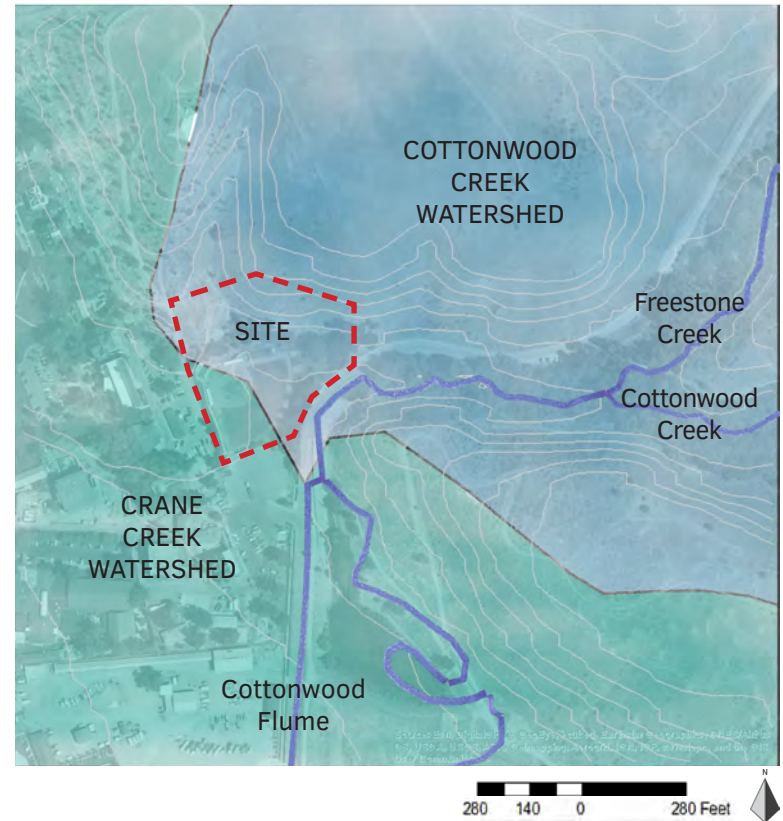
While the slopes provide the opportunity to take advantage of the spectacular views from the higher areas, the limitation is that these slopes have a very erosive character. It is critical that any pathways proposed on these slopes provide stabilization through vegetation, dry stone walls, and terracing slopes so they move gently in the direction of the terrain.

The steeper slopes are particularly sensitive to erosion. The sandy lacustrine deposits on these slopes need stabilization and gentle development. Below is an example of what happens when soils in the near vicinity begin to erode.



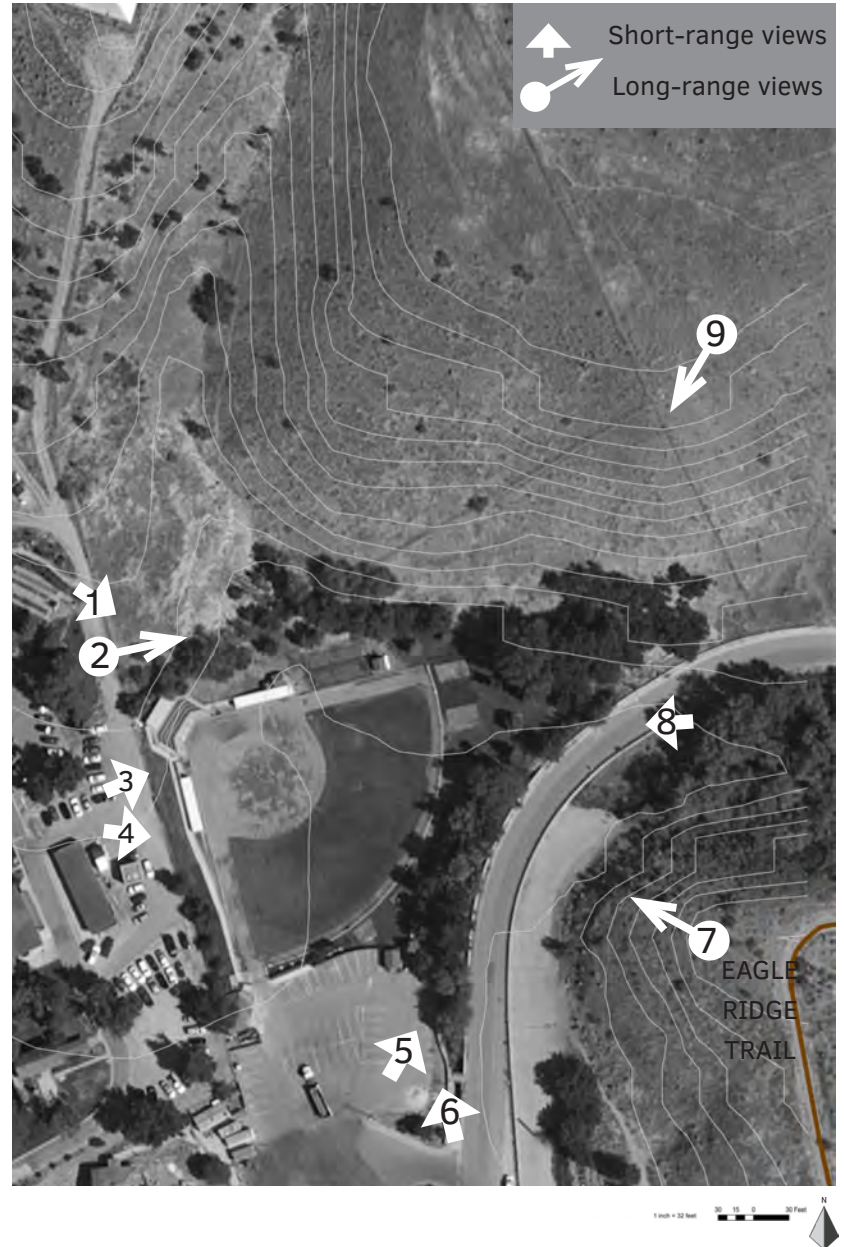
WATERSHED

With favorable breezes, rugged and protective foothills and a source of water, there is no question as to why some of Boise's first settlers chose to make Fort Boise their new home. However, due the Fort's position near the Cottonwood Creek watershed, it has struggled with a rich history of flooding. After repeated flooding events, a flume was built to direct the stream towards the eastern side of town, and later to basins positioned within the Fort. Water runs through this flume for almost the entire year. There is an opportunity to direct water from this flume to be used as a source of water at the site.



PERCEPTUAL CHARACTERISTICS

SIGNIFICANT VIEWS TO SITE





4

Western edge lacks screening



7

Prominent view of western hillside at Eagle Ridge Trail



5

Historic flume begins to hide near site



8

Road barrier along Mountain Cove road obstructs access



6

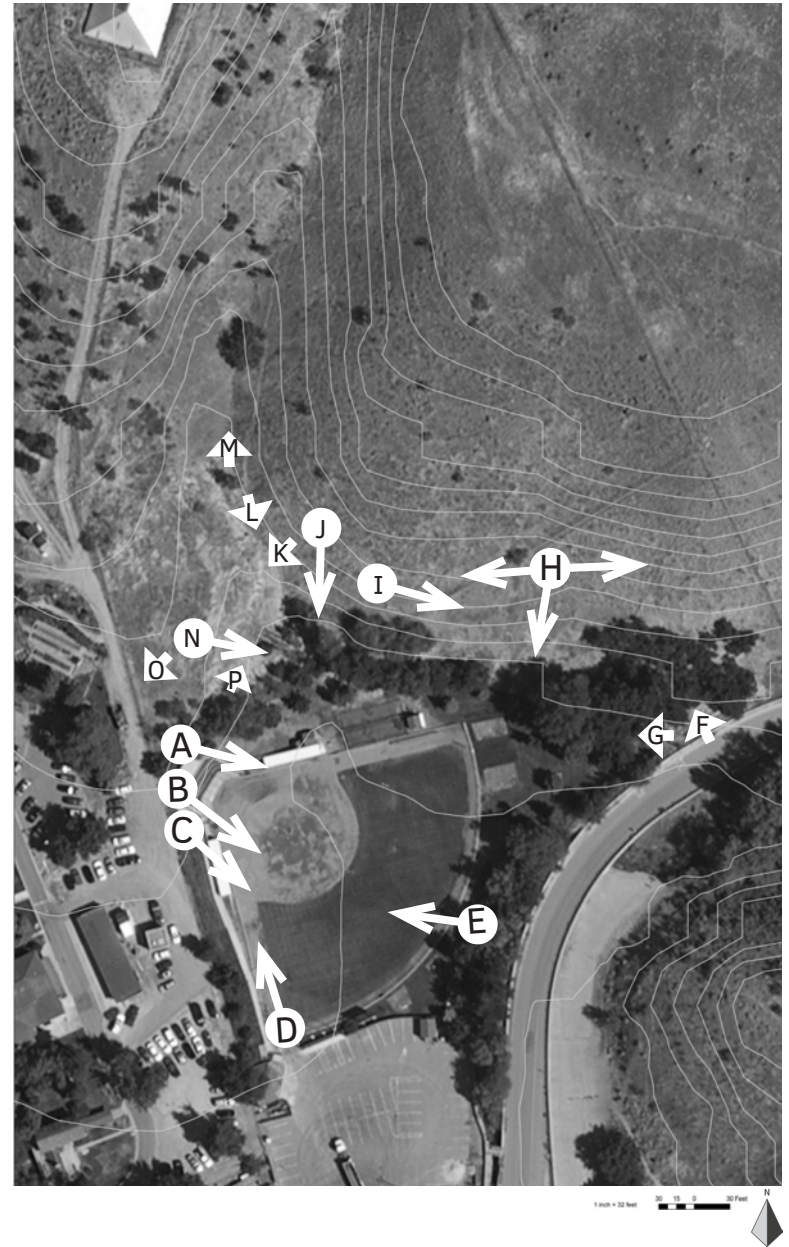
Obstructed visual access approaching site from southeast near Mountain Cove Road

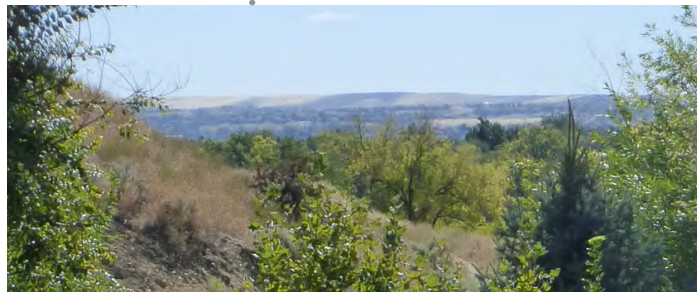
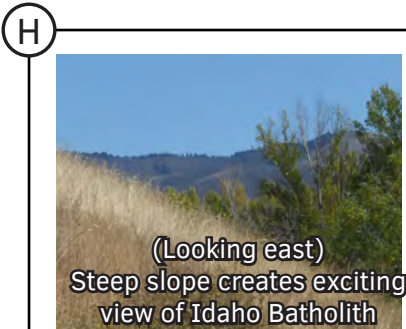
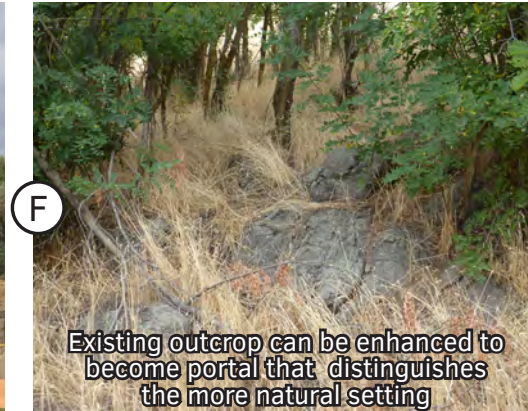


9

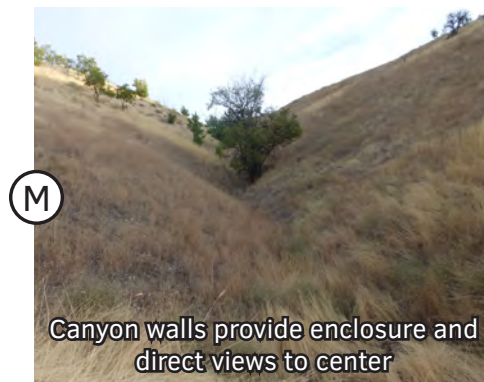
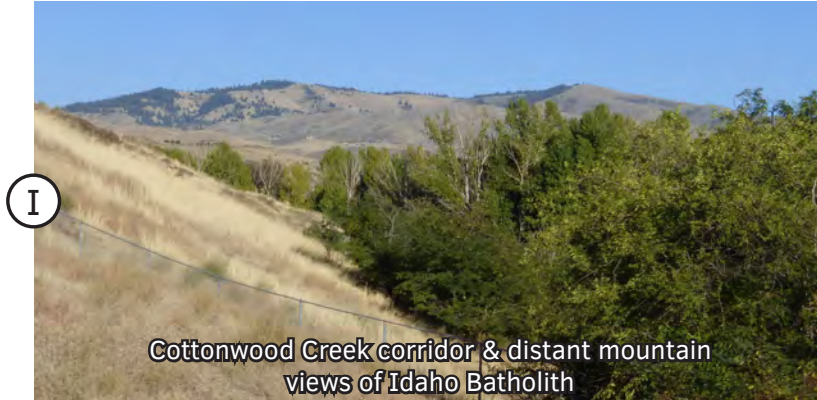
Excellent prospect of site near Elephant Rock Loop Trail

SIGNIFICANT VIEWS FROM SITE





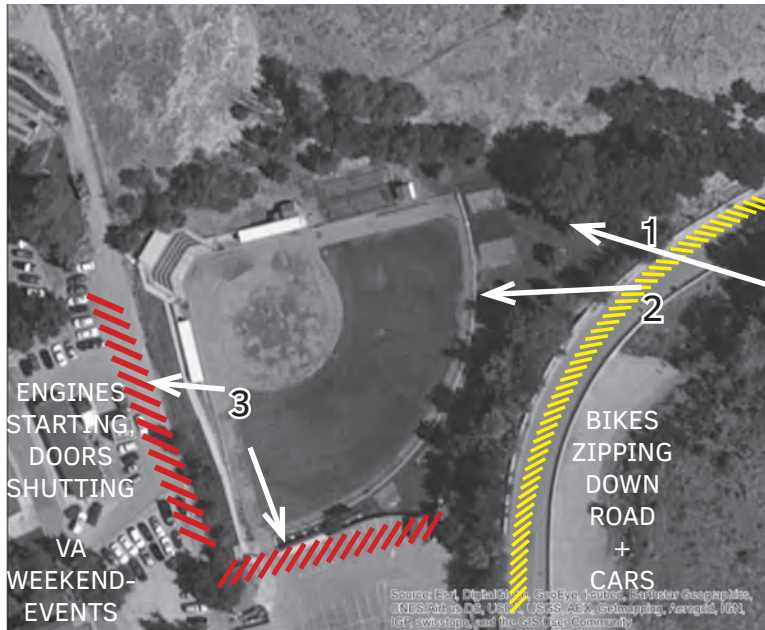
Two narrow, long-range views of ancient river





PERCEPTUAL CHARACTERISTICS

NOISE



OPPORTUNITIES:

1. Enhance sounds of Cottonwoods blowing in wind from corridor to east
2. Utilize sounds of bikes zipping by as sound effects on eastern side of site
3. Screen car activity from existing parking areas & buffer noises



SYNTHESIS : OPPORTUNITIES & CONSTRAINTS

A significant amount of time was spent visiting the site and becoming familiar with its features using direct observation. By experiencing the site this way, the positive and negative features of the site became evident. There are many positive features on the site that create opportunities the design can capitalize on, including views, microclimate, access and natural features. There are also negative features such as slopes and undesirable views that create limitations that the design needs to address.

The dynamic topography and adjacent land uses near the site create areas with unique challenges and opportunities as well. These are distinguished using major points in the Overarching Opportunities and Limitations and the Area Opportunities and Limitations categories, which record details within the areas that were considered in the analysis process.

OVERARCHING OPPORTUNITIES:

- + Areas with or near steeper slopes provide spectacular views of surrounding regional features that **provide borrowed scenery**, which can be showcased by **framing the views** and creating opportunity for reflection
- + Existing natural vegetation areas create opportunities for enhancing **arid and mesic environment** transitions, while capturing their microclimate and atmospheric effects
- + Existing open areas require more **screening** and human-scaled enclosure, as well as **higher-intensity uses**
- + Primary access from the south provides opportunity for defining a gateway to the site

OVERARCHING LIMITATIONS:

- Areas with **steeper slopes** limit **ease of access** and are very **erosive**, requiring that any use of these areas be low-intensity and provide stabilization
- Areas that need screening must address strategic visual access for users approaching the site from the west and south

AREA OPPORTUNITIES & LIMITATIONS:

(Areas color coordinate with the plan)

- + Take advantage of all-day sun for Arid plant environment
- + Close access for visitors arriving from the Veterans Administration buildings
- + Provides consistent views of Table Rock
- + Good orientation towards cooling spring/ summer breezes
- Existing topography creates natural hillside terracing
- Lacks screening of the west to buffer unsightly service areas
- Slopes are erosive and require stabilization regardless of alteration

- + Potential for Arid-Mesic transition
- + Evening downdrafts from canyon create condensation
- + Gentle south-facing slope provides optimal winter solar gain
- + Natural low point of site provides opportunity for alteration
- + Good visibility from hill to the southeast near Eagle Ridge Trail
- + Close proximity to existing parking to the west and East
- Slopes are erosive and require stabilization
- Needs more enclosure and afternoon shade in the west

- + Mesic plant environment provides moisture for freezing & humidity
- + Existing wind buffer for winter winds can be enhanced
- + Cottonwood trees can create snow effect with NW spring breezes
- + Provides direct access to water source from Cottonwood Creek flume
- Historic flume wall limits major alterations to prevent disastrous flooding and preserve historic fabric
- Vegetation limits view of flume



- + Rocky outcrop provides natural landmark
- + Potential visibility from Mountain Cove Road & close access to Cottonwood Creek Trailhead to east

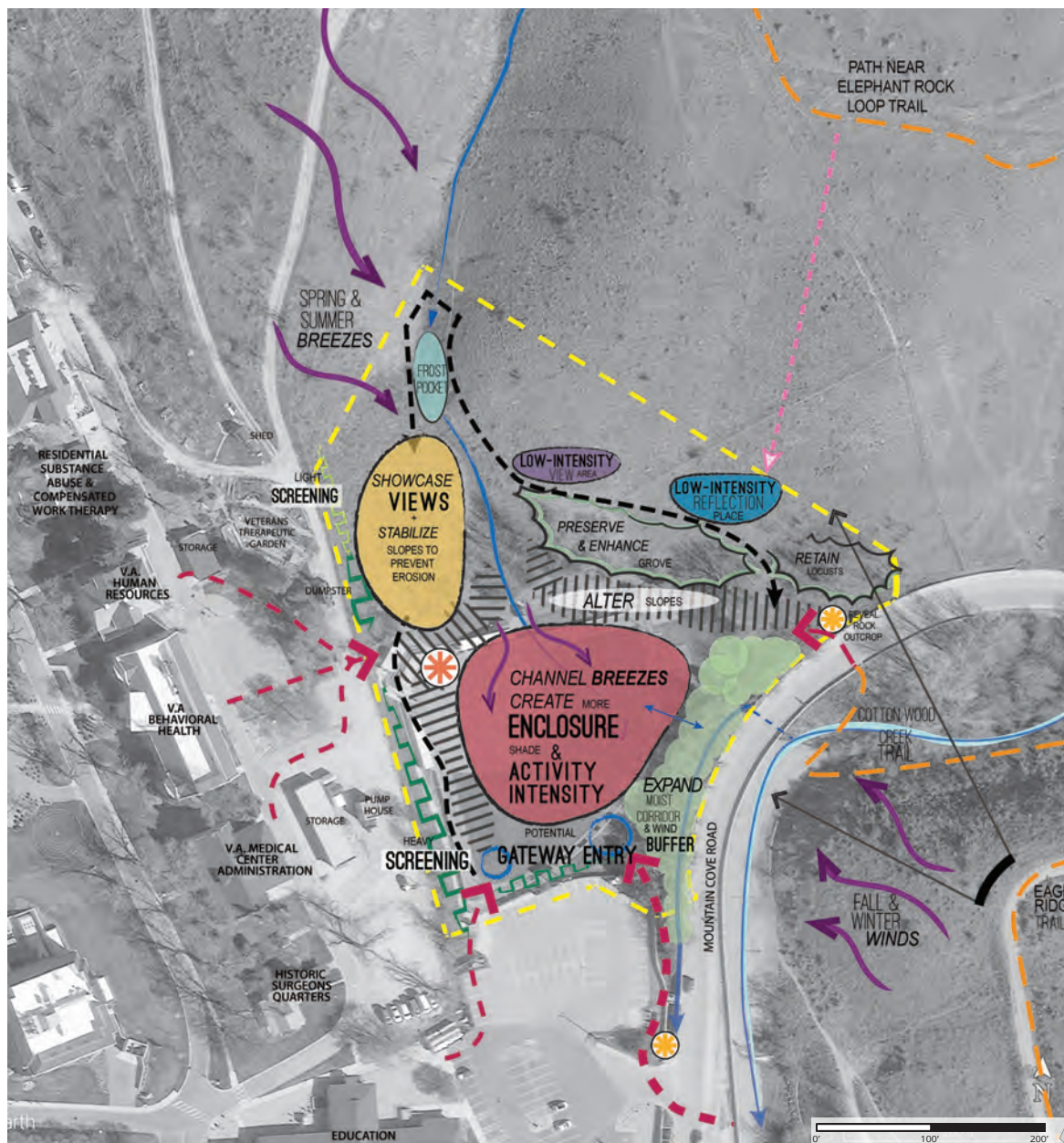
- + Maturing locust grove can channel winter winds upslope
- + Arid plant environment
- + Provides strong sense of prospect of site
- + Provides views of backdrops
- + Unobstructed views for visitors approaching from trail
- SE winter winds require wind resistant materials
- Visibility from outside the site required subtle treatment that integrates with natural character of land
- Highly erosive slopes require low-intensity use
- Warm air updrafts create uncomfortable heat on summer days

- + Natural arid plant environment
- + Directs views towards slope to west
- + Canyon channels cool spring and summer breezes
- **Very erosive slopes** limit activity intensity












- + Canyon **channels views** towards north and south showcasing views of site, Idaho Batholith and ancient river
- + Canyon provides **refuge** from late afternoon heat in arid environment because frost pocket lowest point collects cold air during the day
- + Good opportunity for area that contrasts with desert heat
- + Canyon provides feeling of **enclosure** for while providing prospect overlooking site that can support **reflective areas**
- + Arid to Mesic downhill transition where canyon channels denser, cool night air
- + Arid to Mesic downhill transition with gentle and moderate slopes
- **Very erosive slopes** with require stabilization
- More **limited access** from lower points limits activity intensity



- + High visibility from many points outside the site to drawing visitors as a focal point at slope



LEGEND

-  SITE AREA BOUNDARY
-  CIRCULATION OPPORTUNITY
-  EXISTING HILLSIDE ARID- MESIC VEGETATION DOMINATED BY NATIVE LOCUSTS & COTTONWOOD
-  AREAS WHERE EXISTING SLOPES TRANSITION CAN BE ENHANCED
-  POTENTIAL GATEWAY POINTS
-  DIRECTIONS OF PRIMARY ACCESS
-  DIRECTIONS OF SECONDARY ACCESS FROM TRAIL
-  EXISTING LANDMARK
-  FOCAL POINT
-  EXISTING MESIC VEGETATION TO ENHANCING FOR WIND BUFFERING
-  HEAVY SCREENING FOR NOISE ABSORPTION AND BLOCK UNDESIRABLE VIEWS





The following pages reflect the project design. This represents the synthesis of research and the information gleaned through analysis. This synthesis begins with the narrative which illustrates visions and inspirations guided by the development of the program. The design program helps inform the design concepts based on activities and performance details.

DESIGN NARRATIVE

THE STORY, THE JOURNEY

THE PERFORMANCE

PROGRAM

PROJECT GOALS, OBJECTIVES & PROGRAM
DEVELOPMENT

PROGRAM

CONCEPTUAL DESIGN

PRELIMINARY CONCEPT

CONCEPTUAL PLAN

FOCUS AREAS:

PASSAGE

BREATHE

FLOW

RECHARGE

WELLSPRING

Shaping a narrative in this project is critical to designing a successful place that triggers response for visitors and invites their participation. There are several major questions that are central to address throughout the design in the elements that shape the site as a story-telling and as a performance. It is important that the narrative addresses these questions in order to promote conservation response. One critical part of the narrative is that it can be non-linear.

The major questions this place seeks to explore, address:

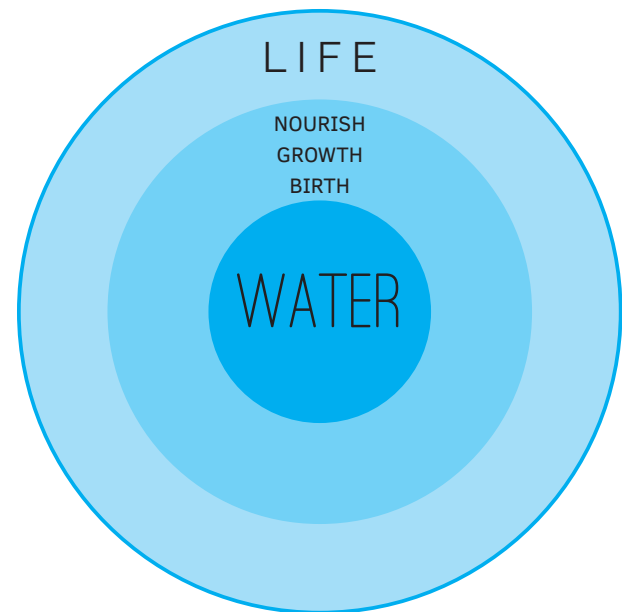
1. HOW DO WE USE IT?
2. WHERE DOES IT COME FROM?
3. WHAT ARE THE WAYS WE ENJOY IT?
4. HOW CAN WE BE WATER-WISE?

“places configure narratives. Landscape not only locates or serves as background setting for stories, but itself is a changing, eventful figure and process that engenders stories...Trees, rocks ground, weather or any elements can serve as emblems in a narrative” (Potteiger & Purinton, 5).

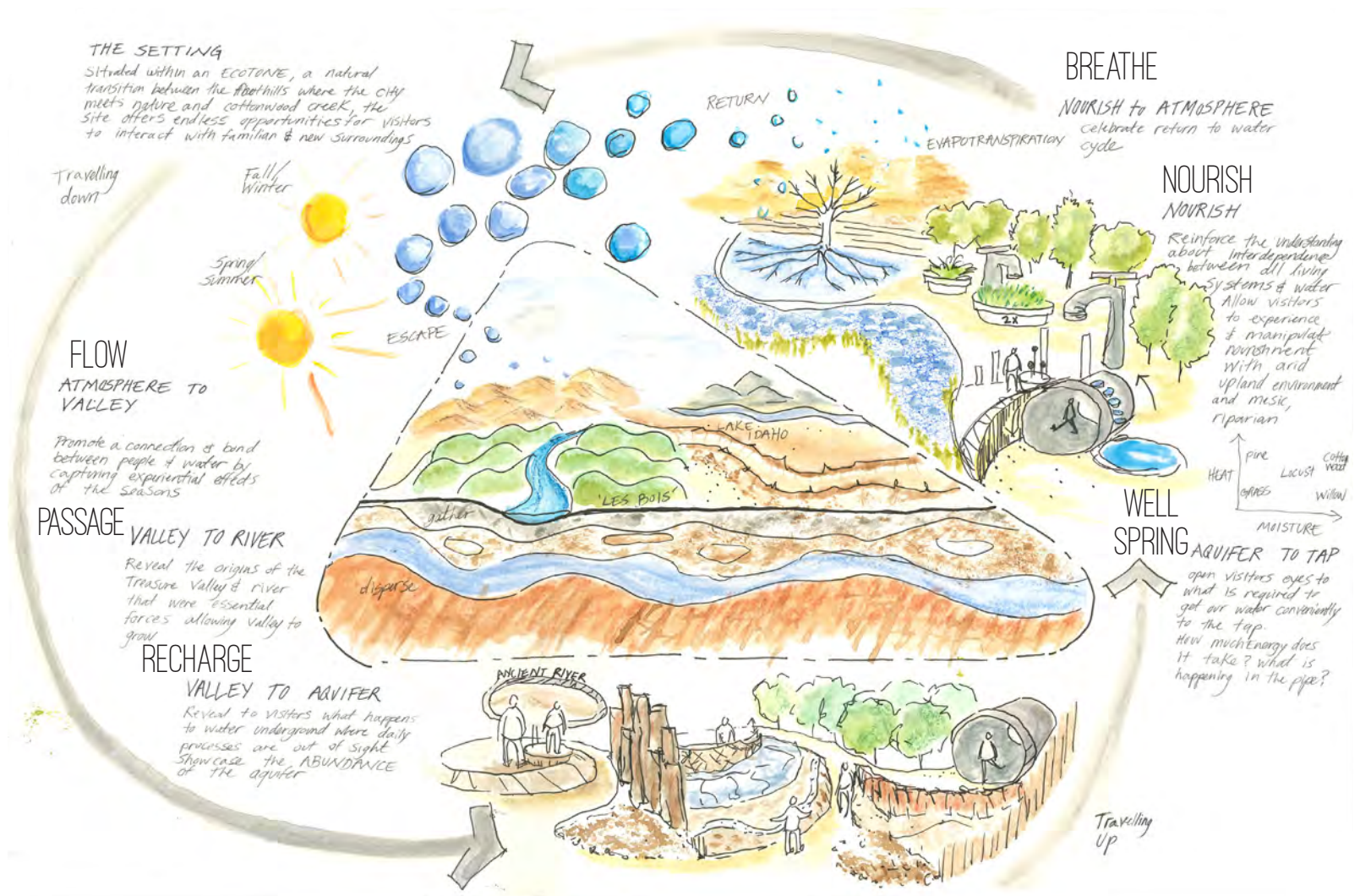
“Narratives are also there in landscapes. They intersect with sites, accumulate as layers of history, organize sequences, and inhere in the materials and processes of the landscape. In various ways, stories “take place” (Potteiger & Purinton, 5).

Thinking about the roles that water plays in daily life was critical to explore for the primary question, How do we use it? This is explored in tandem with the ongoing cycle of water and it's journey as a traveler. This idea develops and inspires ideas for the projects unique spaces that embrace water as our life sustaining force. Water has an everlasting presence in daily life and for the Treasure Valley, so thinking about it holistically as a cycle allows for a flexible experience in the project.

It was important to explore what processes are important to the Treasure Valley water. In the conceptual phase of the design, poetry began solidify the earlier, more literal design ideas with meaning that inspired the ideas for focus areas in the design. As a whole, these experiences create a place that asks for visitor discovery, exploration and performance.



THE STORY, THE JOURNEY



THE PERFORMANCE

All life has an interdependent relationship with water. This interdependent relationship is a daily life performance. Similar to a theatrical performance that can be felt, seen, heard, smelled and sometimes perhaps tasted, this project, 'Wondering Waters' seeks to create the same theatrical qualities that create a transformative place a site into a world that is exciting and memorable.

As a performance, the design invites visitors to participate as an audience and actors in the cast. The cast consists of both water and the visitors that can transform the magical substance in exploration takes place in the story-telling setting with designed "sets" which are on-site, human scaled experiences that vary throughout the site. The other important part of the performance takes advantage of the backdrops that reflect past, present and future regional life.



Source: <https://thisistoronto.wordpress.com/2011/08/01/dancing-in-the-rain/>

*Inspiring with a **cast** that fascinates and awes*



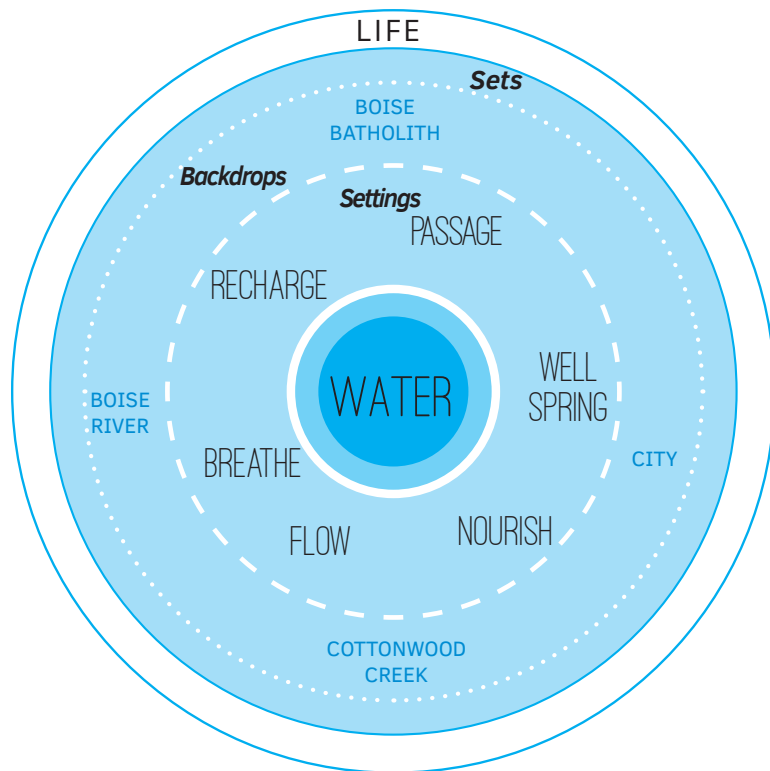
SCULPTOR



MUSICIAN



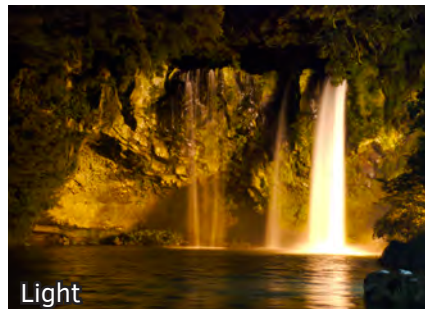
ACROBAT



DRAMATIC EFFECTS



Source: <http://www.weekendnotes.com/fog-sculpture-national-gallery-of-australia/>



Source: https://commons.wikimedia.org/wiki/File:Cheonjiyeon_Waterfall_at_night.jpg



Source: <https://en.wikipedia.org/wiki/Snowmelt>



NOURISHER



GATHERER



TRANSPORTER

GOALS, OBJECTIVES & PROGRAM DEVELOPMENT

GOAL	EXPERIENCE	OBJECTIVE
<i>Embraces</i> the natural patterns and processes unique to the site and Treasure Valley by showcasing their roles	<ul style="list-style-type: none"> ○ Native/ vernacular ○ Theatrical ○ Exciting ○ Seasonal 	<ul style="list-style-type: none"> ● Showcase the major regional processes characterizing the origins of the Treasure Valley ● Emphasize the roles of regional natural processes by creating close, interactive human- scale elements (Sets) that allow visitors to explore their experiential qualities ● Embrace the natural character of the site
<i>Stimulates</i> an appreciative bond between Treasure Valley residents & water, promoting more sustainable use of water in an arid region with abundant water resources	<ul style="list-style-type: none"> ○ Familiar ○ Integrative ○ Social ○ Informative ○ Inspiring ○ Reflective 	<ul style="list-style-type: none"> ● Create thought provoking experiences that allow people to develop contact with the site and the region ● Remind people about the relationships between people and all living systems that depend on water as a nourishing life source ● Reflect on the striking relationship between being in an arid region and reminding people about the luxury of having an abundant water resource ● Inspire more sustainable use of water in everyday life

REQUIREMENTS	ELEMENTS	TECHNOLOGY
<ul style="list-style-type: none"> ● Frame views of natural regional backdrops towards views of mountains, geology, river ● Emphasize the role that climate, the aquifer and energy play in supporting daily life ● Celebrate the change in seasons ● Accommodate processes that may occur more infrequently, such as flooding, drought, snow ● Reveal springs that natural groundwater flows from for water features ● Integrate paths with existing slopes by keeping paths on steep slopes gradual to prevent erosion ● Stabilize existing slopes where erosion occurs ● Clear vegetation to open visual access in wooded areas 	<ul style="list-style-type: none"> ● Frame views of ancient river bed ● Cottonwood Creek & Idaho Batholith ● Use native plants ● Drystack walls 	<ul style="list-style-type: none"> ● Incorporate drains and along pathways to handle seasonal runoff ● Use vegetation with soil stabilizing roots <ul style="list-style-type: none"> - Native grasses, ground-cover, shrubs for steep slopes
<ul style="list-style-type: none"> ● Celebrate long-range views that showcase the regional, larger picture connections ● Integrate views that provide prospect over the site, providing opportunity to reflect on site story ● Promote / integrate sensory experiences that promotes peoples ability to develop a relationship with water ● Incorporate resting areas that provide opportunity for thought, reflection, and observation ● Provide shade in areas to emphasize heat arid climate ● Showcase water at a range of scales , from abundant to scarce ● Familiar examples/ demonstration based on common activities most people are familiar with such as watering plants ● Incorporate take-home messages with simple, easy-to- change ways people can use water more effectively as they desire ● Showcase how we get water and the conveniences that we take for granted to promote appreciation of our resources 	<ul style="list-style-type: none"> ● Landmarks ● Resting areas/ Benches (intimate + group) ● Screens ● Tunnels/ pipes that reveal the processes hidden from daily life ● Planting scenarios (Mesic, Mesic/Arid, Arid) 	<p>Resting spaces:</p> <ul style="list-style-type: none"> - Seating - Locate on firm stable ground with 2% slope or less - 50 foot maximum intervals spacing between benches minimum 60" length <ul style="list-style-type: none"> ● Take advantage of solar effects to create experiential effect of arid desert ● Deep water for water abundance and shallows edges for water scarcity

GOAL	EXPERIENCE	OBJECTIVE
<i>Invites</i> a diverse group of users to playfully interact with and manipulate water in its various forms and settings	<ul style="list-style-type: none"> ○ Exploratory ○ Manipulative/hands-on ○ Multi-sensorial ○ Multi-purpose 	<ul style="list-style-type: none"> ● Design for a range of abilities and interests ● Create features that remind people about the relationships between people and all living systems that depend on water ● Showcase the ways we use water and how it nourishes life
<i>Narrates</i> a story about water as an essential force in the Treasure Valley that sustains all life	<ul style="list-style-type: none"> ○ Coherent ○ Non-linear ○ Natural-feeling ○ Simple ○ Memorable 	<ul style="list-style-type: none"> ● Emphasize the natural systems in the Treasure Valley, how they work, their characteristics by organizing clear areas centered around major themes that create a coherent whole ● Capture visitors attention by creating memorable and distinct focus areas that are centered around major themes, creating a coherent whole together
<i>Excites</i> continuous visitation from a range of local users and visitors	<ul style="list-style-type: none"> ○ Inviting ○ Temporal ○ Comfortable ○ Legible ○ Exploratory 	<ul style="list-style-type: none"> ● Incorporate opportunities for new and old visitors that create experience that promises a depth of exploration ● Design legible spaces that provide an ease of orientation and wayfinding for visitors ● Utilize the site microclimate to orchestrate continuous change throughout the seasons that surprises visitors

REQUIREMENTS	ELEMENTS	TECHNOLOGY
<ul style="list-style-type: none"> ● Create spaces that provide opportunities for people with varied height, strength, fitness ● Organize spaces that share compatible uses ● Allow visitors to experience the cause and effect of water changing its form and setting ● Incorporate elements that are experiential through touch, taste, smell, sound and sight 	<ul style="list-style-type: none"> ● Seating that accommodate lunch-break visitors and educational programming ● 'Nourish to atmosphere' exhibit allowing visitors to experience evaporation in dry area ● 'Atmosphere to Valley' allowing visitors to feel condensation ● Maintenance/ mechanical & bathroom 	<ul style="list-style-type: none"> ● View area accommodates height range of people who are three feet to six feet tall
<ul style="list-style-type: none"> ● Organize narrative into clear areas while repeating coherent themes in the whole site and within focus areas ● Create a series of "outdoor rooms" with feeling of enclosure <ul style="list-style-type: none"> - Create distinctions between focus areas and with site surroundings - Screen distracting and obstructive edges beyond the site 	<ul style="list-style-type: none"> ● Overlook areas providing views of site ● Focal points within areas ● Screening 	<ul style="list-style-type: none"> ● Unite story with repeating materiality to create coherence ● Layer plantings to provides a sense of depth in both large and small areas <p>Screening:</p> <ul style="list-style-type: none"> ● Small spaces with thicker screening ● Large spaces with thinner screening
<ul style="list-style-type: none"> ● Secondary areas that may be more challenging, reflective and exciting <ul style="list-style-type: none"> - Extend opportunities beyond the major areas to secondary areas <p>Pathway opportunities</p> <ul style="list-style-type: none"> ● Multidirectional movement hierarchical system of paths ● Pacing between spaces allows for enjoyment and reflection ● Use screening to provide a quality of hide & seek <ul style="list-style-type: none"> - Use partial views of areas beyond to entice visitors to explore - Use slopes to block views and create spatial edges ● Connect key features and nodes of activity ● Provide visual access at entrances, between spaces and direct views towards key points that are located beyond the site ● Support a range of transportation modes 	<ul style="list-style-type: none"> ● Primary, secondary, tertiary paths ● Gateway at main entrance and secondary entrances ● Landmarks or way-finding signage for most significant features ● Parking for visitors driving to site ● Bike racks 	<ul style="list-style-type: none"> ● Use simple materials <ul style="list-style-type: none"> - use slopes to block views and create spatial edges - use flat ground to open views beyond ● Features that freeze

GATEWAY ENTRANCE AREA : 'CAPTIVATE'

200 – 250 SF

Activities:

- Gathering
- Resting, waiting
- Wayfinding

Performance Criteria:

1. Locate close to parking
2. Integrate threshold element or planting that defines entrance and provides gate
3. Clearly define adjacent pathway opportunities on ground plane and vertical plane with distinct vegetation and pathway surface
4. Incorporate sociopetally arranged seating that engages conversation
5. Provide trashcans for litter
6. Provide sneak peaks of areas or elements beyond
7. Incorporate kiosk area to provide information and take home messages
8. Incorporate drystack cairn that invites curious visitors to enter through gateway through use of sound
9. Incorporate welcoming signage

DRINKING FOUNTAIN 'WELL SPRING'

50-100 SF

Activities:

- Drinking
- Reflection
- Gathering
- Interactive play/ exploration

Performance Criteria:

4. Locate close to main entrance
5. Create a feature that provides adjustment opportunity to fit various users
 - one spout for kids 3' -5' tall
 - one spout for adults 5'-6'11", using same plumbing feature
6. Use textural surfaces around the fountain to prevent slipping
7. Create access fountain with no less that 3' to accommodate most mobility types
8. Provide comfortable shade with tree cover or structure

FLOW

2500 SF

Activities:

- Contemplation
- Reflection
- Exploratory play
- Resting/ observation

Performance Criteria:

1. Provides views of Idaho Batholith to east or ancient desert to west
2. Locate in transitional area between slopes
3. Allow for solar exposure to capture enhance ice melt effects
4. Integrates screening between waterfall annex area and sound fountain to create surprise and mystery
5. Incorporate rock drums that allow for intimate and group use
6. Incorporate seating for observation and resting
7. Provide screen in fountain to keep out litter and debris
8. Incorporate drumming stones/ sticks that attach to rocks
9. Incorporate outlines for major keys on rock to produce including:
 - B major(cheery, hopeful), G major(E major(Joy, delight), D major(triumph)
10. Provide adequate space around rock gongs, 6-8'

PASSAGE

10,000 SF

Activities:

- Resting/ observation
- Quiet exploration

Performance Criteria:

1. Locate close to 'Breathe'
2. Locate in existing moist area to be enhanced
3. Close proximity to main entrance
4. Create 'willow tunnel' exploratory pathway option
5. Use plants that like moisture but can tolerate drought
6. Provide both intimate and group seating options

BREATHE

5,600 SF

Activities:

- Relaxing
- Exploratory play
- Reflection

Performance Criteria:

1. Locate in transitional area near slopes and moist environment
2. Provide close access to gathering area
3. Provide seating for intimate and shared resting
4. Integrate vapor that can be activate by simple touch button, or potentially by moisture sensor
5. Provide comfortable shade with tree cover or structure
6. Use plants that have hygroscopic properties and create desert - transition, and offer comfortable, interesting feel while providing exceptional feeling opportunity
 - Hygroscopic plants: Mountain Mahogany, Indian ricegrass, Little bluestem

Year-round structure (shrubs)

- Threadleaf Rubber Rabbitbrush(*Ericameria nauseosa* subsp. *consimilis*)
- Big Sagebrush (*Artemisia tridentata*)
- Sand Sagebrush (*Artemisia filifolia*)
- Black Sagebrush (*Artemisia nova*)

Perennials & Grasses

- Desert Sunrise Hummingbird Mint(*Agastache* 'Desert Sunrise')
 - Sioux Blue Indian Grass(*Sorghastrum nutans* 'Sioux Blue')
 - Black Flowering Fountain Grass (*Pennisetum alopecuroides* 'Moudry')
 - Karley Rose Oriental Fountain Grass (*Pennisetum orientale* 'Karley Rose')
 - Boughton Silver Wormwood (*Artemisia stelleriana* 'Boughton Silver')
 - Lambs Ear
7. Use raised beds that encourage feeling opportunity
 8. Incorporate secondary exploratory stone walk with shallow pool of water
 - Use stepping stone boulders that vary in size and placement for range of abilities, spaces 1/2 foot to 1 1/2 feet range
 - Provide edge that creates distinct texture
 9. Use surface that provides traction to prevent slipping
 10. Incorporate interactive scupper/weir feature allowing visitor to flood shallow basin

11. Incorporate screening that creates mystery near vapor to excite visitors

RECHARGE

3,500 SF

Activities:

- Resting
- Interactive play/ exploration
- Reflection

Performance Criteria:

1. Views of Ancient river plain to south
2. Close proximity to gathering area
3. Within or near arid area
4. Incorporates seating for reflection
5. Integrates sound that can be discovered near entrance
6. Provides water table element that allows visitors to discover rapid recharge of aquifer
7. Distinct entrance gateway creates cavernous like feel
8. Close proximity to 'Nourish' area to reinforce water source association
9. Provide comfortable shade with tree cover or structure

GATHER

8,800 SF

Activities:

- Resting
- Gathering
- Relaxing

Performance Criteria:

1. Multipurpose flexible gathering space
2. Water feature focal point
3. Seating diversity
 - Group
 - Intimate

NOURISH

10,000 SF

Activities:

- Reflection
- Exploratory play
- Demonstration

Performance Criteria:

1. Use plant palette that showcases xeriscape plants
2. Incorporate a desert spring features that reflects the fragility of water in the desert
3. Create feature that allows visitors to feel & see amount of water needed to sustain a large surface area of xeriscape plants compared to small area of water-loving plants, such as turf
4. Provide adequate screening and sculpted earthwork buffers at western and south edges near Veterans Administration parking
5. Create areas that provide shade refuge and resting in the warm seasons

PATHS

Overarching Performance Criteria:

1. Use bends in the paths to excite interest and create mystery
2. Create loop opportunities that allows incremental exploration for new visitors
3. Use cast in place concrete that is tinted, brushed or mixed with aggregate to reduce glare. Or, use precast concrete pavers or textured stone surfaces
4. Use colors that are neutral and not extremely light colored to avoid blinding users
5. Use joints with tight spaces with material like dry stone

Primary Paths

Activities:

- Socializing
- Relaxing

Performance Criteria:

1. Use 6-8 feet wide paths for two people on foot or in wheelchairs side by side
2. Include railing where slopes exceed 1:12 feet.
3. Incorporate multiple levels with 34" adult and 20-28" childrens/small adults
4. Edge paths with curbs that are 6" high or greater so wheelchair users will not roll off the path. Use visual accents that contrast with pathway surface
5. Use handrails that will stay cool in the heat
6. Design wide and curving paths with ample shade and seating every 10-15 feet

Secondary Paths

Activities:

- Reflection
- Relaxation

Performance Criteria:

1. Use materials that are distinct from secondary and tertiary paths

Tertiary

Activities:

- Reflection & Observation
- Exploration
- Maintenance

ANCILLARY AREAS & ELEMENTS

LIGHTING

Activities:

- Accent lighting
- Security
- Wayfinding

Performance Criteria:

1. Use LED or solar lighting along path edges
2. Use path and spread lights on paths, to flank entry and gathering spaces and locate to strategically to guide visitors along paths that curve.
3. Incorporate subtle illumination that allows the garden to be seen at night.
4. Use lighting to indicate edges

5. Use downlighting and pair overhead and peripheral lighting along paths with low-level lighting elements to avoid blinding and create dark shadows.
6. Use uplights and accent lights and mount in the ground to accent sculptural elements and specimen planting.
7. Use ground and well lights in paving and planting beds

KIOSK

Activities:

- Conservation education demonstration
- Take-home messages display

Performance Criteria:

1. Incorporate space for bulletin and information
2. Provide seating nearby at main entrance
3. Provide smaller kiosks at secondary access points

SIGNAGE

Activities:

- Wayfinding
- Labels

Performance Criteria:

1. Use matte finishes on signage and built structures to reduce glare
2. Provide signage at secondary access points

PARKING

Performance Criteria:

1. Provide 3 Handicap- accessible spaces
 - 1 van accessible space (9' wide)
 - 2 handicap vehicle spaces (8.5' wide)
 - Incorporate shared access aisle 15' wide
 - Integrate 1: 12 max flare landing with texture that reduce glare
 - Use smooth surface or tight joints that prevent wheel stops
2. Provide clear lines of sight to access site

SERVICE/ MECHANICAL AREA

60 SF - 200 SF

Activities:

- Maintenance Storage
- Mechanical storage

Performance Criteria:

1. Provide access for maintenance + repair vehicle or 4 wheeler-type truck
2. Provide screening to absorb and reduce noise

BATHROOM

300 SF

Activities:

- Restroom
- Handwash area

Performance Criteria:

1. 1 male/1 female restroom (12'x 10' apx. each (120 SF))
2. Provide level slope for wheelchair access
3. Provide adjacent shared handwash area (20 SF apx.)

BIKE RACKS

Activities:

- Parking

Performance Criteria:

1. Provide sound buffering with vegetation or slopes
2. Accommodate variety of bike types with inverted U, post & ring or wheelwell- type rack spaced at least 24" apart
3. Provide convenient access with 72" min -96" deep parking area and 48"min. aisle to 60".

CONCEPTUAL DESIGN

PRELIMINARY CONCEPT



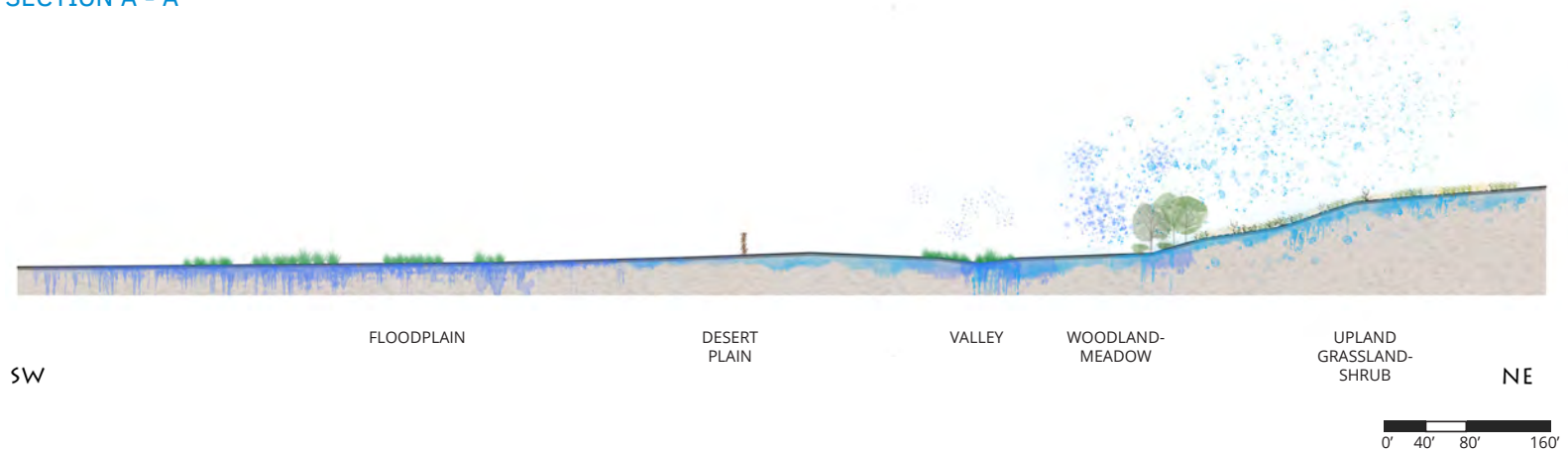
This conceptual design represents the early stage of the design process. The concept involves the synthesis of earlier analysis opportunities and constraints along with the narrative.

This concept guides next phase of the design

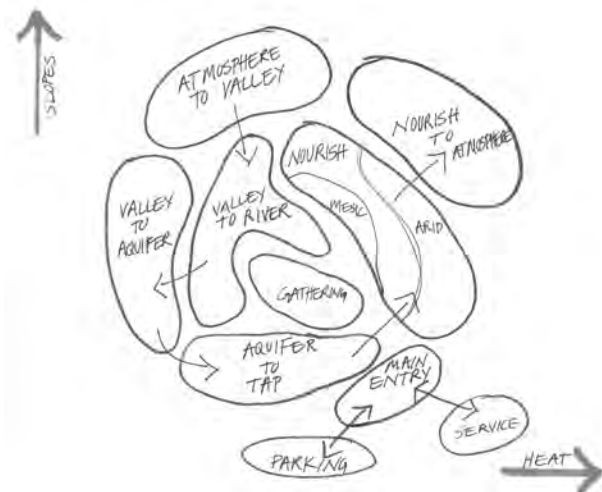
By outlining the general areas, access and circulation allowed the next phase of the program emerge and guide the design for the garden as a whole and for the specific focus areas.

The cross section below represents how the site character shape a range of experiences through microclimates and pathway experiences through moisture, topography and habitat. The upland grassland area transitions between the hid woodland and the toe of the hill and the dry upland. This is where water can arrive the site from the atmosphere through precipitation and escape through evapotranspiration amongst the woodland stands. The valley is where water gathers and provides moisture.

SECTION A - A'

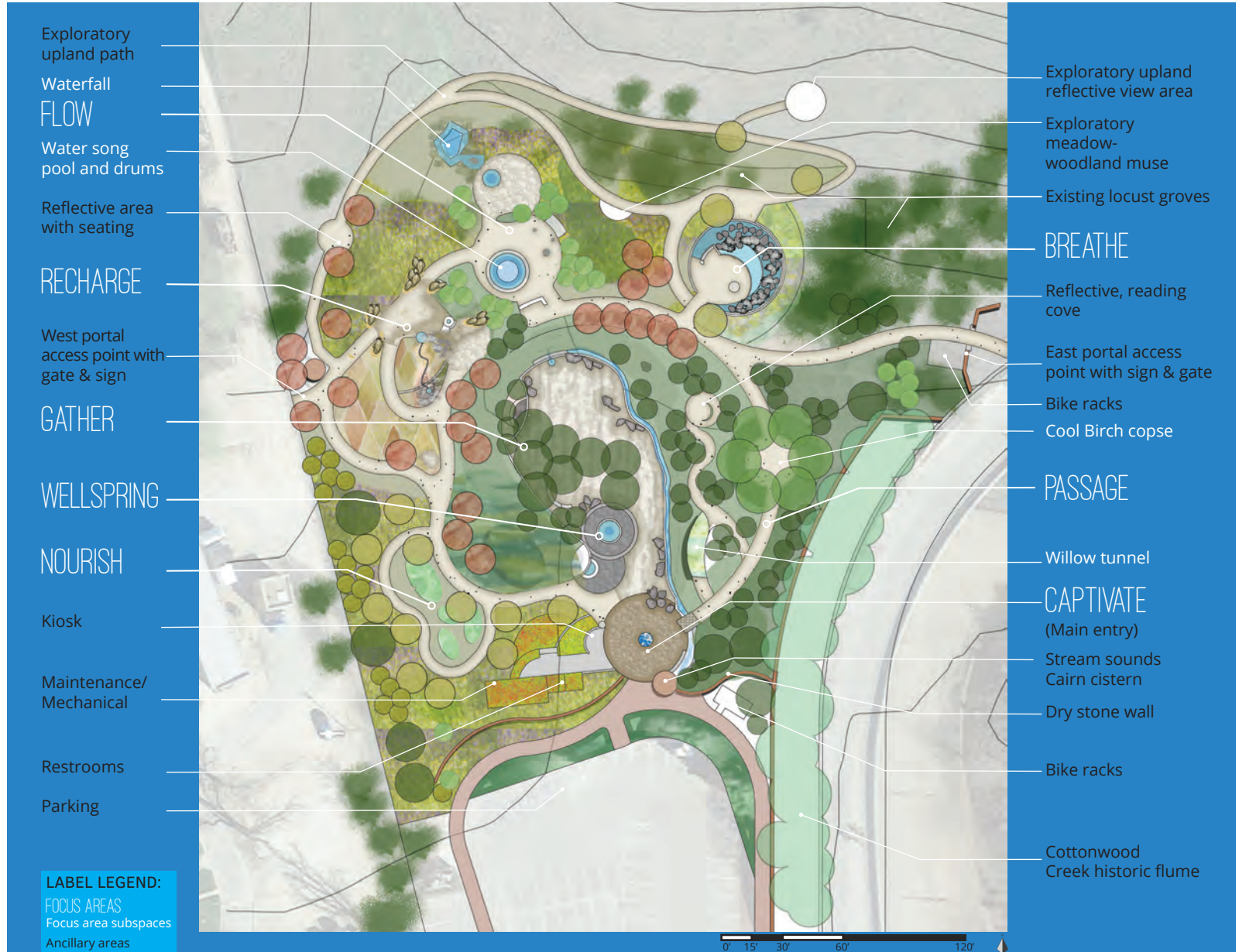


IDEAL SCHEMATIC



This ideal schematic diagram represents ideas regarding site heat and topography in relation to processes that inspire design focus areas.

CONCEPTUAL PLAN



The conceptual plan expresses the orchestration of spaces throughout the whole site. The primary entrance is the front entry hall of the garden. This is where visitors can meet a friend, find information, have an impromptu meeting, or use the rest room. The main entrance connects to the central gathering area and the main pathways leading in various directions through the exhibits.

This main pathway in the garden connects the exhibits in a sequence that is open to visitor exploration. Surprises can be found throughout the garden along all of these route options, creating continuous opportunities for the regular and the new visitor alike.

Passage is one of the first areas beyond the main entry. It is an exhibit that embraces the moist, cool microclimate. Visitors entering the garden through the secondary gateway from the east will also move through this cooler environment. This woodland becomes drier towards the north where the setting is characterized by a more semi-xeric microclimate.

Breathe is located in this area at the toe of the hill. Here, the garden fades into the natural landscape characterized by a drier sagebrush-grass upland. Beyond Breathe, visitors can find more exploratory experiences in the woodland and upland areas. Secondary and tertiary paths traverse the steeper terrain on the site, extending the depth of exploratory opportunities in the garden. As well, these exploratory areas provide places where the visitor can rest and reflect.

Another area in the garden is called Flow, which is located at the mouth of the canyon in the garden. Flow is a place where the visitor can connect with water through sound and exploratory play. The visitor finds refuge in this canyon that features plants creating a semi-mesic microclimate. This gradually transitions to a more xeric landscape defined by plants that are commonly found in drier areas throughout the region.

Recharge is the next exhibit in the garden. Located outside of the canyon, the setting becomes drier as a space that is defined with unique xeric, desert-adapted plants. Similar to Flow, Recharge also intrigues the visitor with a unique experience of sound.

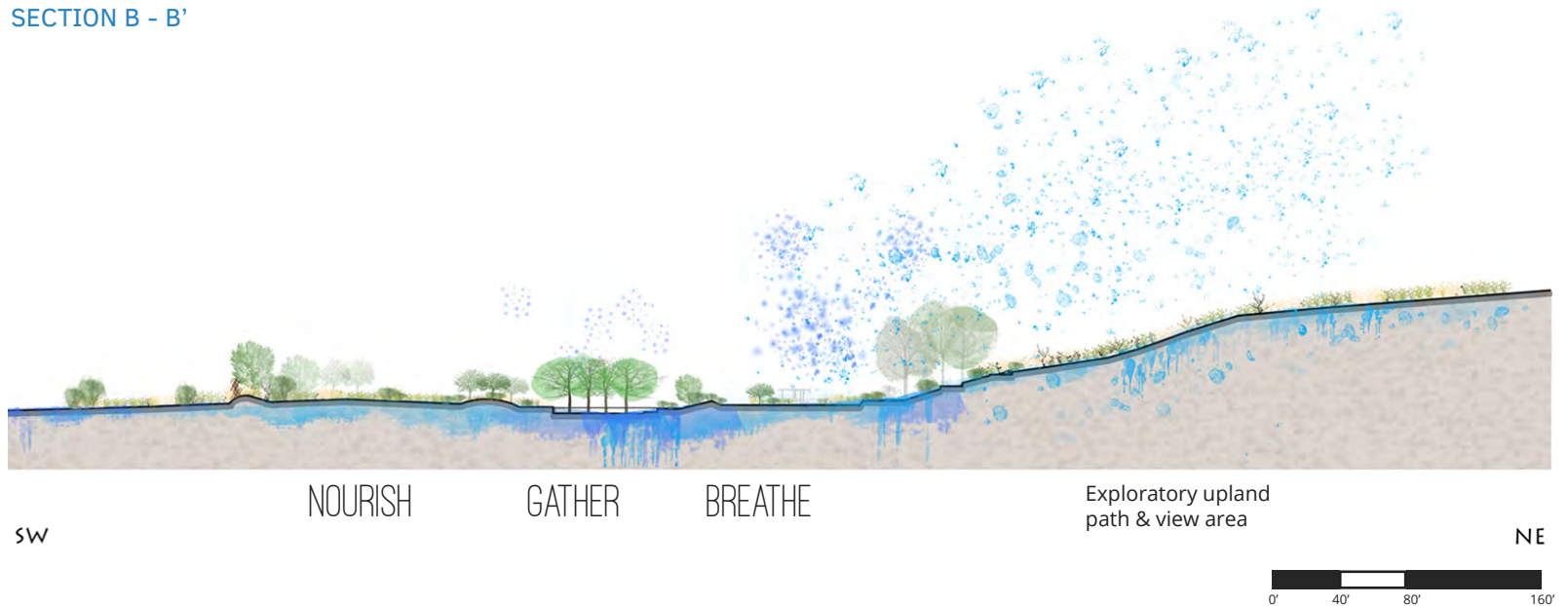
A junction occurs along the main pathway west of Recharge towards the garden boundary. This connects to the gateway that provides convenient access to the garden from the Veterans Administration property at the west. As well, it connects the main path towards the more challenging uphill exploratory loop traversing the steep areas in the garden.

The main pathway also takes visitors through the area called Nourish. Nourish is characterized as a more xeric place. It greets areas that offer semi-xeric refuge near the edge of the garden and towards the gathering area.

The central gathering area in the garden is a comfortable semi-xeric setting where visitors can congregate and relax. Similar to the apse of a church, Wellspring is positioned as a cove within the gathering area. Here, visitors can find a place for refreshment and reflection.



SECTION B - B'

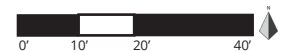
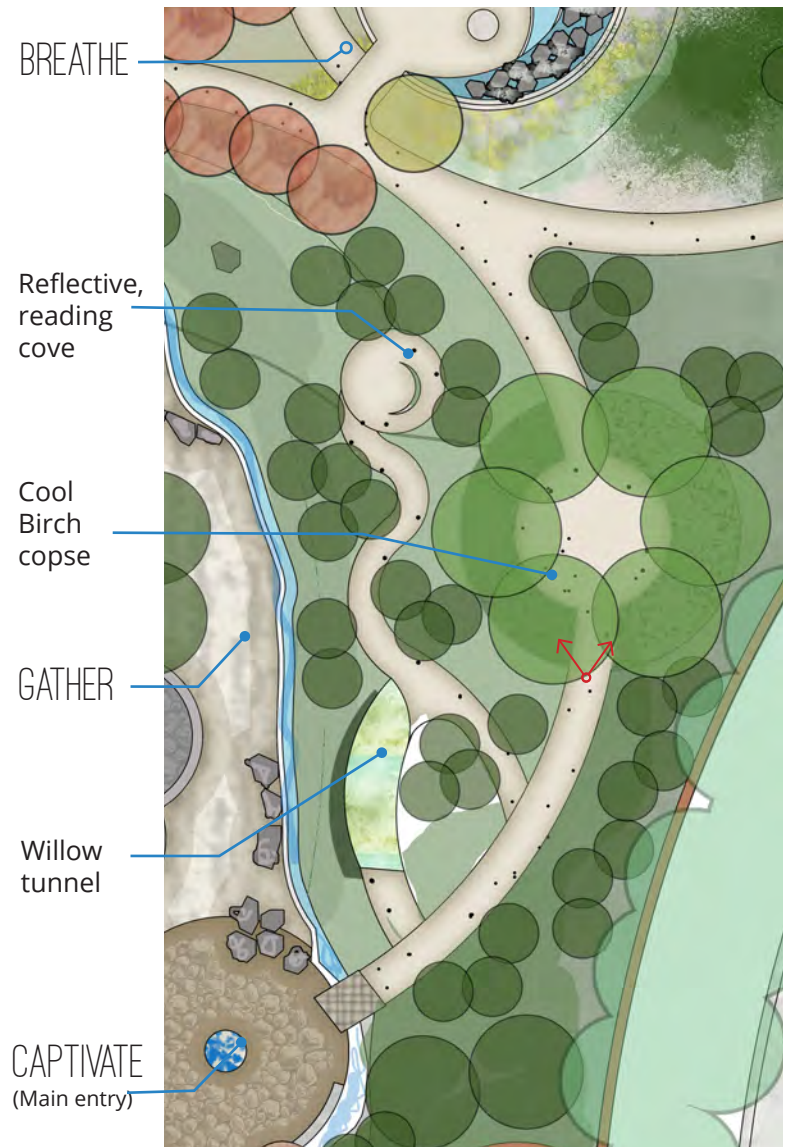


The cross section represents the enhancement of the site character. 'Gather' embraces the valley as bosque-like oasis that is hemmed in by semi-arid and arid areas. It features the area, 'Breathe', which celebrates the air and moisture exchange occurring in the transitional area between the xeric upland beside the humid woodland and the valley below.

PASSAGE

Passage is designed to offer visitors with an experience of exploration, reflection, and quiet retreat. After crossing the bridge from the entrance, visitors are drawn towards a sinuous and curving path through a cool and moist woodland. Here, they have the option to go through an enchanted tunnel woven with willow. In the cool season, willow dew drops will glisten in the sun and provide a feature for quiet fascination.

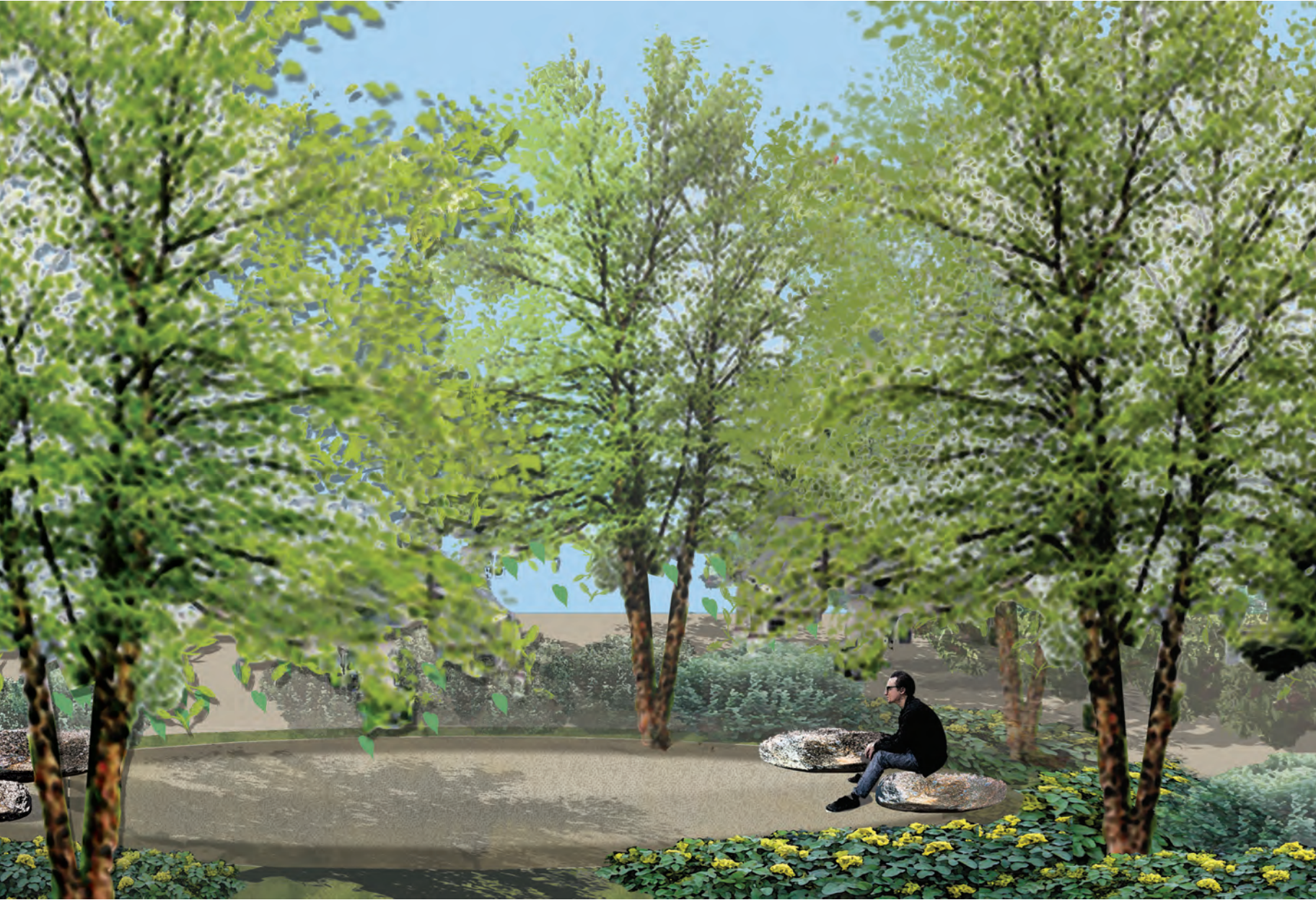
Further down the path, a copse of with birch trees welcomes visitors with a sense of enclosure and quiet fascination. It is inspired by protection and cooling. These are two elements that drew early pioneers to the Treasure Valley. Here, visitors can sit on the granite stones, watch the birch leaves dance to the wind and admire dew drops twinkle on the catkins. The alder tree symbolizes passage as a pioneer tree that colonizes fertile moist territory. As well, it references the Cottonwood tree, which dominates the nearby area and shares similar qualities.

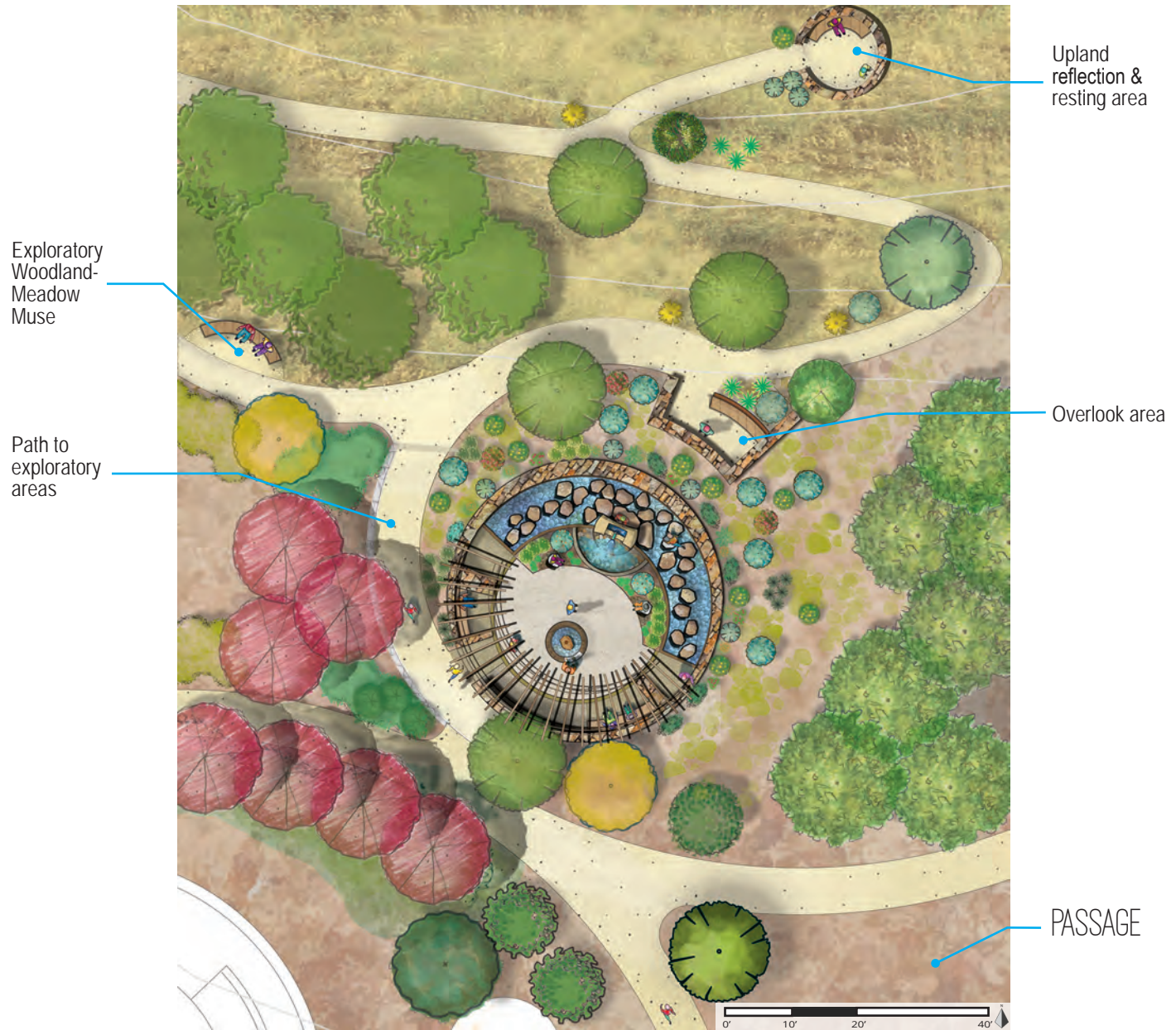




The Willow tunnel



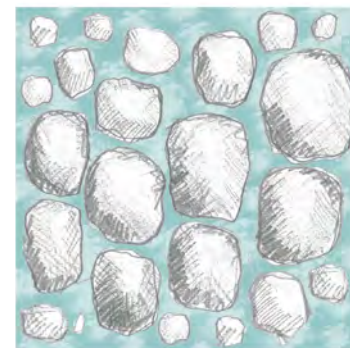
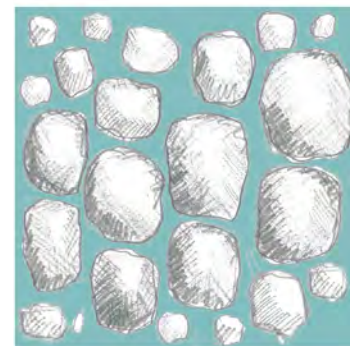




The next area featured beyond the moist Passage woodland is called Breathe. Breathe is a place for reflection and exploratory play. It is centered on the exchange between the water, all living creatures and the atmosphere. It is hemmed in by a border of plants with a range of textures that invite visitors to explore and discover a variety of tactile experiences. Reminding visitors of the local landscape, this border fades into the nearby locust grove and the quintessential upland sagebrush grass foothills.

An arc of stepping stones encourages visitors to slowly traverse along the water. This is inspired by how water moves slowly in the saturated zone underground. At the core, a small basin with an interactive scupper element asks for visitor exploration and play. Visitors can flood the small pool with an interactive flood gate and watch water dissipate rapidly into a permeable bed of cobbles. This feature emulates the way water passes through fine pores in the unsaturated zone. From here, water transforms into another magical form, gas. Visitors discover water sneak out of the central stone as delicate, mysterious steam and watch it vanish into the atmosphere. The visitor will rediscover water in a new disguise in the nearby area called, Flow.

Breathe also serves as a gateway to several exploratory paths. One path leads visitors to the reflective meadow-woodland muse. Another path leads visitors to the Breathe overlook where they can observe the fascination from above. There is opportunity for further exploration with a trail leading to a reflection area in the upland setting. Here, visitors can connect with views of regional features and reflect on the everyday exchanges occurring naturally in the Treasure Valley.



Pores - Pencil Sketch by author





Interactive
scupper
feature

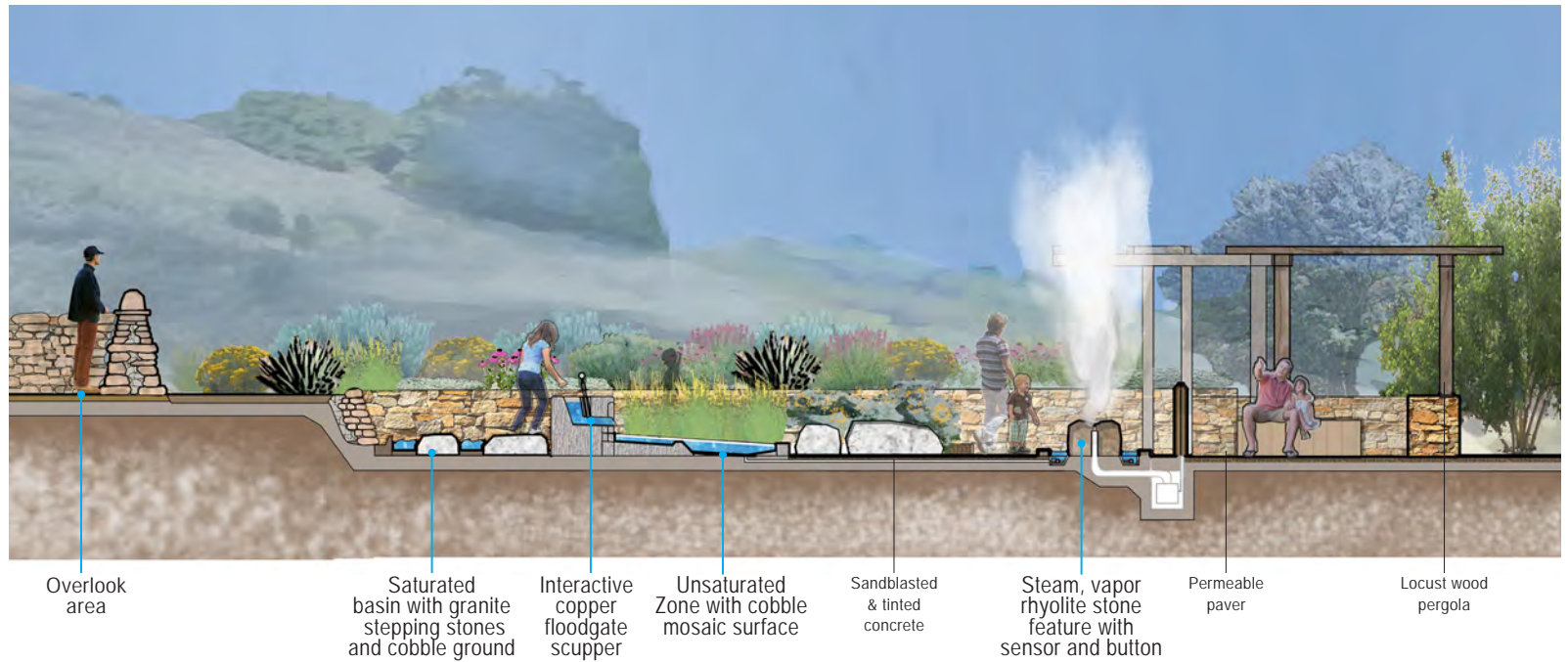
Saturated
stone
walk

Drystack
wall with
textural
plant
border

Steam
stone

Design

SECTION A - A'



PLANT DETAILS



Woolly Butterfly bush
Buddleia marrubifolia















Little Bluestem
Schizachyrium scoparium

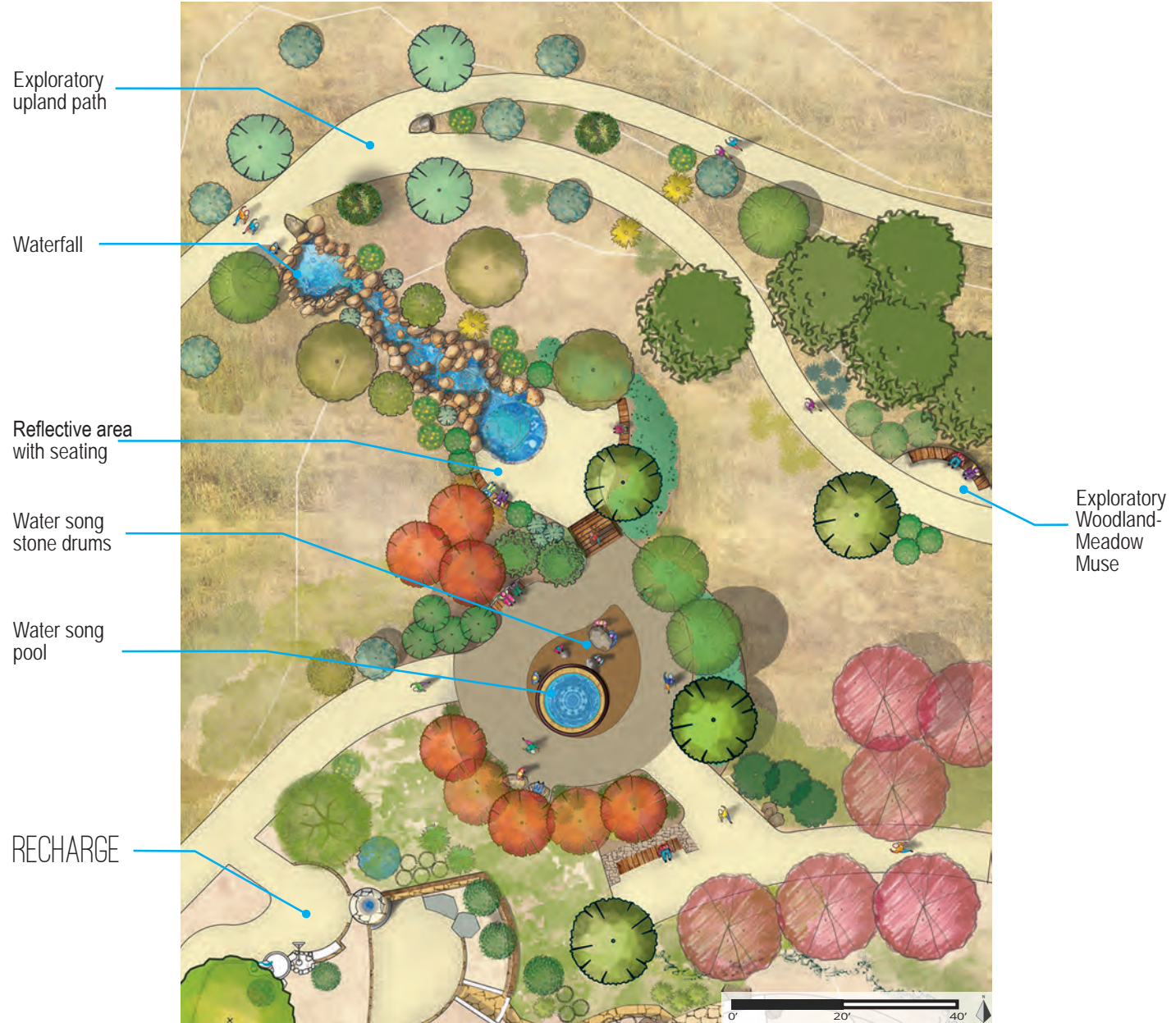


Threadleaf Rubber
Rabbitbrush
Ericameria nauseosa
subsp. *consimilis*



PLANT CALENDAR

SPRING			SUMMER			FALL			WINTER		
APR	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.
											
Blue Flax <i>Linum lewisii</i>			Threadleaf Rubber Rabbitbrush <i>Ericameria nauseosa</i> subsp. <i>consimilis</i>	Desert Sunrise Hummingbird Mint <i>Agastache 'Desert Sunrise'</i>		Little Bluestem <i>Schizachyrium scoparium</i>	Scarlet Gilia <i>Ipomopsis aggregata</i>	Wooly Butterflybush <i>Buddleia marrubifolia</i>	Lacy Buckwheat <i>Eriogonum corymbosum</i>	Utah Agave <i>Agave utahensis</i>	
											
Chocolate Flower <i>Berlandiera lyrata</i>			After Midnight Coneflower <i>Echinacea 'Emily Saul'</i> After Midnight		Alderleaf Mountain Mahogany <i>Cercocarpus montanus</i>		New Mexico Privet <i>Forestiera neomexicana</i>				



After strolling along the main path through a fragrant meadow at the toe of the hill visitors enter the next room in the garden, Flow. This room is located at the mouth of the canyon in the garden opening to the valley below. It is a place that invites visitors to engage with water through sound. Visitors can discover the various emotions of water through an exploratory, interactive performance as well as through quiet reflection.

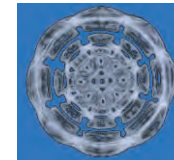
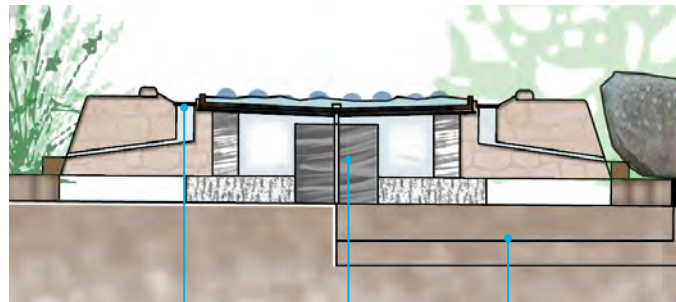
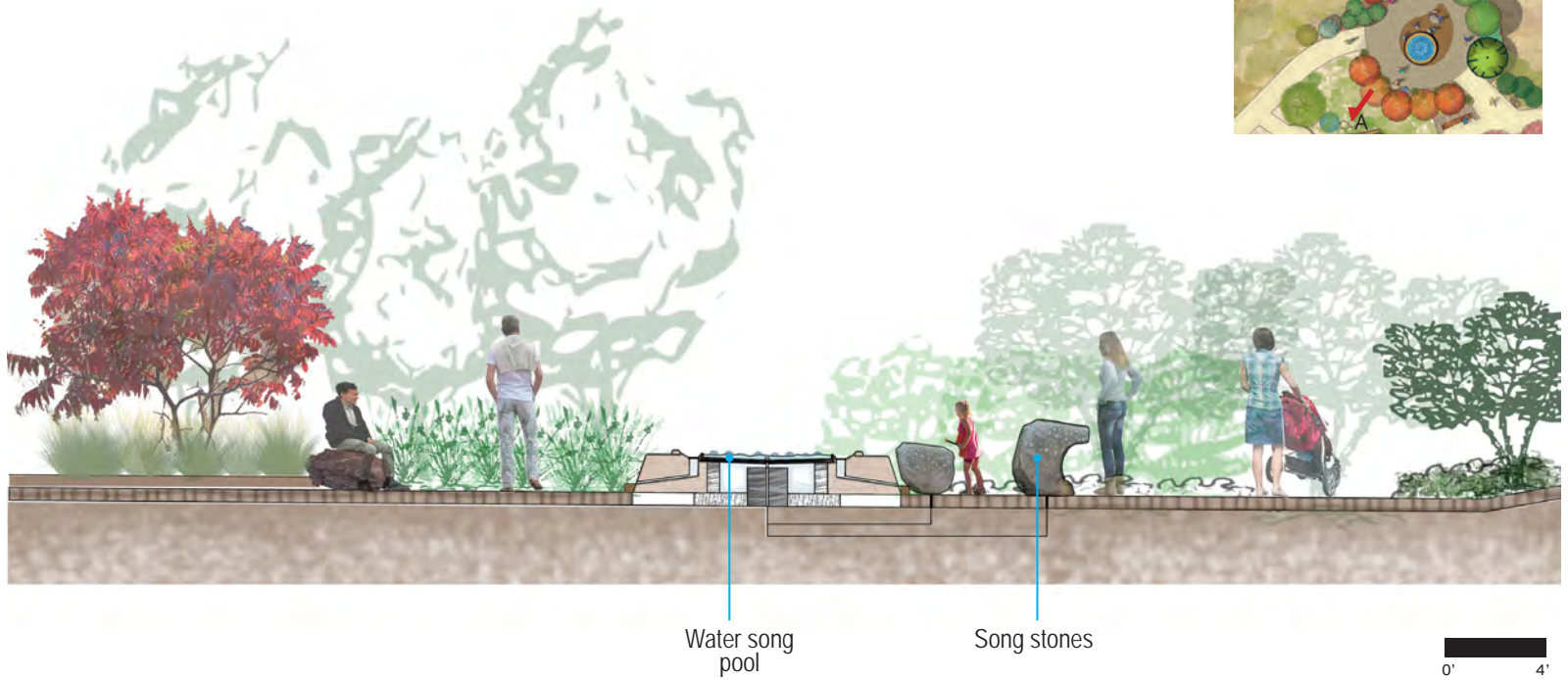
A set of boulders represent rocks that are deposited by natural forces throughout the valley. These boulders are song stones that can be played as drums in an exploratory performance. The mysterious sedimentary stones contain natural iron, a mineral that is found in our local water supply. Visitors tap on the boulders with smaller stones to create bell-like ringing melodies. These rocks connect to a shallow basin filled with water. The water in the basin reacts to the sound vibrations causing a ripple effect. By seeing sound coursing through the water, the visitor creates an emotionally engaging performance. The variety and frequency of taps create a series of fascinating concentric and Mandela-like forms in the round basin, which are reminiscent of rhythms in the atmosphere. Several drum shapes and sizes offer allow visitors to enjoy the discovery experience alone or in groups.

Further into the canyon, a waterfall awaits visitors with surprise and mystery. The misty curtain creates a contrast with the interaction nearby providing a feature to contemplate. It reminds visitors to remember the origins of water and the journey it takes down from the mountains and through gulches. Plants reinforce this journey by creating a gradient with semi-mesic species in the lower canyon and semi-xeric and xeric,

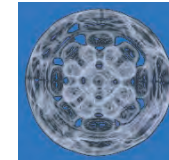


desert-adapted species that transition up into the hillside. Visitors can see and appreciate the abundance water. At the foot of the tiered waterfall, a plunge pool provides a place for reflection. The waterfall flow can change throughout the day, and the seasons, providing the opportunity for returning visitors the observe the changes in water levels.

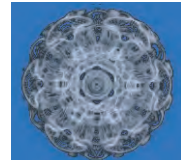
SECTION A - A'



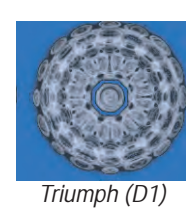
Joy (G1)



Delight (E1)



Cheer (B0)



Triumph (D1)





PLANT CALENDAR

SPRING

APR

MAY

JUNE

JULY

SUMMER

AUG.

SEPT.

OCT.

FALL

NOV.

DEC.

WINTER

JAN.

FEB.

MAR.



Antelope bitterbrush
Purshia tridentata



Staghorn sumac
Rhus typhina



Elderberry
Sambucus canadensis



Snowberry
Symphoricarpos albus



Mockorange
Philadelphus lewisii



Netleaf Hackberry
Celtis reticulata



Threadleaf Rubber Rabbitbrush
Ericameria nauseosa subsp. *consimilis*

RECHARGE

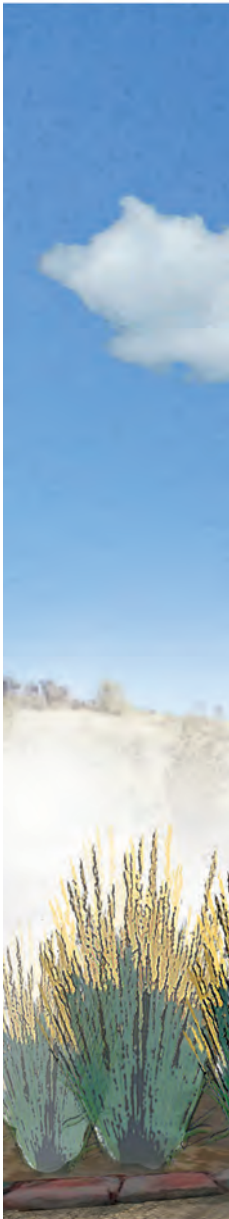
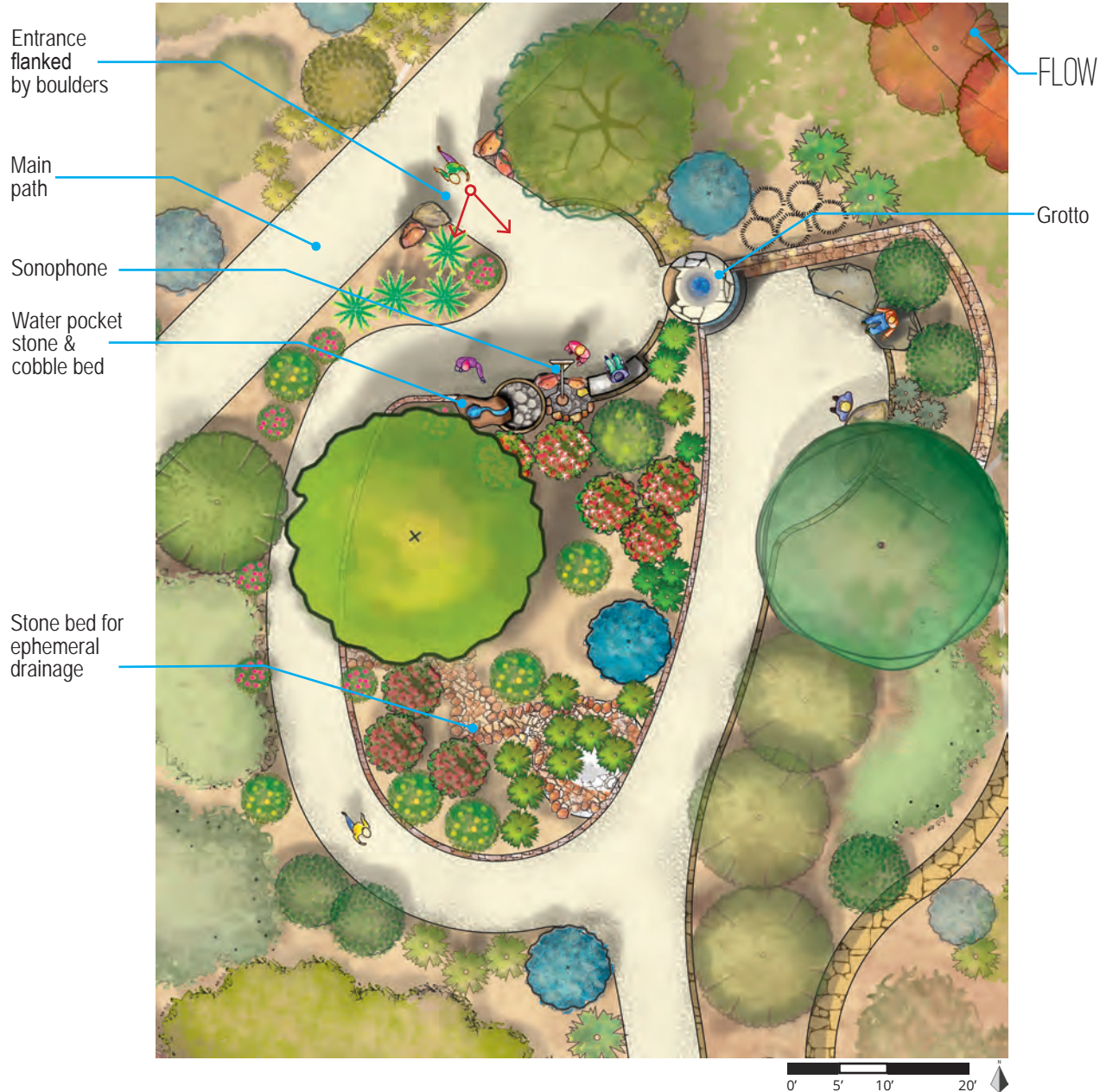
From the canyon, visitors continue along the main path towards the next area, Recharge. After passing through the entrance framed by robust boulders, visitors are greeted by features that create a sense of mystery through sound and sight.

Visitors are drawn towards a large stone carved with a pool and a stream of flowing water. This element is reminiscent of water journeying through the aquifer. It emulates the way water rests in the mountains and then escapes, perhaps after a rain storm or snowmelt, carving the landscape as it makes its way to the valley floor. It flows gently from the stone into a bed of cobbles on the ground. Here, it escapes again percolating underground.

Recharge creates a meditative and reflective experience. Underground and unseen, water drips into a reservoir and the sound of each drop is amplified by a sonophone. It surprises visitors through the disguise of sound. The intent is to remind visitors about the power of each and every drop of water. Visitors also might discover the roof opening to the Grotto, where they can see glimpses of water below as it shimmers in the changing light.

The path beyond reminds visitors of our desert region. The palette of semi-xeric and xeric plants have vibrant colors to reinforce the power of sound. Visitors can feel fragile wispy textures to remember the luxury of water. On a rainy day, they might hear water chuckling as it meanders gently between the plantings in a stone bed. Close to the descent, the grotto awaits curious visitors. It provides another experience of surprise where water reveals itself at a new destination on the journey.







PLANT CALENDAR

SPRING

APR

MAY

JUNE

JULY

SUMMER

AUG.

SEPT.

OCT.

FALL

NOV.

DEC.

WINTER

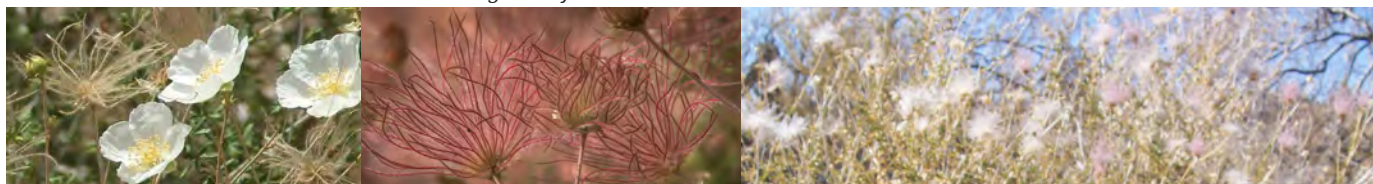
JAN.

FEB.

MAR.



James Buckwheat
Eriogonum jamesii



Apache Plume
Fallugia paradoxa



Adam's Needle Yucca
Yucca filamentosa



Fernbush
Chamaebatiaria millefolium



Stonecrop
Sedum 'Autumn Joy'



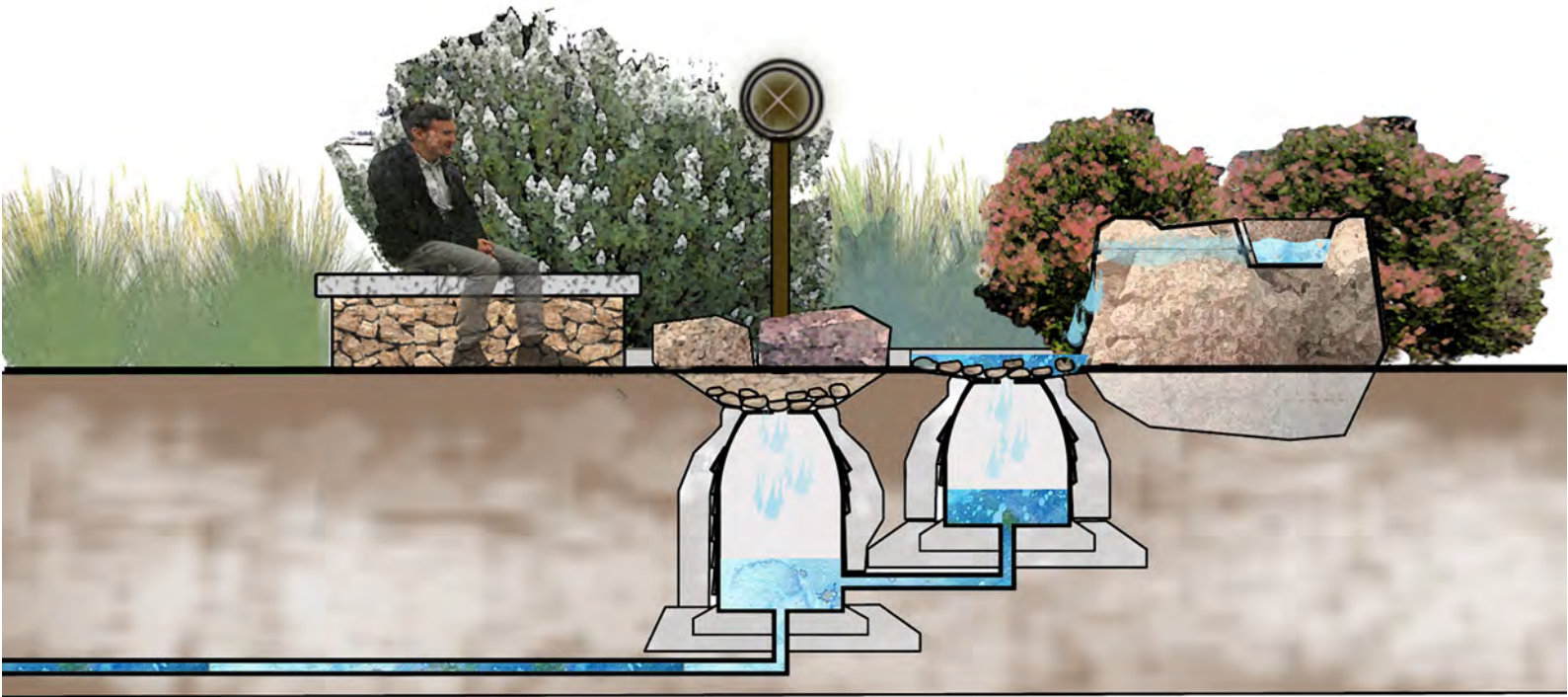
Adam's Needle Yucca
Yucca filamentosa

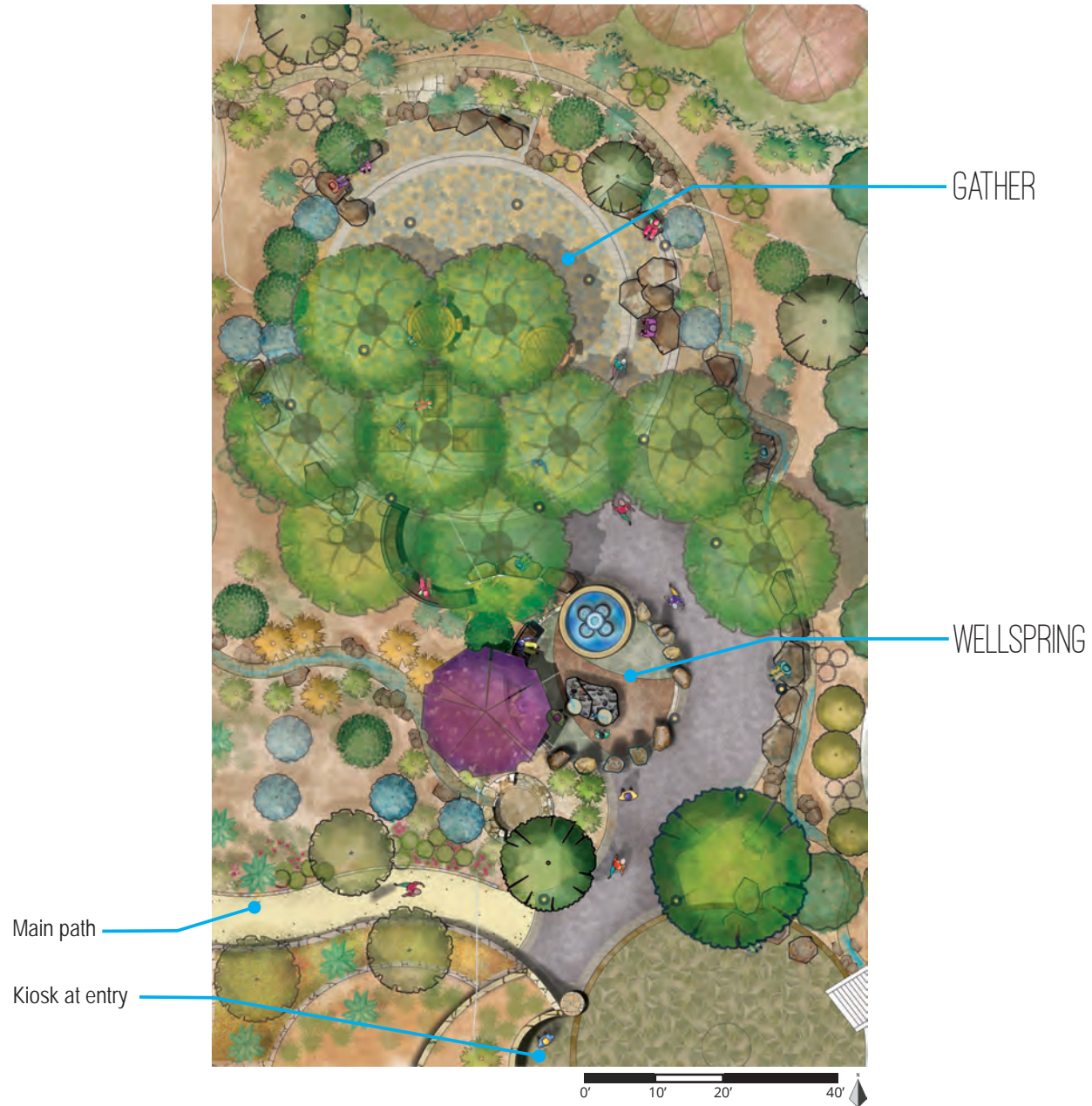


Common Hackberry
Celtis Occidentalis



SECTION A - A'





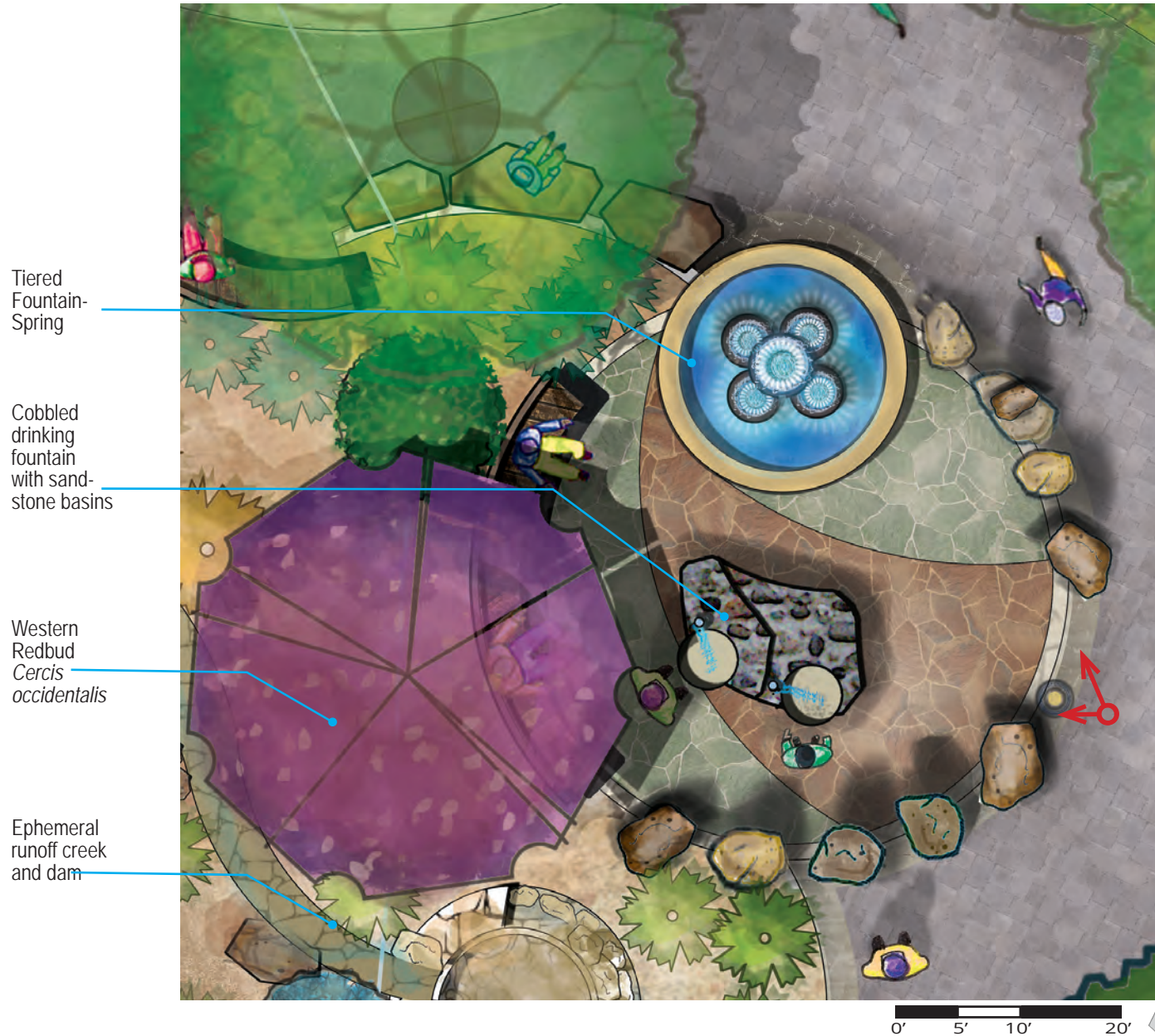
Wellspring is at the heart of the garden within the gathering area. Wellspring is a place for reflection and nourishment. It is a place that emphasizes the importance of treasuring water and holding it dearly as a friend. As a place of nourishment, it opens visitors eyes by experiencing water through taste. Here, water creates a sense of surprise by transforming itself once again.

Brawny stones define the space and contribute to a sense of mystery . The stones are inspired by the way water gathers and deposits in the river. As well, the stones create a sense of mystery that entices visitors to discover what's inside. As symbols of time and strength, these stones create a juxtaposition with the light, fragile springs of water found in the central spring feature. Visitors attention is drawn towards a spring with fanned tiers that step down into a shallow pool. The fountain spring forms reference artesian wells that are unique to our area. The multiple tiers symbolize the community as a whole. These springs rise from a base that creates an impression of gold.

Wellspring is a place for discovery and surprise. Before visitors drink from the fountain, water springs from each fountain tier. When visitors drink from the fountain, the lowest tiers in the fountain become lower, and gentler fans. The highest tier remains the same make the experience of drinking water theatrical and lively.



Wellspring reminds visitors to cherish water because it is the foundation of community and all life. While enjoying water, visitors can look up and admire the elegant Western Redbud. The heart shaped leaves on the redbud can remind people of the loving relationship with water.





PLANT CALENDAR

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JAN.

FEB.

MAR.



Spanish Gold Broom
Cytisus Purgans



Fernbush
Chamaebatiaria millefolium



Spanish Gold Broom
Cytisus Purgans



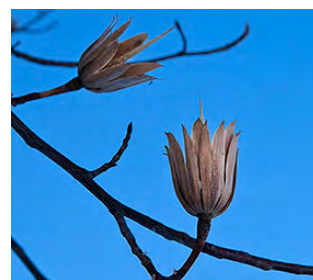
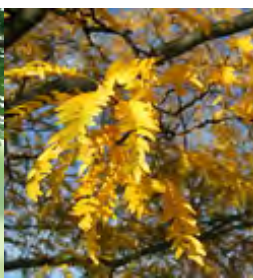
Western Redbud
Cercis Occidentalis



Tulip tree
Liriodendron tulipifera



Moraine Honey-Locust
Gleditsia Triacanthos var. *inermis* 'Moraine'



Tulip tree
Liriodendron tulipifera





The following pages summarize the project with a discussion and evaluation of the project as a whole as well as future steps. In addition, this section reflects on how the design addresses the overall goals of the project. It also evaluates the connection between research and the project design as a whole. This section also discusses additional steps that are necessary for establishing and supporting the long-term garden management and activity. Part of this discussion includes recommendations for resources, partnerships and a model for management. As well, this section introduces future opportunities that can be considered for the garden once established.

DISCUSSION

LONG-TERM MANAGEMENT

[TEAMWORK MANAGEMENT MODEL](#)

[LEADERSHIP RECOMMENDATIONS](#)

[PARTNERSHIP OPPORTUNITIES](#)

FUTURE OPPORTUNITIES

DISCUSSION

The final design creates a place that can foster an appreciative relationship with water to inspire water conservation action in the Treasure Valley. As a whole, the design creates a diversity of spaces and experiences that create comfortable, exploratory and reflective opportunities. The spaces within the garden are connected with flexible pathway opportunities that provide a range of experiences for visitors. There are opportunities for relaxing, exploring, reflecting and gathering suiting a range of visitor interests and needs.

This design addresses the project vision to create a place that engages affective experiences. The focus areas and the garden as a whole can engage multiple senses, which have the potential to move visitors emotions. The discovery opportunities found within each focus area allow visitors to engage with the features as they please.

Like any form of art, the garden may not necessarily move all visitors' emotions in the same way. Therefore, the garden will have the most influential impact in promoting conservation action for those who connect with the features with affective response. As well, the garden creates an outdoor space for the community to enjoy.

The challenge in this project is promoting water conservation. Although the spaces may not move all visitors emotionally, it creates an magical place the enjoy natural wonders, to rest, and to gather. Promoting more sustainable use of water asks for an educational component to compliment the setting. This can be addressed by developing community leadership.

Reflection on conservation action

The design devotes more attention to the sensory experience and the landscape than on the active, educational take-home messages about water conservation action. Addressing the aim of this project to promote water conservation action is done primarily by creating spaces that can potentially move peoples emotions. It was valuable to incorporate conservation action topic in the literature review and find case studies with active elements to understand how the design could integrate this educational need with the landscape. Thus, the design creates a setting that can accommodate this educational activity and programming as a supplementary element.

Unlike most educational examples that focus on content, this design creates memorable experiences for people by creating exhibits that focus on the exploratory play and interaction. This direct interaction plays the most important role in strengthening awareness and understanding for the visitor. Educational programming, such as classes and programs can compliment these experiences.

Many ideas from the environmental psychology literature review were integrated in the design with the intent of triggering people's emotions. Creating a series of sensory experiences for the visitor involves concepts such as coherence and legibility. Repeating the use of materials in each of the spaces creates a sense of coherence in the garden. While materials such as water and stone are used repeatedly throughout the garden, their forms and effects in each space are executed distinctly. In addition, the plant palette found in each space incorporates unique specimens in each area. This not only creates a sense of

complexity, which provides a continuous depth of experiences, but it also allows the visitor to remember the distinct character of each space remembering the unique elements encountered in each of the exhibits.

The design uses materials and site microclimate to tell a story about water. Through their form, color, texture and ephemeral qualities, the materials connote meanings and feelings similar to poetic language. Regardless of whether or not the visitor understands the meaning in the materials, their attributes create the unique character in each setting. As well, the materials have theatrical qualities that make these spaces playful and exciting.

The garden creates surprises that can be discovered through exploration. Therefore, visitors may respond differently depending on the areas they visit, the amount of time they spend, and the degree to which they explore the garden. Likewise, the flexible system of smaller spaces throughout creates a variety of new surprises for both new and returning visitors.

By incorporating flexible pathway options, the garden provides a quality of choice for visitors. This sense of choice is one of the important factors that can successfully help promote conservation action. Therefore, this element is a stepping stone for the future conservation education activities that can eventually occur in the garden when it evolves into an educational setting.

Scale is an important factor in this design. This design consists of spaces that are intimate in size. By creating a series of smaller spaces, the design encourages a closer connection between people and water. Creating these smaller spaces contributes to continuous quality of mystery, allowing visitors to discover one surprise after another throughout the site as well as within each exhibit.

Reflection on site selection

Establishing locational criteria in the process of finding a suitable site was an important factor shaping the design. Choosing a site with existing topography turned out to be advantageous in the design. The terrain allows a series of spaces to occur at different levels, which extends the use of the site allowing it to potentially feel larger. In fact, this is an inadvertent result of the design objective aimed at creating exploratory opportunity. It is also worth acknowledging that after the design becomes implemented, it will be easier to determine how well the site performs as an accessible location.

Limitations

There are some important design and management considerations for this project to become successful in the future. Weaknesses of this design include the management of the spaces and the garden as a whole. It is important to address the care of plants and features through the seasons. Some of the areas are potentially high maintenance and could become wild. As well, it is important to ensure that water use throughout the garden remains minimal. Detailed planting lists would help address water conservation for the garden establishment and management.

The next important step for the design is to enhance the choreography of the spaces throughout the garden. Sculpting the earthwork precisely will enhance the sense of enclosure, mystery and coherence of the spaces. This can be executed through a combination of construction documentation and hands-on physical implementation.

Management and programming through partnerships is critical for maintaining the long-term condition of the garden. Recommendations for the community programming as well as the long-term management of the garden are included in the following pages to illustrate how garden can begin to meet its fullest potential.



LONG-TERM MANAGEMENT

This project is envisioned as a place where a diverse and dedicated team of volunteers, non-profit partners, local businesses, trustees and community groups collaborate to support the garden life and longevity. Developing these long term partnerships is a crucial part of protecting the garden and sustaining the setting. Partnerships consist of three major domains: leaders, donors, volunteers. It is critical that there is diversity across these major domains.

This project asks for a harmonious marriage between art, education and conservation. The idea is to bring together people who with experience in a range of areas that include but are not limited to: environmental conservation, arts and humanities, and education. This applies to both the leadership team as well as the supporting partnerships. Diversity is key for the broader partnership scale as well as within the leadership level. This diversity goes hand in hand with creating a place for a broad range of people's needs and interests.

The seeds of this project can begin to be planted by a few passionate and committed individuals who understand the project objectives. It is very important to have committed leaders who can begin cultivating the garden and inviting community support. There is bound to be at least one individual in the local community with a passionate commitment to the objectives of the project. The Sonoran Museum provides an example. Here, the successful collaboration between William H. Carr, a conservationist and the benefactor, Arthur Pack, helped develop one of the most renowned museums and zoological parks in the world ("Arizona-Sonora Desert Museum

Overview and History," 2016). Finding trustees such as this is a key part of building a team.

In addition to the leadership, developing volunteer partnerships is also key to the successful education, maintenance and outreach taking place in the garden. Many charitable non-profits are supported primarily by volunteers. According to the IRS, 85% of charitable non-profits are run by volunteers and operate without paid staff ("Charities and Volunteers," 2013). The Sonoran Museum provides an example of how a docent program can effectively serve the educational objectives of the garden. At the Sonoran Museum, a strong docent program developed through a small group of volunteers ("Arizona-Sonora Desert Museum Overview and History,"



Source: <http://www.santafebotanicalgarden.org>

2016). This type of community involvement is ideal for not only the ongoing educational programs, but for the maintenance as well. Organizations like the Master gardeners would be a potential partner that could contribute to both education and maintenance.

A strong and energetic leadership team is needed to help direct and facilitate the diverse forms of community support as well as to protect the long-term garden goals. The partnerships envisioned are complex and strong guidance is very necessary. Therefore, establishing leadership is critical for facilitating collaboration between supportive partnerships. It is recommended that a board of directors and/or an executive committee with a team of individuals with a diverse spectrum of backgrounds develops early in the process.

Having a diverse group of individuals with unique knowledge and roles will support one of the main project objectives, which is to create a place that serves a diverse range of user need and interests. It is important to have a body of understanding through various lenses: art, ecology and learning. An example of a similar organization with a board that has a diverse team is the Sonoran Museum. Positions found in this organization such as, Executive Director, Philanthropy Director, Art Institute Director, Conservation Education & Science Director, General Curator, Marketing Director are similar to those proposed in this model they can provide leadership and vision in key areas (“Executive Staff,” 2016).

In order to protect and support the long-term success of the garden it is important to establish an ongoing donation program. While major trustees are key in establishing the roots

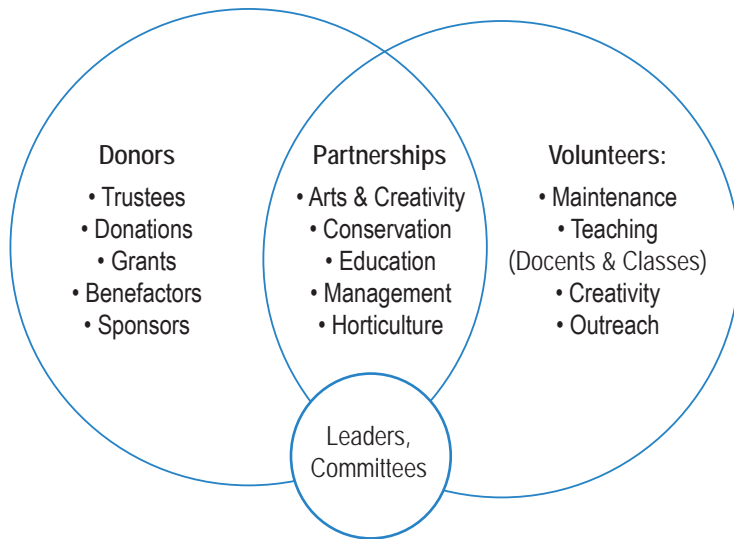
of the garden, it is also important to protect it's long-term success through continuous donations from a diverse range of donors. An example with similar program at a 501 (c) (3) public charity support organization is seen at The Water Conservation Park in West Jordan Utah. The park invites the community to help support the garden with donations in a variety of ways, which range from \$25 plant collection expansions to \$50 class funding or fully sponsored exhibit creation (“Donate,” 2016). The park provides many examples of how donations can help fuel the garden setting and operations.

Another form of support for the garden can be made possible in the form of grants. There are many examples of 501 (c) (3) public charity support organizations, such as the Water Conservation Park in West Jordan Utah, which is supported in part by grants. One potential grant opportunity close to home is through the Boise City Department of Arts and History. The City of Boise Arts and History Grant program funds projects centered on the city culture while benefitting the committee (“Grants,” 2016). The USGS Bureau of Reclamation WaterSMART program provides grants for water and energy projects in the western states. This project could potentially demonstrate how it saves water and then apply for this grant for long term funding(“WaterSMART,” 2016”).

Developing these partnerships shows how the garden can cultivate countless win-win opportunities across the community. Ensuring that these partnerships remain diverse is key to addressing the project objectives.

TEAMWORK MANAGEMENT MODEL:

This model illustrates the main three domains that are central to long term success of garden.



LEADERSHIP RECOMMENDATIONS:

These positions will form a successful leadership team with the role as a Board of Directors or as Executive Committee:

- Executive Director
- Director of Community Project Outreach
- Philanthropy Director / Treasurer
- Volunteer Coordinator
- Education and Conservation Director/ Steward
- Exhibit & Arts Curator
- Horticulture Manager/ Curator
- Director of Marketing and Creativity

PARTNERSHIP OPPORTUNITIES:

Organizations:

- U.S.G.S Bureau of Reclamation
- Idaho Conservation League
- Horticulture
- Idaho Botanical Garden
- Idaho Humanities Council
- Boise Urban Garden School
- Master Gardeners
- Foothills School
- Sage International
- IDoTeach STEM Secondary Education at Boise State University
- Boise Arts and Humanities Council
- Boise Art Museum

Grant Opportunities:

- City of Boise Department of Arts and History
<http://www.boiseartsandhistory.org/opportunities/grants/>
- Water SMART through U.S.G.S
<http://water.usgs.gov/watercensus/WaterSMART.html>Water smart USGS
- Idaho Humanities Council
<http://www.idahohumanities.org>
- Boise State University Arts & Humanities Institute
<https://ahi.boisestate.edu/home/funding-and-resources/>

FUTURE OPPORTUNITIES

The garden provides a setting for countless future opportunities. Areas that have not yet been designed, such as the exhibit Nourish have the potential for showcasing demonstration-type garden areas that can showcase themed plantings like xeriscape, or other unique collections

One of the objectives of this project is to provide changing opportunities throughout the year. Offering new and exciting classes, workshops and special events at a low cost on a weekly, monthly or bi-annual basis is one way to address this goal and could even help leverage costs for the garden. Another opportunity is to have temporary installations or travelling exhibits. The garden can become a setting for students, artists or conservation enthusiasts to showcase their knowledge and insights with the greater community.

The garden also has the potential to become an outdoor gallery, where local artists can share their work with the public in an outdoor setting. A partnership could develop with the Boise Art Museum, who may wish to use the garden as an outdoor exhibition space.



Idaho Botanical Garden, Boise, ID.

Source: <http://suagcenterwater.blogspot.com>



Desert Botanical Garden, Phoenix, AZ.

Source: <http://beyonddoorwaystravel.com>

INTRODUCTION

'Exhale' by Mikyoung Kim. Retrieved December 10, 2016 from: [http://www.townofchapelhill.org/Home/Components/News/News/9228./](http://www.townofchapelhill.org/Home/Components/News/News/9228/)

Background. Retrieved March 13, 2016 from: <http://jablab.deviantart.com/art/water-splash-people-163505950>

Kiryat Sefer Park. Author: Ram Eisenberg. Used with permission of Author.

LITERATURE REVIEW

Enclosure at Ryogen-in, Kyoto.

Author: Muza-chan's Gate to Japan. Retrieved April 29, 2016, from: <http://muza-chan.net/aj/poze-weblog3/garden-mos-ryogen-in-temple-kyoto-big.jpg>

Shakkei at Entsu-ji, Kyoto. Retrieved April 29, 2016, from: https://upload.wikimedia.org/wikipedia/commons/6/6d/Entsuji_Kyoto01s3.jpg

Contrast, Stepping Stones Path at Katsura Imperial Palace.

Author: William Corey, (1949-2007) "Katsura Rikyu" (E-104) from "The Imperial Gardens of Kyoto" series, photograph courtesy of William Corey gallery, LLC. Retrieved April 29, 2016, from: <http://www.botanicgardens.org/exhibits/william-coreys-japanese-gardens#&gid=null&pid=1>

Idaho Master Gardeners. Retrieved November 16, 2016. http://www.extension.uidaho.edu/mg/meet_barton_gallery.html

CASE STUDIES:

THE WATER CONSERVATION GARDEN

Pathways & Signage. Author: DPA Design. Retrieved April 29, 2016, from: <http://www.dpadesign.com/art/xeri/DSC04438.jpg>

Garden Sculptures. Author: DPA Design. Retrieved April 29, 2016, from: http://www.dpadesign.com/water_conservation_garden.html

Garden Tours. San Diego Water Conservation Garden. Retrieved April 29, 2016, from: <http://thegarden.org/learn/classes-workshops/>

Design Consultations. San Diego Water Conservation Garden. Retrieved April 29, 2016, from: <http://thegarden.org/wp-content/uploads/2015/07/landscape-consult-02.jpg>

Interpretive Signage. DPA Design. Retrieved April 29, 2016, from: http://www.dpadesign.com/water_conservation_garden.html

Mulch Exhibit. San Diego Water Conservation Garden. Retrieved April 29, 2016, from: <http://thegarden.org/visit/exhibits/>

Low Water Alternatives for Turf Exhibit. San Diego Water Conservation Garden. Retrieved April 29, 2016, from: <http://thegarden.org/2015/11/low-water-alternatives-for-turf/>

THE AUSTRALIAN GARDEN

Garden Tours. Elizabeth Barton

<http://agdev.anr.udel.edu/longwoodgradblog/2016/01/>

The Diversity Garden. http://res.cloudinary.com/sagacity/image/upload/c_crop/c_limit,w_1080/v1396779001/Aus_bioregions_plotsnyvaqu.jpg

Red Sands Garden Photo Credit: R. Reeve. Retrieved November 2 from: <https://www.flickr.com/photos/rreeve/23680745226/>

CONCLUSION

Idaho Botanical Garden. Retrieved December 10, 2016 from: <http://lsuagcenterwater.blogspot.com>.

Desert Botanical Garden, Phoenix, AZ. Author: Adam Rodriguez. Retrieved December 10, 2016 from: <http://beyonddoorwaystravel.com>.

All references are cited using APA style

About Idaho's Master Gardeners - Idaho Master Gardener. University of Idaho Extension. Retrieved April 8, 2016, from <http://www.extension.uidaho.edu/mg/about.html>

"About." Water Conservation Park. Retrieved June 4, 2016 from <https://conservationgardenpark.org/about>.

Appleton, Jay. (1998). Nature as Honorary Art. *Environmental Values*, 7(3), 255-66.

Appleton, J. (1975). *The experience of landscape*. London, New York: Wiley.

"Arizona-Sonora Desert Museum Overview and History." Retrieved Nov. 18, 2016 from <https://www.desertmuseum.org/about/>.
The Australian Garden - Royal Botanic Gardens of Victoria. Retrieved April 11, 2016, from <https://www.rbg.vic.gov.au/visit-cranbourne/attractions/australian-garden>.

The Australian Garden by Taylor Cullity Lethlean and Paul Thompson. (n.d.). Retrieved April 08, 2016, from <http://www.landezine.com/index.php/2013/04/the-australian-garden-by-taylor-cullity-lethlean-and-paul-thompson/>

BUGS Program - Boise Urban Garden School. Retrieved April 7, 2016, from <http://www.boiseurbangardenschool.org/about-us/bugs-programs/>

Cachelin, Adrienne, Paisley, Karen, & Blanchard, Angela. (2009). Using the Significant Life Experience Framework to Inform Program Evaluation: The Nature Conservancy's Wings & Water Wetlands Education Program. *Journal of Environmental Education*, 40(2), 2-14.

Carmi, N., Arnon, S., & Orion, N. (2015). Transforming Environmental Knowledge Into Behavior: The Mediating Role of Environmental Emotions. *The Journal of Environmental Education*, 46(3), 183-201.

Caro, Borgerhoff Mulder, & Moore. (2003). Effects of conservation education on reasons to conserve biological diversity. *Biological Conservation*, 114(1), 143-152.

Cedar River Watershed Education Center- Wilderness Rim Association, 2013

"Charities and Volunteers." IRS Stay Exempt- Tax Basics for Exempt Organizations. Retrieved November 18, 2016 from <https://www.stayexempt.irs.gov/Resource-Library/Charities-and-Volunteers>

Clayton, S., Fraser, J., Saunders, C., Heimlich, Joe E., & Ogden, Jacqueline J. (2009). Zoo experiences: Conversations, connections, and concern for animals. *Zoo Biology*, 28(5), 377-397.

Consumer Guides - Seafood Watch. Retrieved April 11, 2016, from <http://www.seafoodwatch.org/seafood-recommendations/consumer-guides>

"Donate." Retrieved November 18, 2016 from <https://conservationgardenpark.org/donate>

Donovan, M., Fiske, Tina, Goldsworthy, Andy, Beardsley, John, Kemp, Martin, & National Gallery of Art. (2010). *The Andy Goldsworthy project*. New York : Washington: Thames & Hudson ; in association with National Gallery of Art.

Environmental psychology. (n.d.). Retrieved May 01, 2016, from https://en.wikipedia.org/wiki/Environmental_psychology
Exhibits - The Water Conservation Garden. Retrieved April 11, 2016, from <http://thegarden.org/visit/exhibits/#>

"Executive Staff." Retrieved November 18, 2016 from <http://www.desertmuseum.org/about/staff.php>

Falk, J. (2005). Free-choice environmental learning: Framing the discussion. *Environmental Education Research*, 11(3), 265-280.

Falk, J., Moussouri, T., & Coulson, D. (1998). The Effect of Visitors ' Agendas on Museum Learning. *Curator: The Museum Journal*, 41(2), 107-120.

Garden Tours - The Water Conservation Garden. Retrieved April 11, 2016, from <http://thegarden.org/visit/garden-tours/>

Gonzalez, Robert. (1998) *Waterworks Gardens* by Lorna Jordan. Places.

Gilbertson, M., A. Hurlimann, and S. Dolnicar. (2011). Does water context influence behavior and attitudes to water conservation?. *Australasian Journal of Environmental Management*, 18,147-60.

Goldsworthy, A. (n.d.). Andy Goldsworthy Quotes. Retrieved September 21, 2016, from http://www.brainyquote.com/quotes/authors/a/andy_goldsworthy.html

"Grants." Boise City of Department of Arts & History. Retrieved November 18, 2016.

Gray, D. (2009). *Doing research in the real world* (2nd ed.). Los Angeles: SAGE.

Great Lakes Science Teacher Badging - Shedd Aquarium. Retrieved April 11, 2016, from <http://www.sheddaquarium.org/Learning-Experiences/Educators--Classrooms/Professional-Development/Great-Lakes-Badging/>

Hobson, B. (2013, October 23). This was the first botanical garden purely for Australian native plants. Retrieved April 11, 2016, from <http://www.dezeen.com/2013/10/23/movie-the-australian-garden-world-landscape-of-the-year-2013/>

The Home Garden - Royal Botanic Gardens of Victoria. Retrieved April 11, 2016, from <https://www.rbg.vic.gov.au/visit-cranbourne/attractions/plant-collections/the-home-garden>

How to Garden - Royal Botanic Gardens of Victoria. Retrieved April 11, 2016, from <https://www.rbg.vic.gov.au/visit-cranbourne/attractions/plant-collections/how-to-garden>.

Kaplan, S., & Kaplan, Rachel. (1982). *Cognition and environment : Functioning in an uncertain world*. New York: Praeger.

Kaplan, R., & Kaplan, Stephen. (1989). *The experience of nature : A psychological perspective*. Cambridge ; New York: Cambridge University Press.

Kaplan, S., & Kaplan, Rachel. (1978). *Humanscape : Environments for people*. North Scituate, Mass.: Duxbury Press.

Kaplan, S., Bardwell, L., & Slakter, D. (1993). The Restorative Experience as a Museum Benefit. *Journal of Museum Education*, 18(3), 15-18.

Kastner, J., & Wallis, Brian. (1998). *Land and environmental art (Themes and movements)*. London: Phaidon Press.

Helen Kopnina. (2014). Contesting 'Environment' Through the Lens of Sustainability: Examining Implications for Environmental Education (EE) and Education for Sustainable Development (ESD). *Culture Unbound : Journal of Current Cultural Research*, 6(5), 931-947.

Kudryavtsev, Alex, Stedman, Richard C., & Krasny, Marianne E. (2012). Sense of Place in Environmental Education. *Environmental Education Research*, 18(2), 229-250.

Landscape Design Consultations - The Water Conservation Garden. Retrieved April 11, 2016, from <http://thegarden.org/learn/landscape-design-consultations/>

Low Water Alternatives for Turf - The Water Conservation Garden. Retrieved April 11, 2016, from <http://thegarden.org/?s=turf&search=Search>

Malpas, W., & Lockwood Thompson Collection. (2004). *Land art: A complete guide to landscape, environmental, earthworks, nature, sculpture and installation art*. Maidstone, Kent: Crescent Moon Pub.

Mission | About. The Water Conservation Garden. (n.d.). Retrieved April 11, 2016, from <http://thegarden.org/about-us/about-the-garden/>

Nassauer, J. (1997). *Placing Nature: Culture and Landscape Ecology*. Washington DC: Island Press.

Nassauer, J. I. (1995). Messy ecosystems, orderly frames. *Landscape journal*, 14(2), 161-170.

"Our Partners." Seafood Watch. Retrieved April 11, 2016, from <http://www.seafoodwatch.org/businesses-and-organizations/partners>

Partners & Supporters - The Water Conservation Garden. Retrieved April 11, 2016, from <http://thegarden.org/about-us/partners-supporters/>

Patagonia Environmental & Social Initiatives 2015. (2015). Retrieved April 11, 2016, from <https://issuu.com/thecleanestline/docs/patagonia-enviro-initiatives-2015>

Penn, A. (2014, May 8). The Australian Garden That Everyone's Talking About. Retrieved April 11, 2016, from <http://landarchs.com/australian-garden-everyones-talking/>

Potteiger, M., & Purinton, Jamie. (1998). *Landscape narratives : Design practices for telling stories*. New York: J. Wiley.

Project Based Learning- Foothills School. Retrieved April 7, 2016, from <http://www.foothillsschool.org/page.cfm?p=384>

Why SCA? - The Student Conservation Association. Retrieved April 7, 2016, from <http://www.thesca.org/partner/why-sca>

Promote. (n.d.). Retrieved March 13, 2016, from <http://www.merriam-webster.com/dictionary/promote>.

Ross, S., Gillespie, K., Heimlich, Joe E., & Ogden, Jacqueline J. (2009). Influences on visitor behavior at a modern immersive zoo exhibit. *Zoo Biology*, 28(5), 462-472.

School Programs -Wastewater Services Education Programs. Retrieved April 11, 2016, from <http://www.kingcounty.gov/services/environment/wastewater/education/programs/school.aspx>

Smith, L., Broad, S., & Weiler, B. (2008). A Closer Examination of the Impact of Zoo Visits on Visitor Behaviour. *Journal of Sustainable Tourism*, 16(5), 544-562.

Starke, B., & Simonds, John Ormsbee. (2006). *Landscape architecture : A manual of environmental planning and design* (Fifth ed.). New York: McGraw-Hill Education.

Sturken, Marita. (1991). The Wall, the Screen, and the Image: The Vietnam Veterans Memorial. *Representations*, 35, 118-42.

Sustainable Fisheries and Aquaculture - Monterey Bay Aquarium. Retrieved April 11, 2016, from <http://www.montereybayaquarium.org/conservation-and-science/our-priorities/sustainable-fisheries-and-aquaculture>

‘The Australian Garden: Taking Public Garden Design to a New Level.’ Portland Monthly. November 2009. pdxmonthly.com

The Social Life of Small Urban Spaces: William H. Whyte [Video file]. (1980). In The Social Life of Small Urban Spaces: William H. Whyte. Retrieved October 21, 2016, from <https://vimeo.com/111488563>

Thompson, I. (2000). Ecology, community, and delight : Sources of values in landscape architecture. London ; New York: E & FN Spon.

Water Saving Garden - Royal Botanic Gardens of Victoria. Retrieved April 11, 2016, from <https://www.rbg.vic.gov.au/visit-cranbourne/attractions/plant-collections/water-saving-garden>

“WaterSMART” – RECLAMATION – Managing Water in the West. Retrieved Nov. 18, 2016 from <http://www.usbr.gov/watersmart/grants.html>

Waterworks Gardens - Wastewater Services Education Programs. Retrieved April 11, 2016, from <http://www.kingcounty.gov/services/environment/wastewater/education/locations/south-plant/waterworks-gardens.aspx>

Waterworks Gardens - Forester Network. (2004, January 13). Retrieved April 13, 2016, from <http://foresternetwork.com/daily/water/waterworks-gardens/>

Waterworks Gardens- ‘4 Culture’ Advancing Community through Culture. Retrieved April 11, 2016, from <http://www.4culture.org/publicart/collection/profile.aspx?projectid=39&cat1=Collection&cat2=Project&cat3=S-Z&cat3b=>

The Water Conservation Garden | Otay & Helix Districts - DPA Design. Retrieved April 11, 2016, from http://www.dpadesign.com/water_conservation_garden.html

Weintraub, L. (2012). To life! : Eco art in pursuit of a sustainable planet (Ahmanson Murphy fine arts imprint). Berkeley: University of California Press.
