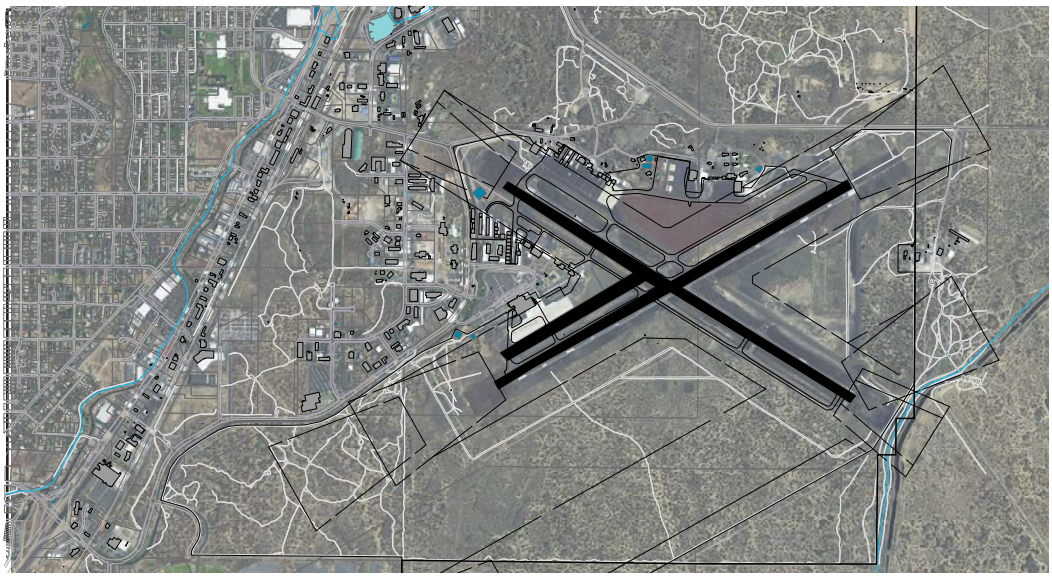


Redmond Airport Landscape Master Plan

Winter 2016 • Department of Landscape Architecture

Lin (Flora) Chen • Department of Landscape Architecture
Mark R. Eischeid • Assistant Professor • Department of Landscape Architecture

UNIVERSITY OF OREGON

SCI
Sustainable Cities Initiative

Acknowledgements

Redmond Municipal Airport Staff and Committee

The LA 539 Studio wishes to acknowledge and thank the Redmond Municipal Airport for this opportunity and for making this project possible. We would also like to thank the following Redmond Municipal Airport staff and committee:

Zachary Bass, Airport Director
Rob Berg, Committee Member
Ross Centers, Committee Member
Kelly Coffelt, Committee Member
Fernando Gonzales, Facilities Supervisor
Nettice Honn, Aviation Program Manager
Doug Knight, Committee Member
Tim Moor, Committee Member
Sean Neary, Committee Member
Jay Patrick, City Councilor
Winton Platt, Operations & Facilities Manager
Eric Sande, Committee Vice Chair
Mike Wilcox, Airport & Facilities Maintenance
Ben Wolfe, Operations Supervisor

UO Department of Landscape Architecture Faculty

The LA 539 Studio wishes to thank our professor, Mark Eischeid, RLA, Assistant Professor

Guest Speakers and Studio Visitors:

Charles Brucker, RLA, ASLA, LEED AP Principal of PLACE Studio LLC
Sonja Dümpelmann, Associate Professor, Landscape Architecture, Harvard University
Kenneth Helphand, FASLA, Knight Professor of Landscape Architecture, Emeritus, UO
John Allan Nelson, RLA, FASLA, Retired Landscape Architect and Planner
Patrick O'Grady, Archeologist, UO Museum of Natural and Cultural History
Iryna Volynets, Fulbright Scholar, UO

About SCI

The Sustainable Cities Initiative (SCI) is a cross-disciplinary organization at the University of Oregon that promotes education, service, public outreach, and research on the design and development of sustainable cities. We are redefining higher education for the public good and catalyzing community change toward sustainability. Our work addresses sustainability at multiple scales and emerges from the conviction that creating the sustainable city cannot happen within any single discipline. SCI is grounded in cross-disciplinary engagement as the key strategy for improving community sustainability. Our work connects student energy, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

About SCYP

The Sustainable City Year Program (SCYP) is a year-long partnership between SCI and one city in Oregon, in which students and faculty in courses from across the university collaborate with the partner city on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner city through a variety of studio projects and service-learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations resulting in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future.

SCI Directors and Staff

Marc Schlossberg, SCI Co-Director, and Professor of Planning, Public Policy, and Management, University of Oregon

Nico Larco, SCI Co-Director, and Associate Professor of Architecture, University of Oregon

Megan Banks, SCYP Program Manager, University of Oregon

About Redmond, Oregon

Redmond, located in Deschutes County on the eastern side of Oregon's Cascade Range, has a population of 27,427 and is one of Oregon's fastest growing cities. The City's administration consists of an elected mayor and city council who appoint a City Manager. A number of Citizen Advisory Groups advise the City Manager, mayor, and city council.

From its inception, Redmond has had its eyes set firmly on the future. Redmond was initially founded in 1905 in anticipation of a canal irrigation project and proposed railway line. Redmond is on the western side of the High Desert Plateau and on the eastern edge of the Cascade mountain range. Redmond lies in the geographic heart of Oregon. Redmond focuses on its natural beauty, reveling in the outdoor recreational opportunities (camping, hiking, skiing) offered by the Cascade mountain range, four seasons climate, and 300+ days of sunshine annually.

Redmond has been focused on innovative, sustainable growth and revitalization while preserving the city's unique history and culture. In 1995, the City of Redmond began to make critical investments in revitalizing its downtown core. The initial phase of renovations strove to balance growth, livability and historic preservation by rerouting Oregon State Highway 97, improving critical infrastructure, and improving the facades of over 100 buildings in the historic center. The City of Redmond has worked with local businesses to revitalize retail, job creation and housing. To facilitate private sector buy-in, Redmond offers innovative incentive programs such as the Façade Rehabilitation and Reimbursement Grant and the Downtown Jumpstart Loan Program, as well as Design Assistance.

Often referred to as "The Hub" of Central Oregon, Redmond is situated at the crossroads of US Highway 97 and US Highway 126. It is served by the Burlington Northern Sante Fe Railway, Cascades East Transit Regional Public Transportation Service, as well as a state of the art regional airport served by multiple commercial airlines and FedEx and UPS. In addition to its geographic location, Redmond is viewed as central to business growth in the region. In 2014, Central Oregon Community College opened a 34,300 square foot Technology Education Center to recruit new businesses and expand existing businesses in Central Oregon. Above all, Redmond prides itself on being a family-friendly city which was the motivation for the work presented in this report.

Course Participants

Margo Barajas, Landscape Architecture Graduate Student
Alden Carr, Landscape Architecture Graduate Student
Lin (Flora) Chen, Landscape Architecture Graduate Student
Chad Hawthorne, Landscape Architecture Graduate Student
Whitney Holt, Landscape Architecture Graduate Student
Justin Kau, Landscape Architecture Graduate Student
John Maxson, Landscape Architecture Graduate Student
Brittany Murphy, Landscape Architecture Graduate Student
Nadja Quiroz, Landscape Architecture Graduate Student
Derek Rayle, Landscape Architecture Graduate Student
Rachel Spencer, Landscape Architecture Graduate Student
Jillian Stone, Landscape Architecture Graduate Student
Jamie Willeke, Landscape Architecture Graduate Student

Table of Contents

Executive Summary

Airports and their relationship to the local landscape have been of concern to landscape architects and environmental planners since the early 20th century. Every plane has to take off and land *somewhere*, and that *somewhere* must accommodate the practicalities of air travel while also being situated in a particular landscape.

As “The Hub” for Central Oregon, Redmond Municipal Airport (RDM) is planning for a future expansion to respond to the rapidly growing population in the City of Redmond. The goal of this project is to design a landscape master plan with a cohesive theme for RDM, as well as address the goals and needs of RDM.

To achieve RDM’s goals, the studio was divided into a research phase and a design phase. Chapter One and Two present students’ work from the research phase, within which students conducted precedent studies as well as site analyses. Precedent studies broaden students’ horizons on creative designs and concepts implemented at airports around the world, from which many of the students later drew inspiration. Site analysis was an extremely crucial process to understand RDM’s landscape, culturally, geologically, ecologically, and regulatory.

With this background in mind, students progressed on preliminary design concepts. After receiving feedback from UO faculty as well as RDM staff during reviews, students finalized their design proposals to a landscape master plans. These design proposals were categorized into: Connectivity, energy and natural resources, materiality, and views, according to their design goals. Each student’s design was presented with images of process work, landscape master plan, drawings to support the landscape master plan, and a brief description of the design. These final designs were presented to UO faculty, RDM staff, and the RDM committee at the end of the term.

In conclusion, these design proposals demonstrated that RDM is an airport with numerous possibilities, and that there are a wide range of approaches to achieve similar goals. With these suggestions, RDM can draw upon its majestic surrounding landscape, rich local culture, and unique ecosystem to become a leader of regional airports in the future.

Introduction

The Redmond Municipal Airport – Roberts Field (RDM) is located in the heart of Central Oregon and is currently served by four air carriers: Alaska Air, American Airlines, Delta Airlines, and United Airlines, with daily direct flights to Denver, Portland, Los Angeles, San Francisco, Salt Lake City, and Seattle.

RDM serves an important role as the “The Hub” of Central Oregon. RDM is located two miles southeast of downtown Redmond and 15 miles north of Bend. To plan for fthe City of Redmond’s future growth both economically and demographically, over the past decade the city has made substantial investment in modern airport expansion to accommodate growing traffic volume. Future facilities include a 116,000 square foot terminal expansion, construction of a new snow removal equipment (SRE)/airport operations and maintenance building, a new airport traffic control tower, and a new airport rescue & firefighting (ARFF) station.

The City of Redmond collaborated with the UO Sustainable City Year Program (SCYP) in a design studio at the Department of Landscape Architecture, instructed by Professor Mark Eischeid, in order to design a Landscape Master Plan for RDM. The goals and outcomes include developing a sub-set program to the Airport Design Guidelines project, and creating the Landscape Master Plan that provides clear site planning and guidance for the design and construction of buildings and facilities on airport property. The primary goal is to provide a consistent theme and feel for future development/redevelopment projects at RDM.

Not only are airports portals for connecting places and transitioning to adjacent areas, they often evoke hopes, dreams, and imaginations. Traveling by air provides travelers a brand new perspective and scale from which to view the world from above. Despite these ephemeral qualities, strict regulations are imposed to ensure airports’ operation as well as security. These characteristics have made airport landscapes unique to design for, which made this project an extremely rare opportunity.

To achieve the project purpose, students formed teams and researched airport design precedents around the world, conducted site analyses, and each student later formed their own design concepts for a Landscape Master Plan. The final products were then presented through illustrations that included but were not limited to: Plans, sections, perspectives, models, sketches, and slide presentations. The development process of students’ designs will be discussed in later chapters.

Throughout the processes, students were in contact with RDM Staff for site visits, acquiring site information such as RDM’s history, current problems and conditions, and future plans. Moreover, review presentations at RDM were made possible in collaboration with RDM Staff.

Chapter One:
Precedent Studies

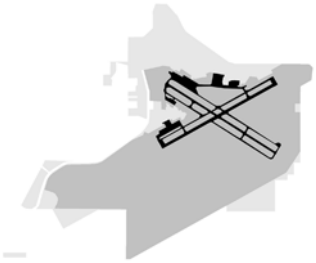
In the beginning stage of the studio, students teamed up to research airport design precedents related to topics such as: Connectivity, creating sense of place, art presented in airport landscapes, and sustainable airport designs. Not only did students study what has been done in airports around the world, they also made connections to how these aspects were related to RDM, and suggested ways for RDM to incorporate these ideas into their landscape.

Each student produced two facing pages with one precedent on each page, which was 8.5” by 11”. Each precedent page included the name, location, designer, project completion year, size, a description, and images of the studied airport. Moreover, the top images of each page showcased plan views of RDM and the studied airport at the same scale, to provide a visual size comparison between the two. The following precedent studies are broken into the topics of connectivity, sense of place, art, and sustainability.

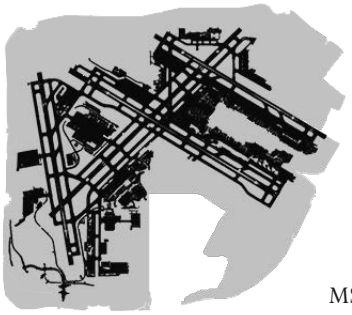
1.1 Connectivity

Airports play a crucial role as transfer points for people traveling from one destination to another. Therefore, connectivity between airports and their surrounding cities is a key to designing airports. Students studied alternative transportation options such as bus, light rail, and bicycle to adjacent transit centers at Minneapolis-St. Paul International Airport; Portland International Airport’s future plan to connect the airport to the city economically, environmentally, and socially; how Schiphol Amsterdam Airport and Santa Monica Municipal Airport utilized green open spaces to blend in with its surroundings and draw people to the airport; and how by incorporating the local landscapes, Changi International Airport and Ben Gurion International Airport successfully anchored the airport to its locality.

Minneapolis-St. Paul International Airport



RDM



MSP

N

1 Mile

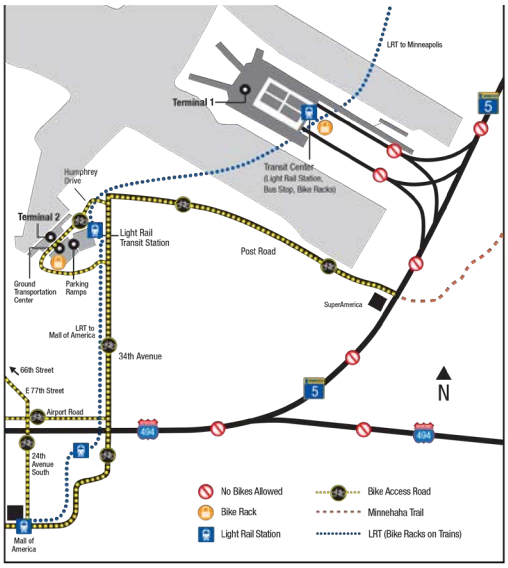


Figure 1-1. MSP transit route

Minneapolis, Minnesota
Minneapolis Architecture Alliance
(2001-2002)

Runways : 4
Area : 3,400 acres
Gates : 128

Minneapolis-St. Paul International Airport (MSP) serves 35,000,000 passengers annually (2014), amongst the highest of the airports in the United States. In response to highway congestion and limited parking, the airport and city collaborated in creating a hub for alternative transportation. In addition to personal and private vehicles, MSP is accessibe by bus, light rail, and bicycle.[1]

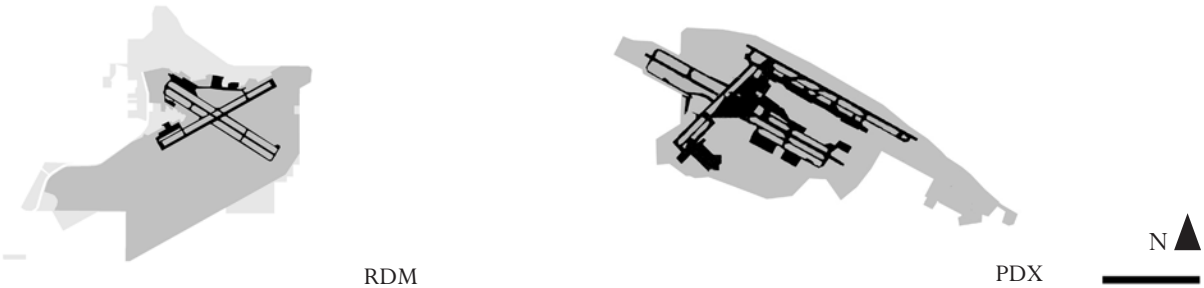
Travelers en route to and from the MSP airport can connect to the adjacent transit center, where travelers may catch the Metro-transit bus # 54 every 15 minutes and choose from 11 transit locations between the airport and downtown Minneapolis. Total travel time from the Airport to the downtown is 35 minutes. Passengers may also load their bicycles onto the bus.[2]

Routes to MSP that are designated only for bicycles have been created from both downtown Minneapolis and the nearby city of Richfield. A bike path of 6.1 miles from Richfield, Minnesota will take the traveler directly to terminal 2. From Downtown Minneapolis, a slightly longer commute, 12 miles, traverses the scenic Minnehaha bicycle trail. Upon arriving at terminal 2 of the airport, bike racks are provided for free, as well as bike lockers available for a fee. Bicycle commuters may at any point travel on metro busses or light rail lines with their bicycles.

The City of Redmond could consider developing their transportation system simultaneously with the airport to meet the demand not only of customers traveling to and from the airport, but for residents that may work in the airport or future businesses and industry created by the development of the airport.

[1] "Transportation," Last Modified 2015 https://www.mspairport.com/GroundTransportation.aspx

[2] "Minneapolis Metrolink," Last Modified 2016 2. http://www.metrotransit.org/



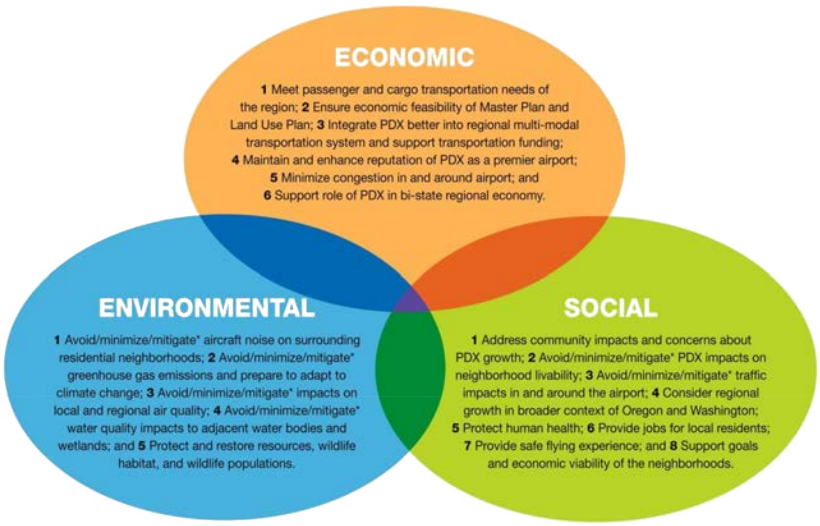


Figure 1-2. Economic, social, environmental intergration

With a rapid growth and development in the airline industry, along with a stable increase in urban populations, cities and airports are bound to merge with one another. In cases such as these it is important for cities and airports to plan on developing congruently to empower surrounding communities and utilize resources that will promote sustainable and economic growth.

The City of Portland has taken a holistic approach in developing their airport's long-term future land use planning. The plan developed over three years (2007-2010), allowing ample time to identify key stakeholders. The process created a communication network between consulting specialists, land owners, the city council, and citizens, to shape the airport's future plan.

The three primary stakeholders involved were the City of Portland, the Port of Portland, and the City of Vancouver, Washington. Through a three-year process, (2007-2010), the development plan was created using the framework of three overlapping values: Economic, social and environmental, onto which they produced four key results to guide the 2035 development plans: Inventory of existing conditions, aviation demand forecasts, facility requirements, and alternatives.

As the City of Redmond looks to expand the business and industrial complex as part of the airport expansion, they may look into establishing a similar dialogue with current and future interest groups.

[1] "Charting a Course For PDX" Last Modified 12/13/2013 http://www.pdxairportfutures.com/
[2] "What is Aeorotropolis" Miki Barnes Last Updated March 22, 2011 http://www.oregonaviationwatch.org/articles/OAW-Aerotropolis.php#Aerotropolis

Portland, Oregon
Jacob's Consultant Collaboration
2007-2010

Runways : 3
Area : 7,000 acres
Gates : 60

Portland International Airport

Alden Carr

Changi International Airport

Figure 1-3. SIN terminal landscape

Changi, Singapore
Safdie Architects
PWP Landscape Architecture
'Project Jewel'
2018

Runways : 3 (2 commercial)
Area : 3,200 acres
Gates : 90+

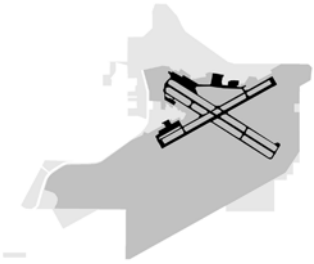
Since the 1960s, Singapore has been working steadily towards becoming a 'city in a garden' and its airport, the sixth busiest in the world, has been an integral part of showcasing that reality. Its newest undertaking, 'Project Jewel', which is currently under construction, is an immersive, tropical landscape encapsulated by a massive glass dome. Situated between Changi International Airport's (SIN) three terminals, this project aims to connect residents and travelers alike to each other and to Singapore's iconic urban landscape.

The dome serves as a roof for a large shopping hub and features a central 130-foot tall 'rain vortex' that funnels recycled rainwater from the roof of the structure. Additional features include a rooftop garden with multiple attractions, extensive trails, tree-like colonades, and two pedestrian bridges from Terminals 2 and 3.

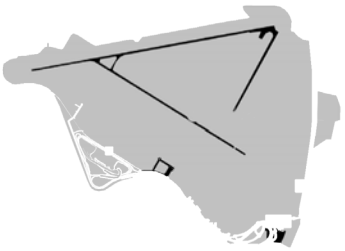
Various entrances from the shopping and dining levels allow for visitors to enjoy park-like settings alongside market activities. Additionally, the approach to the airport, which terminates at the site, is lined with lush, high-canopied trees that synchronize the interior of the 'Jewel' with the airport's exterior.

This project demonstrates connectivity between spaces, landscapes, cultures, and people. Although we are not addressing Redmond Airport's interior, this project illuminates the immense potential that Central Oregon's iconic landscape holds in defining the community both within and outside of the airport.

"2009 Professional Awards." ASLA. N.p., 2009. Web. 13 Jan. 2016. < https://www.asla.org/2009awards/043.html>
Green, Jared. "A Garden Airport in Singapore." The Dirt. N.p., 09 Jan. 2015. Web. 13 Jan. 2016. <http://dirt.asla.org/2015/01/09/a-garden-airport-in-singapore/>
"Infrastructure of Singapore Changi Airport." Wikipedia. Wikimedia Foundation, n.d. Web. 13 Jan. 2016. < http://en.wikipedia.org/wiki/Infrastructure_of_Singapore_Changi_Airport>
Maps. Digital image. Changi Airport. N.p., n.d. Web. 13 Jan. 2016. < http://www.changiairport.com/en/maps.html>
Stevens, Philip. "Work Begins at Moshe Safdie's Project Jewel Airport Expansion." Designboom. N.p., 08 Dec. 2014. Web. 11 Jan. 2016. <http://www.designboom.com/architecture/moshe-safdie-project-jewel-changi-airport-singapore-12-08-2014/>



RDM



TLV

N

1 Mile

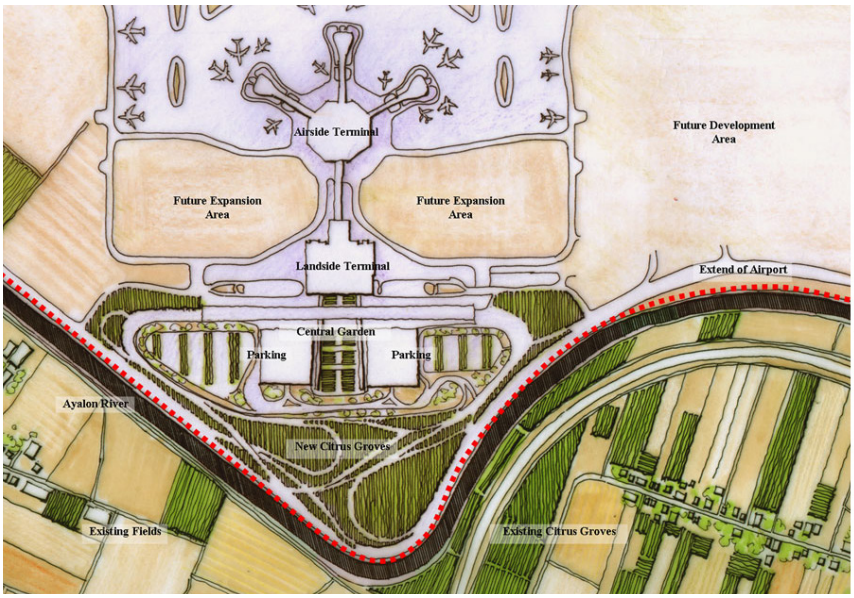


Figure 1-4. TLV landscape

Ben Gurion International Airport

Nadja Quiroz

Ben Gurion International Airport (TLV) is Israel's major international airport, and as such, serves as a gateway to the Holy Land. The designers' goal was to create a landscape that draws heavily from the local vernacular without referencing specific symbols or ideas that might be off-putting to anyone. The result is a rich, agricultural landscape defined by traditional Mediterranean elements.

The 65 acres of designed landscape contain citrus groves and agricultural fields that extend the surroundings up to a central garden. Farmers help to maintain the fields in exchange for their yield.

The central garden summarizes the basic topographical features of the land from the Israeli coast to the mountains of Jerusalem. The lowest terrace features abstracted waves on the beach, followed by orange and palm groves, fields of hay and lavender, and finally olive groves and cypresses which represent the Judean Hills. This sequence of rooms mirrors what a visitor to Israel would experience as they venture further from the airport.

The palm grove also features a series of angular, limestone runnels with short falls that reference local agrarian history and the surrounding landsape. Similar rock is also found lining walkways and walls.

This approach, although intuitive and simple in execution, highlights an opportunity for the design of Redmond Airport's landscape to capitalize on the iconic landscape features and cultural history of Central Oregon.

Lod, Israel
Shlomo Aronson Architects
Ben Gurion International Airport
2005

Runways : 3
Area : unknown
Gates : 30

"ASLA 2005 Professional Awards." ASLA. N.p., 2008. Web. 13 Jan. 2016.
"Ben Gurion International Airport." Shlomo Aronson Architects. N.p., 2010. Web. 13 Jan. 2016. <http://www.s-aronson.co.il/project/infrastructure-projects-project2/>
Ben Gurion Airport Landscape Plan. Digital image. Shlomo Aronson Architects. N.p., n.d. Web. 13 Jan. 2016. < http://www.s-aronson.co.il/project/infrastructure-projects-project2/>

Amsterdam Airport Schiphol

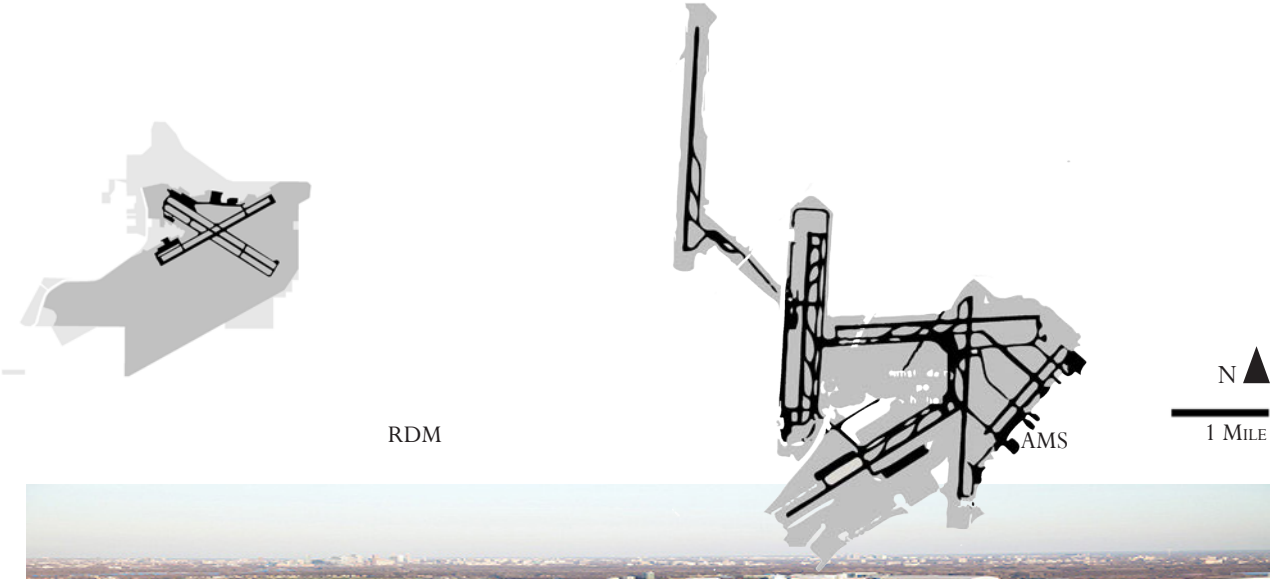


Figure 1-5. AMS

Schiphol, Netherlands,
West 8
1992 (on-going)

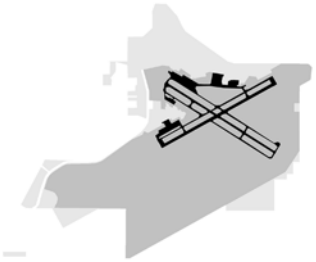
Runways : 6
Area : 6,900 Acres
Gates : 90

In the early 90s, Amsterdam Airport Schiphol (AMS) "had transitioned surprisingly quickly from a small airport in an agricultural landscape setting — into a large airport, with terminals, piers, parking lots," etc.[1] During this time the Landscape Architecture firm West 8 was hired to design a landscape "that unified the buildings and grounds of the expanded airport area."[2] Its goal was to green the airport and seamlessly stitch it into the larger landscape of Amsterdam. In order to merge the airport with the surrounding landscape they planted hundreds of thousands of inexpensive native birch trees. These trees were underplanted with grass and were installed where there was any vacant space available. Although this approach had much less to do with actual design, it worked in obscuring the airport's infrastructural complexity with a green veil[3] that unified the space.

"So the diligent planting of trees and treating every spare, unused bit of the airport surface with grass" became their 20 year strategy.[4] "West 8 is still commissioned on an ongoing basis to advise on landscape matters but essentially the project and the ever-changing landscape look after themselves."[5] The miles of planted trees merge into Amsterdam's big urban forest, built between 1929 and the 1950s.[6] By simply constructing a few bicycle loops and along with the plantings, a seamless recreational zone was created without segregation between the airport landscape and the Amsterdam forest.[7]

Similarly Roberts Field–Redmond Municipal Airport has also grown from a small farming community. As they continue to expand it may be valuable to look at the approach taken at Schiphol Airpot to achieve a landscape of visual harmony. In addition, linking the airport to places outside of its boundary and connecting to places of recreation further enhances its connection to the landscape and community.

1 Geuze, Adriaan, and Maarten Buijs. "West 8 Airport Landscape: Schiphol." *Scenario Journal*. PennDesign, 09 Apr. 2014. Web. 2016.
2 Dümpelmann, Sonja. *Flights of Imagination: Aviation, Landscape, Design*. Charlottesville: U of Virginia, 2014. 70-72. Print.
3 Ibid, 70.
4 Geuze, Adriaan, and Maarten Buijs. "West 8 Airport Landscape: Schiphol." *Scenario Journal*. PennDesign, 09 Apr. 2014. Web. 2016.
5 Ibid.
6 Dümpelmann, Sonja. *Flights of Imagination: Aviation, Landscape, Design*. Charlottesville: U of Virginia, 2014. 70-72. Print.
7 Geuze, Adriaan, and Maarten Buijs. "West 8 Airport Landscape: Schiphol." *Scenario Journal*. PennDesign, 09 Apr. 2014. Web. 2016



RDM

Adjacent Parks to the Airport

SMO

N

1 Mile

Figure 1-6. SMO open spaces

Santa Monica Municipal Airport

Rachel Spencer

Santa Monica Airport Park,
California, US
Ah'bé Landscape Architects
2008

Runways : 2
Area : 227 acres
Gates : NA
Area of Park : 4 acres

The Santa Monica Municipal Airport (SMO) is a historic airport and general aviation hub.[1] More than 300 takeoffs and landings take place there daily.[2] Since 2009, the airport has been committed to a comprehensive sustainability plan and continues to be a leader in the general aviation industry by trying out new ideas and new technologies.[3]

The Landscape Architecture firm Ah'bé was hired in 2008 to create a master plan of open spaces throughout the 227-acre airport.[4] The program includes two soccer fields, an off-leash dog park, restroom and concession facilities, a playground, passive open space, picnic areas, and permeable pavement parking.[5] The park provides an adjacent green space to the airport and functions as a visual buffer between the airport and the surrounding neighborhoods.[6] It has become a place for the community to recreate, connect and gather. As the airport connects the city to other parts of the world, the design of the park expresses this 'notion through a series of pathways that abstractly represent people making connections and also suggest taxiways and runways'.[7] This visual elements adds a lively and vibrant look to the park from those arriving by air.

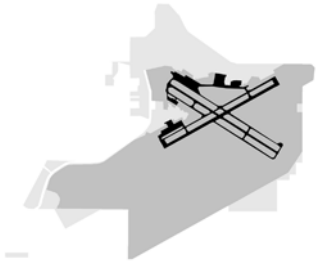
In the creation of the Master Plan for the Redmond Airport through the Sustainable Cities Initiative, the tranformation of open spaces into designed places for recreation will provide areas for community connection. A space to recreate and gather could serve as an area of transition between the environment of the airport, concrete and tarmac-clad, and the thoughtfully planted neighboring community college. Connecting the two places would strengthen the bond between airport and community while increasing the landscape's visual unity.

1 Weikel, Dan. "Proposed Ballot Measure to Protect Santa Monica Airport Challenged." *Los Angeles Times*, 9 May 2014. Web. 2016.
2 Weikel, Dan. "FAA Says Santa Monica Airport Must Stay Open until 2023." *Los Angeles Times*, 4 Dec. 2015. Web. 2016.
3 "SMO: Santa Monica Municipal Airport." *SMO: Santa Monica Municipal Airport*. City of Santa Monica Public Works Department. Web. 2016
4 Newman, Morris. "LAM: Urban Parks." *Landscape Architecture*. 1 Oct. 2008. Web. 2016.
5 "Santa Monica Airpport Park." *Ah'bé Landscape Architects*. Web. 2016.
6 "Santa Monica Airport Park for the Two-Legged, and the Four-Legged Too." LandscapeOnline.com. Ed. Leslie McGuire. Web. 15 Jan. 2016.
7 Ibid.

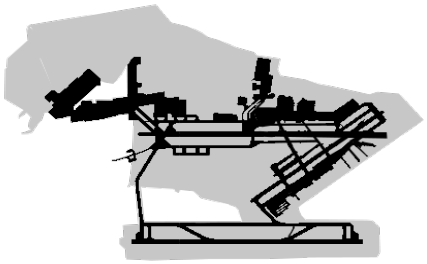
1.2 Sense of Place

Airports often leave an instant impression when one first arrives at a destination. Therefore, the ability of airports to provide a sense of its locality and feel of arrival is one of its many important functions. Students researched examples such as Honolulu International Airport and Brisbane Airport, which focused on creating a sense of place through experiencing its landscape at ground level; as well as using large land art and structural forms to provide a visual cue of arrival upon descending towards Schiphol Amsterdam Airport and Beijing Capital Airport.

Honolulu International Airport



RDM



HNL

N

1 Mile

Figure 1-7. HNL cultural gardens

Honolulu, Hawai'i
Cultural Gardens:
Richard C. Tongg
1962

Runways : 4
Area : 4,520 acres
Gates : 47

Honolulu International Airport (HNL) is located on the capital city of Hawai'i, which is also a hub for O'ahu as well as accessing the other islands of Hawai'i. HNL successfully incorporated the diverse culture in Hawai'i, such as Hawaiian, Japanese, and Chinese culture into the airport's cultural gardens to create a rich sense of place by displaying the influential heritage of "island living." Pathways, bridges, stepping stones, and the waterways connecting all three gardens symbolize the intermingling of cultures in Hawai'i.

Besides the literal presentation of culture on the airport landscape, a sustainable DOT-A program was intiated by the State Department of Transportation, aiming to promote sustainability in the airports of Hawai'i. A document[1] describing how to create an airport's sense of place includes guidelines and examples that incorporate the layered Hawaiian culture into the future planning and design of HNL. One of the design concepts was "Pili Honua," which communicates a strong connection with the land. It is envisioned that each of the six new concourses at HNL will express one of the six moku'aina, or districts, of O'ahu at the terminal with directional references.

RDM is located in an area that was once donminated by Native American culture and the history of World War II. HNL's example provides an opportunity for RDM to think about the "thick section": The history, culture, and stories that make RDM unique, and incorporate these characteristics into its landscape.

[1] DOT. *Hawai'i Sence-of-Place Primer: A Common Perspective for Hawai's's Airports.* 2011.

Figure 1-8. BNE outdoor landscape

Brisbane Airport

Flora Chen

Brisbane, Australia
Designer Unknown
Since 2009

Runways : 2
(3rd under construction)
Area : 6,672 acres
Gates : 86

Similar to RDM, Brisbane Airport (BNE) is a fast-growing hub in a much larger scale for Queensland, and is aiming to become the gateway to Australia. Beginning with the 2009 Master Plan[1], the design of BNE's landscape aimed to create a distinctive sense of place by focusing on some key values including biodiversity, landscape connectivity, scenic amenity, and water conservative design. This concept was developed further in the 2014 Master Plan. To create a sense of place, borrowed landscape from the adjacent waterway, coastline, and vegetated areas are enhanced through landscape design. Moreover, elements that represent and/or resemble the landscape were introduced into the airport through color, texture, and material. To create a richer user experience, pedestrian and cycle paths allowed users to access green open spaces. Artwork and height variation was also incorporated to accentuate the entrances and precinct themes. Furthermore, the design utilized water-sensitive urban design to align with the Queensland subtropical landscape, specified drought tolerant native plants, and minimized the extent of high-maintenance grass areas to reduce water consumption.

After exiting the aircraft, the views of the landscape beyond, such as the mountains, bodies of water, and open spaces surrounding the terminal, will have an instant impact on the visitors and lead them to form their intial sense of the place. The exits of the terminal act as the threshold between the airport and its surrounding landscape, allowing travelers to engage with the place using all their senses. The design concept of evoking the sense of place through borrowed landscape, local landscape elements, and native plant palette of BNE can be a great example for the place-making at RDM.

[1] BAC. "Landscape and Open Space." *Brisbane Airport 2009 Master Plan*. 2009. 136-139.

[2] BAC. "Environment." *Brisbane Airport 2014 Master Plan*. 2014. 156-187.

Schiphol Amsterdam Airport

Figure 1-9. Buitenschot Land Art Park

Schiphol, Netherlands
Paul de Kort, H+N+S L.A., T.N.O.
2013 (Park opened)

Runways : 6
Area : 6,900 acres
Gates : 90
Area of Park : 89 acres

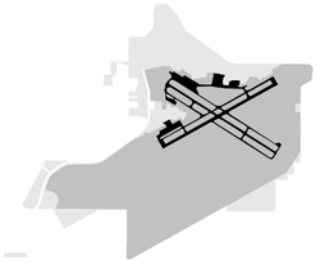
Buitenschot Land Art Park is located near Schiphol Airport in Amsterdam, the Netherlands. The park itself is roughly three-quarters of a mile southwest of Schiphol's newest and largest runway, and was designed in large part as a solution to ground noise complaints from nearby residential areas.[1]

The Schiphol Airport, specifically the Buitenschot Land Art Park, is a great example of the ability to create a unique sense of place as observed from the air. In addition to mitigating excessive noise for nearby residents, the park is a beautiful sculpted work of art. It integrates multiple functions as noise mitigation, public art, and open space.

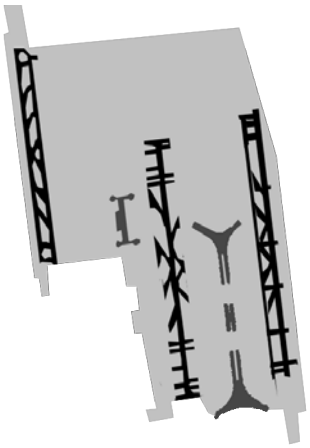
The Buitenschot is a large open area filled with a beautiful array of sharply angular soil ridges in a Chladni-esk pattern created by artist Paul de Kort. The Netherlands Organization for Applied Scientific Research (TNO) studied the ability of this shape to reduce ground noise. Standing 9.5 feet tall and 36 feet apart these ridges are designed to mimic the look and effect of plowed farm fields in the area, they are estimated to be reducing noise by 2 to 3 decibels.[1]

This project serves as an example of the unique ability that airports have to give their clients a different perspective on the landscape. Buitenschot, while unique and well designed for use on the ground, is absolutely striking when seen from the air. In the same way, Redmond airport as seen from the air, has immense potential to create a unique and remarkable sense of place for itself and the region. The use of land around the airport should be considered for its potential generation of regional identity and specificity of place.

[1] Bull, George. "Ridge and Furrow." Landscape (Sping 2014). Web.



RDM



PEK

N

1 Mile

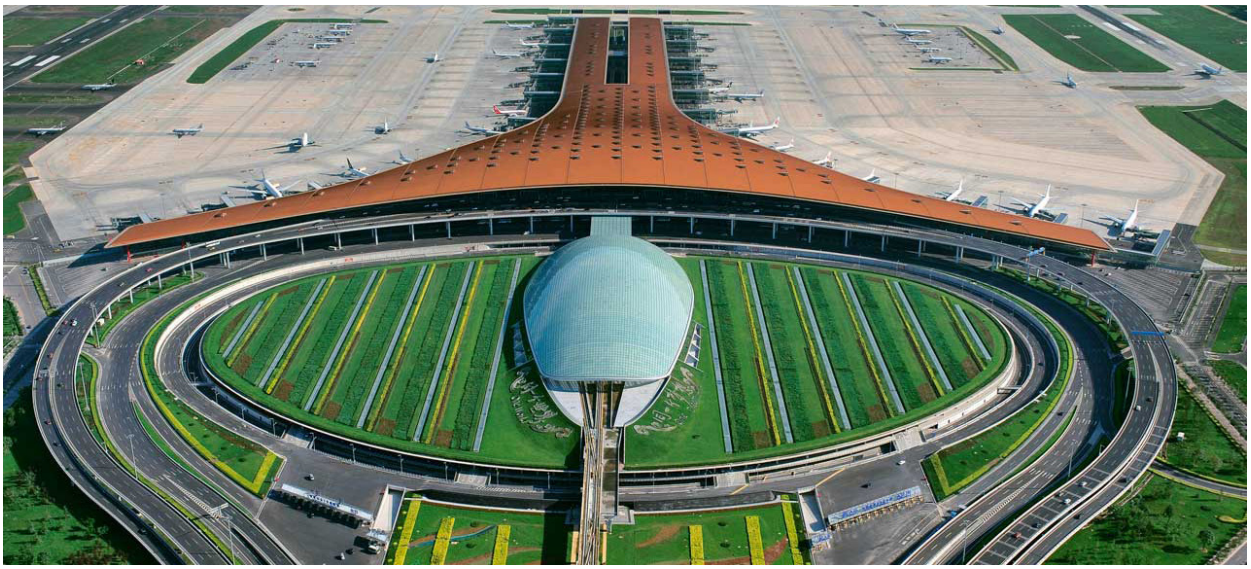


Figure 1-10. PEK

Beijing Capital Airport

Justin Kau

Beijing, China
Foster + Partners
Terminal 3 - 2008

Runways : 3
Area : 3,700 acres
Gates : 150

The newest terminal built at Beijing Capital Airport (PEK) was deliberately constructed to foster a unique sense of place. Terminal 3, opened in 2008, was designed to evoke the essence of a dragon.[1] The shape of the terminal and its integration with the landscape around it create a unique experience when flying to or from this airport.

The design of facilities and the integration therein to the situated landscape have vast potential to shape the experience and establish a sense of place for passengers. The designers express this idea with the following,

> "Designed to be welcoming and uplifting, it [Terminal 3] is also a symbol of place, its soaring aerodynamic roof and dragon-like form celebrating the thrill and poetry of flight and evoking traditional Chinese colours and symbols." - Fosters + Partners [1]

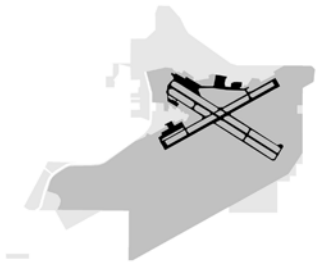
The use of cultural material amplifies the effect of this design, thereby grounding the sense of place in cultural memory. The potential for this lies not only in things abstract or set apart, such as land art, but sense of place can be fostered by careful deliberate use of the very things which make up the airport.

This precedent seems particularly relevant to the Redmond Airport when considering the future plans for expansion. By very deliberate design Terminal 3 generates a sense of place and provides a unique experience for travellers at Beijing Capital Airport. It is possible for Redmond Airport to foster a similarly unique sense of place though attention to this idea when considering future expansions and land planning.

[1] Beijing Airport | Foster Partners. Web. (http://www.fosterandpartners.com/projects/beijing-airport/)

1.3 Art

The City of Redmond is known for its public arts, through which culture and aesthetics are often expressed. Students researched the Perth Airport and Dallas-Fort Worth International Airport's way of achieving artistic goals through large scale land arts; as well as the Denver International Airport and Auckland Airport's use of art in a much smaller scale, where visitors can experience art at the ground level.



RDM

PER

N

1 Mile

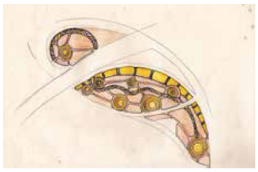


Figure 1-11. PER

Perth, Australia
Australian Government;
Sharyn Egan, Jilalga Murray,
Deborah Carmody, Naomi Grant

August, 2015 (on-going)

Runways : 2
Area : 5,201 acres
Gates : 38 [1]

Perth Airport

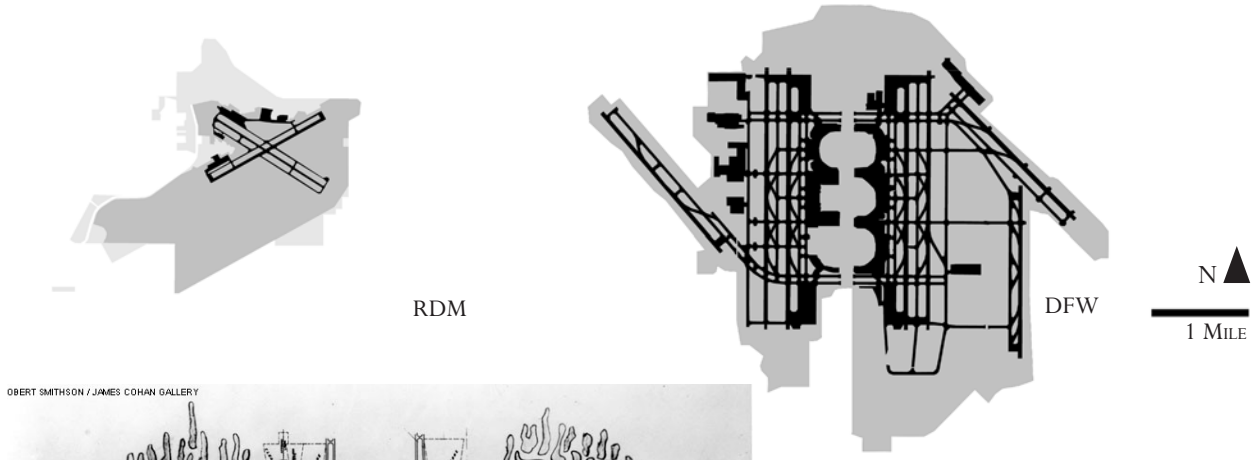
As Western Australia's largest airport, Perth Airport (PER) serves a large geographic area. In 2014, Perth Airport served over 13 million travelers on domestic and international flights.[1] Much like the Redmond Airport, Perth Airport has experienced extensive growth in the last few years, and anticipates similar future expansion.

"Perth has a new Front Door"

Gateway WA Perth Airport and Freight Access is a 1 Billion AUD transportation and development initiative to improve the efficiency and safety of the highways linking the airport to the city and centers of commerce. The City of Perth has realized that their airport approaches, exits, and linking highways holds excellent opportunities to clarify routes, ease travel, and impress visitors with public art. The Land Art Gateway currently under construction is a unique installation on the land. A composite piece from four aboriginal artists, the Land Art Gateway uses materials of the surrounding landscape to relate the space to the surrounding region. Appropriate for the setting, 'Journey' was the theme the artists began exploring, and the final piece references the sky, the Western Australian landscape, and the state's unique geology and topography. The completed project will be visible to travelers driving through the interchange and airline passengers landing in Perth. [2]

Redmond Airport currently has limited signage leading to the approaches of the terminal. The narrow stretches of property outside the fence along Airport Way, which have little development value, could be excellent canvases for public art similar to Gateway WA. Native American patterns, symbolism, and cultural history could be represented along with the early pioneer history of the region. A large art project outside of Redmond Airport can create a new and welcoming front door for the broader Central Oregon region.

[1] Perth Airport. "Corporate Information." About Us. N.p., n.d. Web. Jan. 2016.
[2] Gateway WA. Perth Airport and Freight Access Project. Urban Design / Public Art Factsheet. Land Art Gateway. N.p., Aug. 2015. Web.



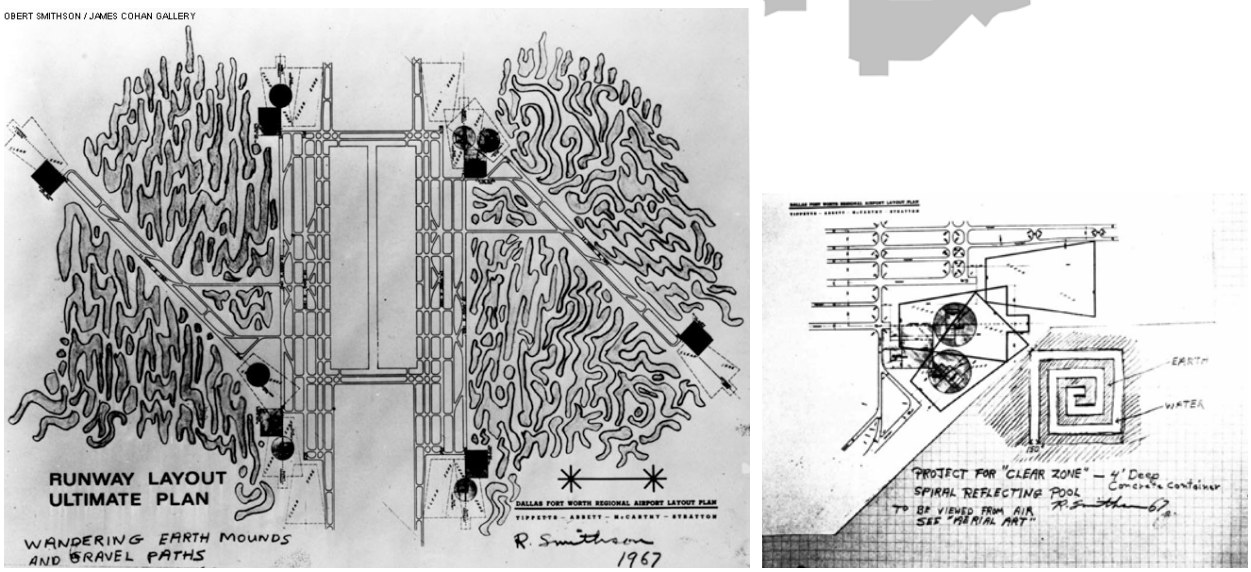


Figure 1-12. Proposed design for DFW

Dallas-Fort Worth International Airport

Dallas, Texas
TAMS Architecture/
Robert Smithson
1966-1974
(unrealized)

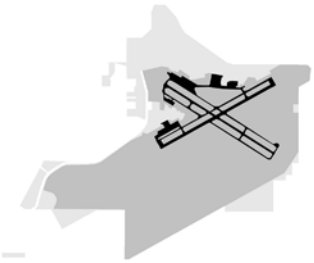
Runways : 7
Area : 18,083 acres
Gates : 165 [1]

The architecture at Dallas-Fort Worth Airport (DFW) marked a transition away from the impressive designs of the jet-set age and a move toward more generic and regulated dimensions intended to promote ease of traveling. The artist Robert Smithson was asked by Walther Prokosch, an architect working on DFW, if he was interested in "trying to figure out what an airport is." Smithson began working on large land art pieces set on the periphery of the airport— a space that would allow his work to be seen only during the brief periods of takeoff and landing of an airplane. These works, all of which remained on paper and were never constructed, were meant to become specific to a site that was lost in the generic glass and steel facade that defined so many pieces of architecture at the time. The proposed mounds of earth or spirals of water would uniquely contrast with the asphalt and concrete structures they surrounded. The fact that the work needed to be viewed from the air, and would only be visible for a few moments, inexorably linked the artwork to the airport itself. The work could be experienced in no way besides as a traveler. [2]

The rugged Cascade Mountains that sit near Redmond offer a much different landscape than the flat earth that surrounds DFW. Land art viewable from the air, though, can still be useful for RDM to create a sense of place and arrival. High bedrock conditions around the airport would make deconstructive earthwork challenging, but mounding of earth or loose rock could be visually effective. Patterns can also be revealed by addition or subtraction of surrounding vegetation. Tied in with an utilitarian purpose, like reducing avian habitat or creating firebreaks, earth or vegetation sculpture and patterning could be a very productive use of the surrounding landscape.

[1] "DFW Fast Facts." Dallas-Fort Worth International Airport, n.d. Web. Jan. 2016.
[2] Eggebeen, Janna. ""Between Two Worlds": Robert Smithson and Aerial Art." Public Art Dialogue 1.1 (2011): 87-111. Web.

John Maxson



RDM

Denver International Airport

Denver, Colorado
Ned Kahn
November 2015

Runways : 6
Area : 140 km2
Gates : 85

"Field of Air" was constructed in November 2015 in front of the Denver international airport in Denver, Colorado. The piece was designed and built by Ned Kahn, an environmental artist and sculptor. The artist's intent was to capture the beauty of the surrounding landscape and the forces of nature for those who enter and exit the airports main entrance. Native grasses of the plains expose the invisible force of wind and inspired the designer to highlight their features. Prairie grasses are represented through construction of 18,500 individual blades made from aluminum. The sculpture dances in an elegant fashion while reveling in the vigor of the wind and inviting visitors to the state of Colorado. The Redmond airport in Redmond, Oregon is currently lacking any form of land art or art installation within the vicinity of the main entrance. Land art within the context of an airport has the potential to educate and connect those who are visiting the surrounding landscape, and for this reason a permanent art installation could benefit the airport of Redmond and travelers.

"Yann Kersalé, Ned Khan + Patrick Marold To Create Distinctive Art Pieces for Denver International Airport : Illumni – The World Of Creative Lighting Design." Illumni The World Of Creative Lighting Design RSS. N.p., n.d. Web. 12 Jan. 2016.

http://www.flydenver.com/about/art_culture/commission

RDM

In 2014, SUEGACE DESIGN. INC. was commissioned by the city of Auckland to design a land art sculpture "gateway" approaching the Auckland international airport in Auckland, New Zealand. The designers attempted to create a transect of New Zealand's geography and ecology to establish a welcoming presence for those leaving or entering the airport by vehicle. The piece reflects the two distinct ways that society has engaged with New Zealand through landscape. When the Maori population arrived to the island with their exotic and tropical food sources, they constructed large pits, where they carved and lined the earth. Later, the arrival of Europeans brought the construction of giant hedgerows. The massive earth forms rising nine meters in height are an abstraction of the kumara pits constructed by the native population which are juxtaposed by hedges which frame the boulevards and resemble European engagement with the land. Currently, the Redmond airport has ample space surrounding the entranceway and no defined planting palate or art near the airport. Drawing inspiration from Auckland, these areas could be used in a more appealing way to potentially tell a story about Redmond.

Auckland , New Zealand
SUEGACE DESIGN. INC.
2014

Runways : 2
Area : unknown
Gates : 65

Barrett, Michael. "Auckland Airport Landscapes." Architecturenow.co.nz. Architecturenow, Sept. 2014. Web. 09 Jan. 2016.

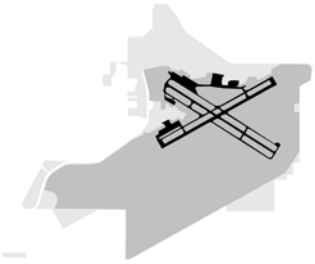
Auckland Airport

Derek Rayle

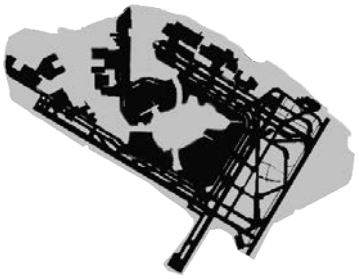
1.4 Sustainability

To respond to the challenges of climate change, degrading natural systems, and rising water and energy costs, sustaining solutions are extremely needed. Therefore, students studied issues related to food production at John F. Kennedy Airport and Chicago O'Hare Airport; utilizing geothermal and solar at Orly Airport and Redding Municipal Airport, respectively; large and temporary spaces as well as structures for the preparation of disasters at King Abdulaziz International Airport and Tribhuvan International Airport; landscape planning that included ways to increase biodiversity and habitat corridors at Gatwick Airport, as well as designing zones for different plant communities in regard to the Federal Aviation Administration (FAA) regulations at Portland International Airport; and finally, solutions for grey water and runoff treatments at Stewart International Airport and Tancredo Neves International Airport.

John F. Kennedy International Airport



RDM



JFK

N

1 Mile

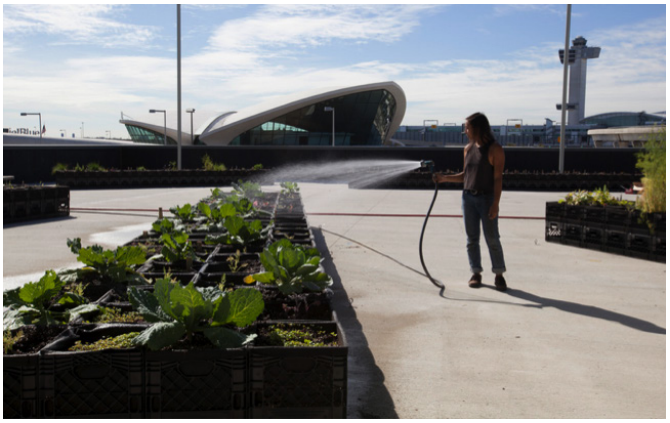


Figure 1-15. JFK T5 Farm

Queens, New York
ORE Design + Technology
October, 2015 (on-going)

Runways : 4
Area : 4,930 acres
Gates : 125

John F. Kennedy Airport (JFK) occupies 4,930 acres in Queens, New York. JFK, located 15 miles from downtown Manhattan, has six airport terminals that contain a total of 125 gates serviced by more than 80 airlines. The four runways at JFK cover nine miles, not including the 25 miles of taxiway.[1] In contrast, Roberts Field Airport, located in Redmond, Oregon, contains two runways and 580 acres of area "outside the fence."

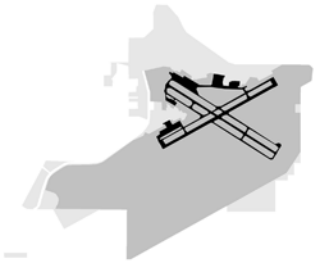
The modern American airport contains acres of underutilized outdoor space. At JFK, JetBlue Airlines has converted a 24,000 square-foot space at Terminal 5 into T5 Farm. Located on a roof of the departures level, T5 Farm consists of over 4,000 recycled plastic milk crates filled with soil from upstate New York and composted material from food waste generated at Terminal 5.[2] The farm concentrates on the organic production of kale, blue potatoes, and herbs. Potatoes are used by Terra, the company that produces the popular, free potato chips available on Jet Blue flights. Other produce is donated to local food banks through GrowNYC, one of the project collaborators. One of the major concerns with the design of T5 Farm was attracting birds to the airport property. In order to discourage unwanted bird traffic, direct seeding was avoided with most plants started off-site and transported to the farm. Flowering plants were also avoided. Jet Blue estimates that 80,000 gallons of annual rainwater will be diverted from sewers thanks to the soil in the milk crates.[3]

Redmond Airport has a vast amount of acreage that is underdeveloped and could be used more creatively for food production.

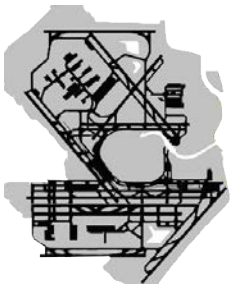
1 "History of JFK International Airport." John F. Kennedy International Airport. The Port Authority of New York and New Jersey, 2016. Web. 12 Jan. 2016. <http://www.panynj.gov/airports/jfk-history.html>.
2 "GrowNYC Builds 7 New Gardens in 2015." GrowNYC. GrowNYC, 17 Dec. 2015. Web. 12 Jan. 2016. <http://www.grownyc.org/blog/grownyc-builds-7-new-gardens-2015>. Jersey, 2016. Web. 12 Jan. 2016.
3 Schonbrun, Zach. "JetBlue's Airport Farm Adds a Touch of Green to J.F.K." The New York Times. The New York Times, 16 Nov. 2015. Web. 12 Jan. 2016. <http://www.nytimes.com/2015/11/17/business/jetblues-airport-farm-adds-a-touch-of-green-to-kennedy.html?_r=0>.
Photos: https://www.flickr.com/photos/jetblue/sets/72157659855617991

O'Hare International Airport

Margo Barajas



RDM



ORD

N

1 Mile

Figure 1-16. ORD aeroponic airport garden

Chicago, Illinois
Future Growing LLC
2011

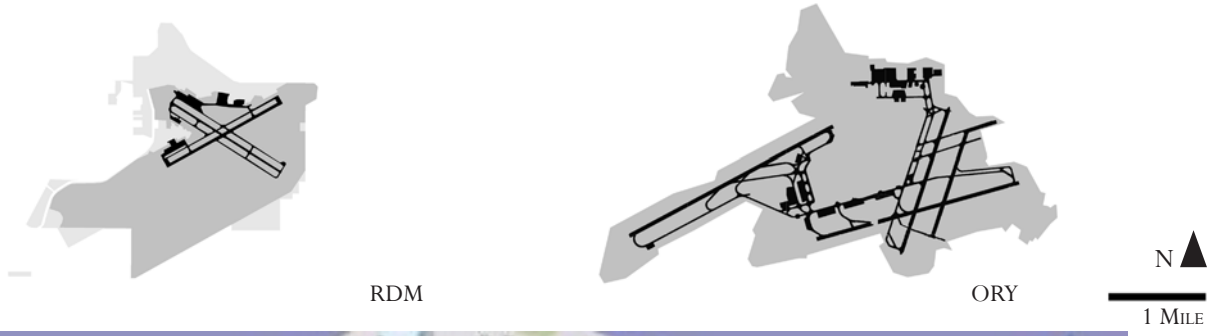
Runways : 6
Area : 7,200 acres
Gates : 188

O'Hare International Airport (ORD) occupies 7,200 acres in Chicago, Illinois.[1] ORD, located 18 miles northwest from downtown Chicago, has four airport terminals that contain a total of 188 gates. American and United Airlines utilize ORD as a hub, occupying 146 of the 188 gates. ORD is in the process of an $8 billion major modernization and expansion of its runways, with an estimated completion in 2020. Once complete, ORD will operate six east-west parallel runways.[2]

In 2011, The Chicago Department of Aviation and HMS Host, an airport food-service company, opened the world's first aeroponic airport garden. The garden is located in Terminal 3 over the corridor to Concourse G.[3] Aeroponic gardening is a method of growing plants without soil. Plants are intermittently sprayed with a nutrient-dense solution during their watering cycle. O'Hare's Urban Garden employs 26 growing towers that contain over 1,100 planting spots. Wicker Park Sushi, Wolfgang Puck and Tuscany Café are among the restaurants inside of O'Hare that utilize fresh produce from the Urban Garden. Some of the plants grown on site include swiss chard, lettuce, peppers, edible flowers, beans and various herbs.[3]

Redmond Airport has potential space inside and out for that could be utilized for aeroponic gardening. The soil surrounding Redmond Airport is rocky and sandy, creating further challenges for food production. The utilization of indoor space could be a great opportunity.

1 http://www.flychicago.com/OHare/EN/AboutUs/Facts/Facility-Data.aspx
2 http://www.flychicago.com/OHare/EN/AboutUs/ModernizationProgram/introduction.aspx
3 http://www.flychicago.com/OHare/EN/AboutUs/Sustainability/Aeroponic-Garden.aspx
Photo: http://www.flychicago.com/OHare/EN/AboutUs/Sustainability/Aeroponic-Garden.aspx



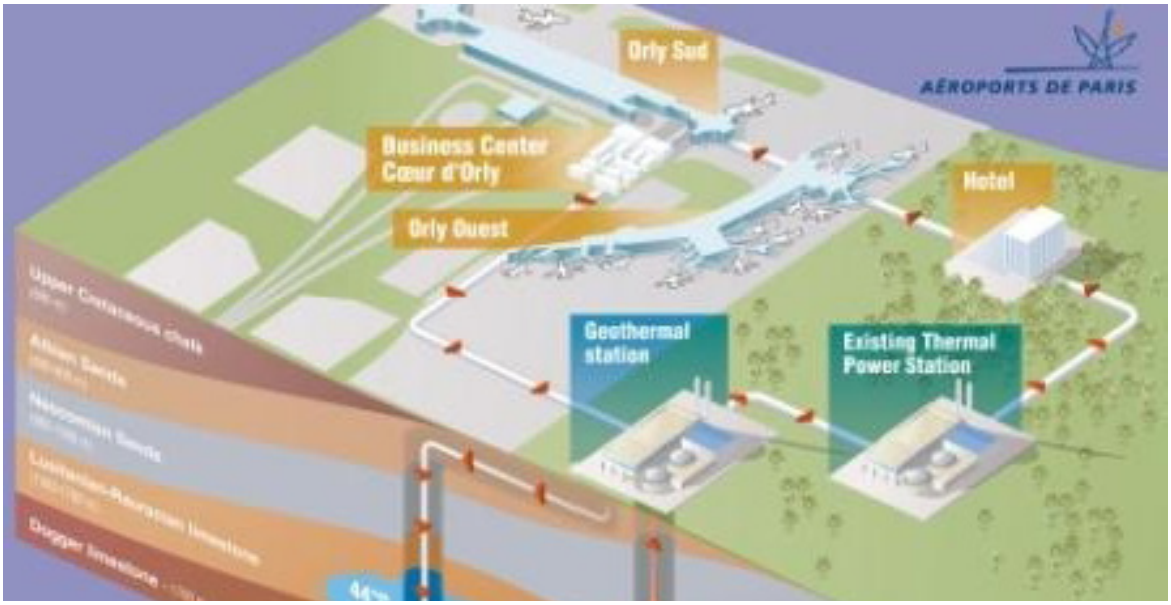


Figure 1-17. ORY geothermal project diagram

Orly Airport

Paris, France
Areoports de Paris (ADP)
2011- completion unknown

Runways : 4
Area : 3776 acres
Gates : 72 gates & 2 terminals

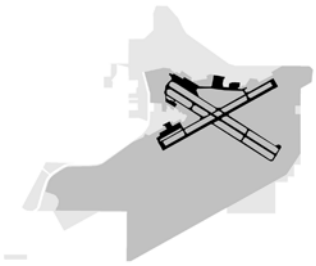
With future energy costs expected to increase and resources for energy production to decrease, companies are in a constant struggle to find new and alternative methods to attain energy for the powering of operations while remaining competitive and profitable. Clean, sustainable energy then must be seen as a reliable, effective, and feasible alternative to the burning of fossil fuels.

In 2008 the Orly Airport (ORY) in Paris France launched a 17.5 million dollar project to build a geothermal energy station directly on the airport property. Orly Airport sits upon a large stable geothermal source aquifer some 5,500 feet below the surface. The geothermal aquifer reaches 165 degrees F, making the water temperature a highly efficient heating source. To obtain the hot water needed to run the heating systems, two separate pipes were drilled down into the earth's surface. The first pipe would tap into the aquifer and bring the water up to the surface at 165 degrees. The second pipe acts as a return portal, sending the water back down to the source at 110 degrees F.

Thus the closed system runs at a highly clean and efficient manner. The closed loop system will cut annual carbon emissions by 7,000 tons and provide the airport with up to 35% of their heating needs. The project was slated to break ground in 2009 be fully functioning by 2011. According the US Department of Energy, the use of geothermal energy can reduce energy costs by 60 %. Because of the dominating volcanic activity in the Central Oregon region, geothermal energy can be a viable green energy investment strategy.[1]

Due to the large geothermal reserves that rest beneath the earths surface in Central Oregon, geothermal energy may prove a vaiable energy producing resource.

[1] Inhabit.com: Orly-to-utilize-geothermal-heating



RDM

RDD

N

1 Mile

Figure 1-18. RDD solar field

Redding Municipal Airport

Chad Hawthorne

Redding, California
Belvedere Equipment
Finance Corporation &
Halcyon Solar
May 2011

Runways: 2
Gates : 1
Acres : 1,584

In November, 2010 a public hearing was held to approve a proposed solar field at the Redding Municipal Airport (RDD). The proposed solar field would cover roughly 3.75 acres of low reflective solar photovoltaic panels. The solar field would be situated directly south of the airport terminal and remain in a fixed southerly position to capture the maximum solar radiation. Like the City of Redmond, the City of Redding receives over 300 plus days of intense sunlight, making a solar investment a profitable venue.

The agreement would see a 60 month lease of solar equipment through the Belvedere Equipment Finance Corporation with construction contracts to be given to Halcyon Solar Construction. The project was to be funded through the American Recovery and Reinvestment Act (ARRA), a federal grant moneys initiative to help project ready companies invest in sustainable energy alternatives. [1]

Original costs for both equipment and construction for the project totaled $4,175,880. The ARRA would offset the costs by covering 30% of the costs. This reduced the Redding Municipal Airports costs to $2,923,116. Further credit incentives were awarded to the airport through credit programs from the Redding Electric Utility (REU). Approval of the project was granted and in May of 2011, the switch was flipped and the Redding Municipal Airport was generating enough energy to run the entire operations at the terminal as well as other parts of the airfield. In June 2016, the 60 month lease will expire and the Redding Municipal Airport plans to pay off the remaining balance, refinance the loan, and own the solar field outright. The profits that the Redding Municipal Airport expects to gain from this investment over the next 20 years is an estimated $ 3,584,963, allowing the airfield to operate well into the future and remain economically independent. [1]

1. Report to City Council Re: Public Hearing re Solar Power, November 22, 2010

King Abdulaziz International Airport

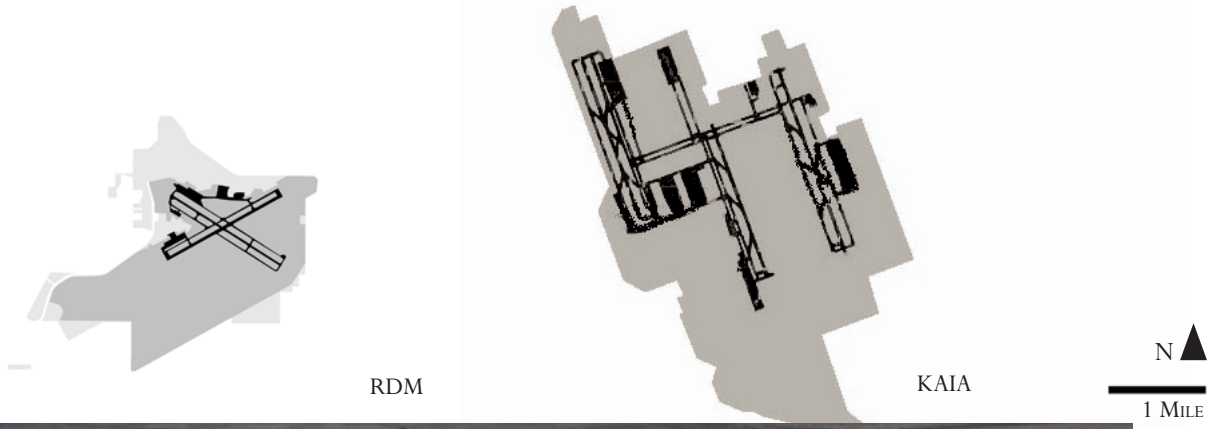


Figure 1-19. KAIA Hajj Terminal

Jeddah, Saudi Arabia
Skidmore, Owings & Merrill, LLC, 1981

Runways : 3
Area : 3,706 acres
Gates : unknown

King Abdulaziz International Airport (KAIA) is located 43 miles from the Holy City of Mecca in Saudi Arabia, making it one of the primary hubs of transportation during the annual pilgrimage during Hajj. To accomodate the vast influx of travellers (an average of 800 flights per day) during the 2015 Hajj season,[1] KAIA has a separate terminal solely for use during the observance of Hajj. The Hajj Terminal, designed by Skidmore, Owings & Merrill in 1981[2], is five million square feet and sits on 100 acres of land.[3] Almost like a miniature city, this terminal is able to house 80,000 visitors at one time[3], totalling over two million annually.[4] The Hajj Terminal provides facilities for pilgrims to stay comfortably for several days, including places to sleep and prepare food.[2] The terminal also has a large mosque, banks, post offices, currency exchanges, telephone services, markets, restaurants, and a medical clinic.[5] The Hajj Terminal building won the 2010 American Institute of Architects 25 Year Award.[6]

In the aftermath of the Cascadia earthquake, or similar natural disaster, it is likely that Redmond will serve as hub for Oregonians leaving and arriving at the region. While the Redmond Municipal Airport will never compare with the King Abdulaziz International Airport when it comes to sheer size and volume, it is nonetheless an excellent example of an airport accomodating a large influx of travelers. Given the fact that many services in the Coast and Willamette Valley regions will be severely damaged by the earthquake and flooding[7], it may be essential for the Redmond area to provide these services to people escaping the damage. Because many people with be flying in and out of the Redmond airport in the event of a major earthquake, providing on-site services (especially lodging and food preparation) may prove essential.

[1]"800 Flights at King Abdulaziz International Airport per Day during Haj." Arab News. Arab News, 23 Sept. 2015. Web. 11 Jan. 2016.
[2] "King Abdulaziz International Airport – Hajj Terminal." SOM. Skidmore, Owings & Merrill, n.d. Web. 11 Jan. 2016.
[3] "Jeddah Hajj Terminal (Arrival)." Hajj Practicalities. N.p., Dec. 2013. Web. 10 Jan. 2016.
[4] "The Hajj Terminal at King Abdul Aziz International Airport in Jeddah Saudi Arabia," Lake Union Laboratory/ LULab, accessed January 13, 2016, http://lulab.be.washington.edu/omeka/items/show/1354.
[5] "King Abdulaziz International Airport Terminal Information." World Airport Guides. N.p., n.d. Web. 11 Jan. 2016.
[6] "The Hajj Terminal at King Abdul Aziz International Airport." AIA RSS. The American Institute of Architects, n.d. Web. 11 Jan. 2016.
[7]Kathryn Schultz. "The Earthquake That Will Devastate the Pacific Northwest." The New Yorker. N.p., 20 July 2015. Web. 13 Jan. 2016.
Image: Diler, Ahmet Akin. Digital image. Lake Union Laboratory. N.p., n.d. Web. 13 Jan. 2016. <http://lulab.be.washington.edu/omeka/items/show/1354>.

Tribhuvan International Airport

Brittany Murphy

Figure 1-20. HSA at TIA

Kathmandu, Nepal
Nepalese Goverment
March, 2015

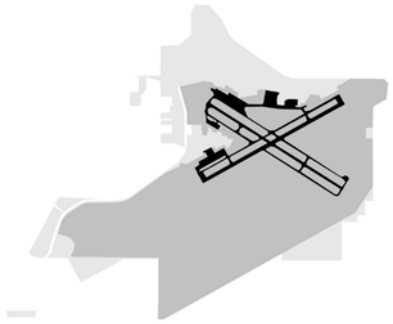
Runways : 1
Area : unknown
Gates : 38

Opened in March 2015, the Humanitarian Staging Area (HSA) at the Tribhuvan International Airport (TIA) functions as both storage and clearinghouse for supplies and personnel coming in to the airport.[1] Managed by the United Nations World Food Programme (WFP), which provides free storage to aid agencies, the staging area can hold 9,500 metric tons (almost 10,500 US tons) of supplies.[2] The HSA acts as the "main entry point during the event of an earthquake" according to the executive director of the WFP[1]. The communication services and power supply operate independently of the airport.[3]

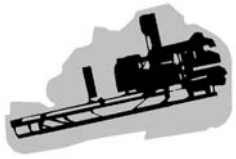
Unfortunately, the HSA was put to the test shortly after its inauguration when a 9.0 magnitude earthquake struck near Kathmandu in April 2015.[3] According to a WFP logistics officer, the HSA was "operational on Day 1" after the earthquake.[3] The area proved invaluable in decongesting the airport by facilitating the unloading of cargo quickly. This prevents aircraft from sitting on runways or at gates.[3] At the end of August, the HSA had cleared 5,741 metric tons (over 6,300 US tons) of cargo.[4]

The precedent set by the Tribhuvan Airport may be scaled down to fit the needs of Redmond Airport in the event of a Cascadia earthquake affecting western and central Oregon.[5] Redmond Airport may be in a position to store and transport a large amount of cargo and personnel being brought in and out of affected areas. As seen in Kathmandu, delays in unloading aircraft can cause bottlenecks on runways, preventing other crafts from landing or taking off. Managing high traffic levels may prove difficult for Redmond Airport, which has only two runways and one terminal. It may be advantageous for the Redmond airport to have an area designated as a staging area where cargo can be stored and personnel organized.

[1] "Humanitarian Staging Area Set up at TIA." The Kathmandu Post. N.p., 27 Mar. 2015. Web. 11 Jan. 2016.
[2] "Nepal Risk Reduction Consortium Facebook." Humanitarian Staging Area (HSA) At... N.p., 26 Mar. 2015. Web. 13 Jan. 2016. <https://www.facebook.com/NepalDRR/posts/788008807914693>.
[3] Anyadike, Obi. "Inside the Logistics Hub at Kathmandu's Airport." IRINnews. N.p., 1 May 2015. Web. 13 Jan. 2016.
[4] "British Minister Visits WFP-Managed Emergency Relief Base In Nepal." World Food Programme. N.p., 28 Aug. 2015. Web. 13 Jan. 2016.
[5] Kathryn Schultz. "The Earthquake That Will Devastate the Pacific Northwest." The New Yorker. N.p., 20 July 2015. Web. 13 Jan. 2016.
Image: DFID Nepal (DFIDNepal). "#DFID Asia Director Beverley Warmington visits humanitarian staging area funded by #UKaid at Tribhuvan Int'l Airport" 26 June 2015.



RDM



LGW

N

1 Mile

Figure 1-21. LGW ecological channel

Gatwick Airport

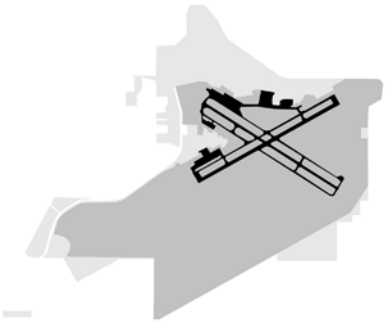
Crawley, United Kingdom
Gatwick Airport Ltd.
May, 2014 (on-going)

Runways : 1
Area : 19 acres
Gates : 113

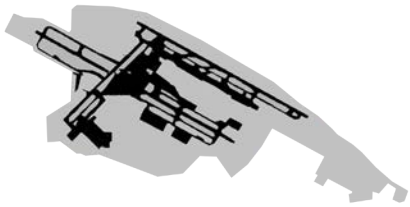
Gatwick Airport (LGW) is facing a possible massive expansion with the creation of a second runway. The airport has commissioned a development plan, pending expansion, that will increase biodiversity and habitat corridors surrounding the airport. Gatwick has gained a lot of publicity with their progressive management plan, and has even been recognized by the Wildlife Trust.[1] Prior to the plan, a thorough investigation was completed in order to gage the effects of airport expansion on local wildlife. After pinpointing possible issues associated with development, Gatwick developed a plan that both protects endangered and displaced species while increasing ecosystem services.[2] The airport made plans to compensate for the most impacted habitats where appropriate and possible. Most notably, the River Mole, which runs to the south of the airport boundary, will need to be diverted into an open channel in order to accommodate the new runway. The new watercourse will enhance natural water flow and increase wildlife habitat and biodiversity in the region.[3] The airport has plans to re-establish certain species to this new habitat area and to thin out dense woodland in order to increase wildlife corridors.

Since Redmond Airport is also growing and has some major development plans in place, a similar comprehensive wildlife management plan could be beneficial in a number of ways. Such recognition as Gatwick received would increase the popularity and prominence of the Redmond Airport while preserving important wildlife in the region.

1 "Gatwick Wins Wildlife Trust's Biodiversity Benchmark Award." Gatwick Media Centre –. N.p., n.d. Web. 14 Jan. 2016.
2 Response to Airports Commission Consultation. Rep. West Sussex: Gatwick Airport, 2015. Print. Appendix 13.
3 ibid



RDM



PDX

N

1 Mile

Figure 1-22. PDX terminal and surrounding landscape

Portland International Airport

Jillian Stone

Portland, Oregon
Port of Portland
2009

Runways : 3
Area : 600 acres
Gates : 38

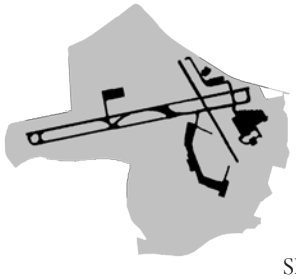
The Portland Airport (PDX) has published an extensive planting plan for wildlife management. The plan begins by recognizing the need for aesthetically pleasing plantings that still satisfy the safety requirements of the Federal Aviation Administration (FAA). The first step of the plan is an assessment of current vegetation in the airport's landscape in order to identify any plants that might pose a wildlife hazard. Certain plants will attract wildlife, increasing the chance of a plane striking an animal, or an 'airplane strike.' Grasses, which dominate the groundcover at PDX, will be assessed for habitat. If the grasses seem to provide additional habitat, other groundcover such as turf, grass-crete, and paving may be used instead. After the initial assessment, the Port of Portland drafted a list of plants that grew well in the region without creating additional wildlife habitat. The finalized plan establishes plant regulations for different airport zones. Zone One, inside the airport security fence, will be groundcover plants only. Plantings in Zone Two, which includes the aircraft approach area, should be aesthetically pleasing while not risking aircraft operation. Trees planted in this intermediate zone will be spaced so as to discourage nesting of certain species in developed canopies. Trees planted near each other should have varied canopies and heights and tend towards columnar forms to reduce perching. At the end of the wildlife management plan, PDX includes an approved plant list with species name, type, maximum height and spread, and where to find more information on each plant[1].

Since Redmond Airport plans to lease out a number of their buildings, a similar standard for landscaping to manage wildlife could be created. Therefore, any new business entering the airport property has a plant list and landscaping plan that meets FAA requirements for safety while creating a cohesive theme throughout the airport's landscape.

1 "Portland International Airport Landscaping Standards." Port of Portland, 2009. Web.

Stewart International Airport

RDM



SFW

N

1 Mile

Figure 1-23. SFW

New Windsor, New York
Port Authority of NY and New Jersey Engineering Department
2010

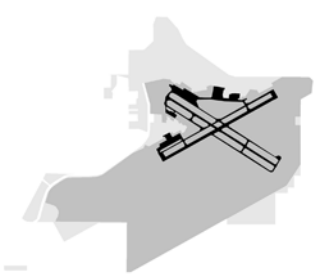
Runways : 4
Area : 2,400 acres
Gates : 7

To expand parking capacity at the Stewart International Airport (SFW) in New Windsor, New York, the Port Authority used pervious pavement on six acres of land. The pervious pavement allows for infiltration of water into the underlying soil instead of flowing across the pavement surface, collecting pollutants and increasing in temperature before being treated and/or discharged into water systems. Immediate infiltration also decreases peak runoff rates and recharges groundwater.[1] Other sustainable features of the new parking lot include a dry swale for runoff collection, pollutant filtration, and infiltration.[2] Some runoff is collected and used for irrigation with pumps powered by solar energy.[3]

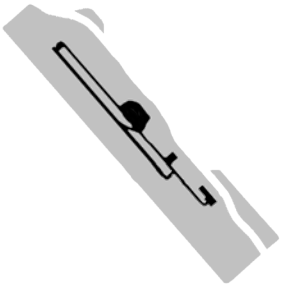
Additionally, the airport has included several operational actions in its Environmental Sustainability Plan related to reducing water consumption and treating discharge and runoff. These actions include preventative maintenance, special training, spill prevention, and designating certain areas for vehicle and aircraft fueling, washing, and painting measures.[4]

The actions taken by Stewart International Airport demonstrate the use of newer sustainable technology to reduce harmful stormwater runoff. Though Redmond does not receive great amounts of rainfall, snowmelt and intense precipitation during thunderstorm events can increase the amount of stormwater runoff that the area produces. Features such as dry swales and pervious pavement can work to remove pollutants, reduce peak flows, and recharge groundwater in an arid environment with increasing water demand.

[1] Vanasse Hangen Brustlin, Inc. "Stewart International Airport Environmental Sustainability Plan." Stewart International Airport. Port Authority of New York and New Jersey, Sept. 2010. Web. 13 Jan. 2016.
[2] Ibid.
[3] "Stewart Airport Pervious Asphalt Pavement." Stewart Airport Pervious Asphalt Pavement. Department of Environmental Conservation, 2016. Web. 13 Jan. 2016.
[4] Vanasse Hangen Brustlin, Inc. "Stewart International Airport Environmental Sustainability Plan."



RDM



CNF

N

1 Mile

Figure 1-24. CNF

Tancredo Neves International Airport

Confins, Brazil
Unknown Designer
Unknown Date

Runways : 1
Area : 3,002 acres
Gates : >9

The Tancredo Neves International Airport (CNF) implemented a greywater treatment unit to treat water from kitchen sinks, bathroom/locker room sinks and showers, and water from cleaning. The treatment unit consists of "an anaerobic filter followed by a ultraviolet (UV) disinfection device."[1] Both parts of the treatment unit are fairly compact in size: The anaerobic filter is 1.8 meters tall with a diameter of one meter, and the UV device is 30 centimeters in length with an eight-cm internal diameter.[2] The device also uses gravity instead of an electronic pumping system.[3] The greywater flows into the anaerobic filter where biodegradable, organic matter is removed. Next, it is treated with UV radiation for additional disinfection. Though the study does not state explicitly for what purpose the stored, treated water was used, it suggests that it could be used for the airport's non-potable water needs such as landscape irrigation and toilet flushing.[4] Further, it suggests the potential integration of water conservation and renewable energy efforts.[5]

The study emphasizes the use of this type of system in small- to medium-sized airports, or large airports with decentralized treatment.[6] As Redmond is a small airport in an area with low precipitation, a system similar to this could be beneficial to decrease the consumption of potable water for uses that do not require potable water without the use of chemicals. Further, as Redmond's population is growing rapidly and enplanements are expected to increase, there will likely be greater demand on the aquifer from which the city and airport currently retrieve water. With this in mind, taking advance steps to reduce water consumption could ensure that the Redmond Airport is well positioned to handle potential future water shortages.

[1] Couto, Eduardo De Aguiar Do, Maria Lúcia Calijuri, Paula Peixoto Assemany, Aníbal Da Fonseca Santiago, and Lucas Sampaio Lopes. "Greywater Treatment in Airports Using Anaerobic Filter Followed by UV Disinfection: An Efficient and Low Cost Alternative." Journal of Cleaner Production 106 (2015): 372-79. Web. 13 Jan. 2016.
[2] Ibid.
[3] Ibid.
[4] Ibid.
[5] Ibid.
[6] Ibid.

Jamie Willeke

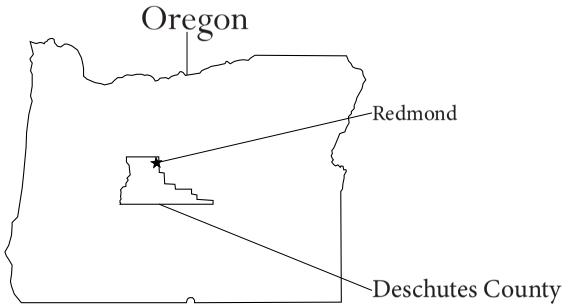
Chapter Two:
Site Analysis

After the site visit led by Professor Eischeid and RDM Staff, students conducted a thorough site analysis specific to RDM and the City of Redmond as the second part of the research stage. This site analysis was conducted in order to understand the site as a whole geographically, culturally, and its natural processes. These analyses looked at aspects such as geology and soil, climate, flora and fauna, natural hazards, water systems and infrastructure, identifying on-site waste, viewshed, materiality, livability and points of interests, open space and circulation, land use and zoning, runway use and noise, airspace classification, and FAA regulations.

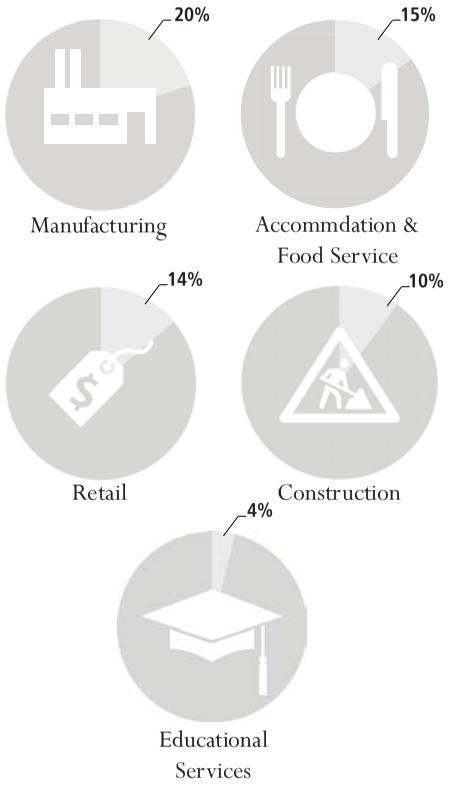
The site analyses listed below are provided on the following pages:

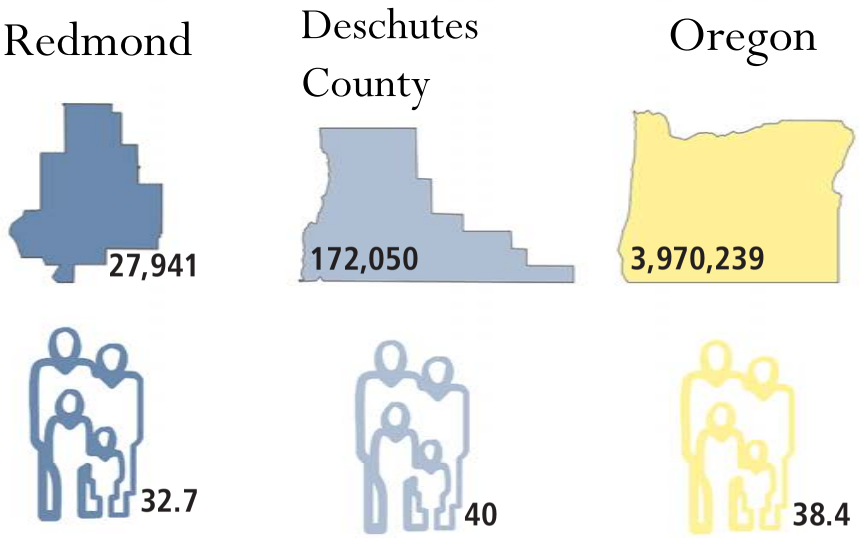
Demographics

Whitney Holt



Major Industry





Percentage of residents, age 25 and older, with a bachelors degree

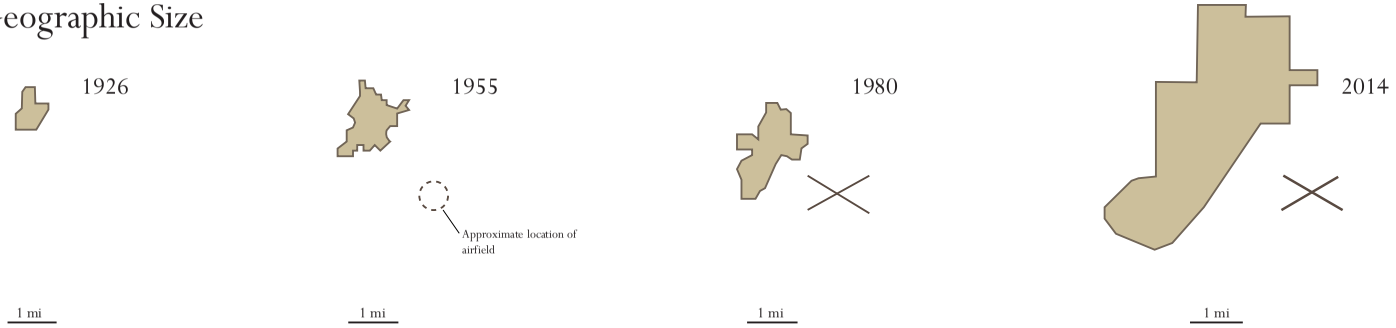
References: "Demographics." Redmond, OR :. N.p., n.d. Web. 07 Feb. 2016.
"Deschutes County, Oregon (OR)." Deschutes County, Oregon Detailed Profile. N.p., n.d. Web. 07 Feb. 2016.
"Redmond (city) QuickFacts from the US Census Bureau." Redmond (city) QuickFacts from the US Census Bureau. N.p., n.d. Web. 07 Feb. 2016
"Redmond Economic Development, Inc. Helping Redmond Business Succeed since 1987." REDMOND ECONOMIC DEVELOPMENT INC. N.p., n.d. Web. 07 Feb. 2016.

Figure 2-1. Site analysis: Demographics

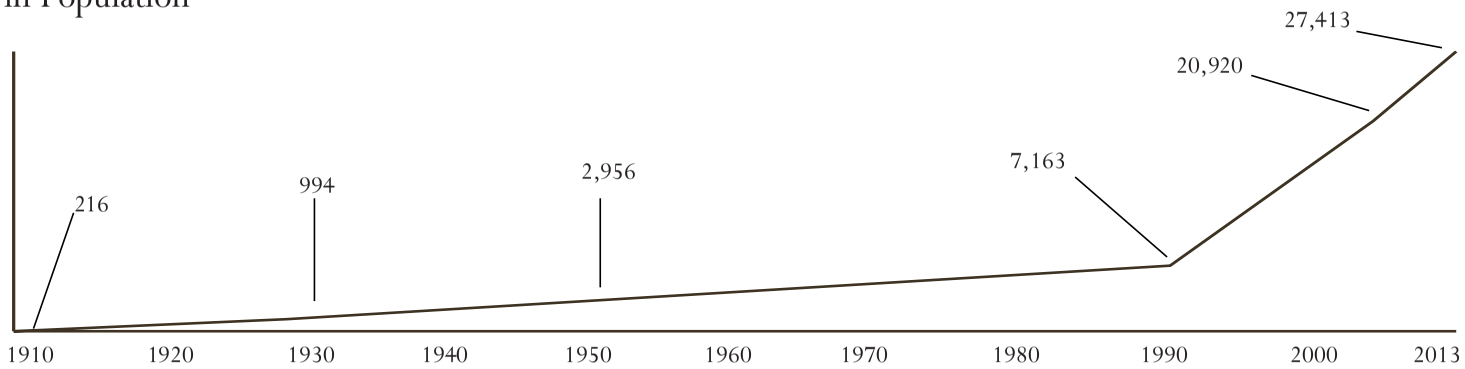
Historic Change

Brittany Murphy

Change in Geographic Size



Change in Population



Timeline of Historic Events

1904: Founded by Frank and Josephine Redmond

1910: Incorporated as the City of Redmond

1911: Railroad through Redmond completed

1943: US Air Force established B17 and P38 training base

1946: First commercial flight out of the Robert's Field

1950: Passenger terminal built

2009: Passenger terminal reached 140,000 square feet after major renovation

Sources:
"History" City of Redmond website. http://redmond.or.us/our-community/history
"Redmond History" Redmond Chamber of Commerce and CVB. http://www.visitredmondoregon.com/History

"Map Locator and Downloader." USGS Store. USGS. http://store.usgs.gov/b2c_usgs/usgs/maplocator/(isQuery=yes&xcm=r3standardpitrex_prd&query=*oregon*&layout=6_1_61_58&uiarea=2&ctype=areaDetails&carea=%24ROOT)/.do

Figure 2-2. Site analysis: Historic Change

Livability

Flora Chen

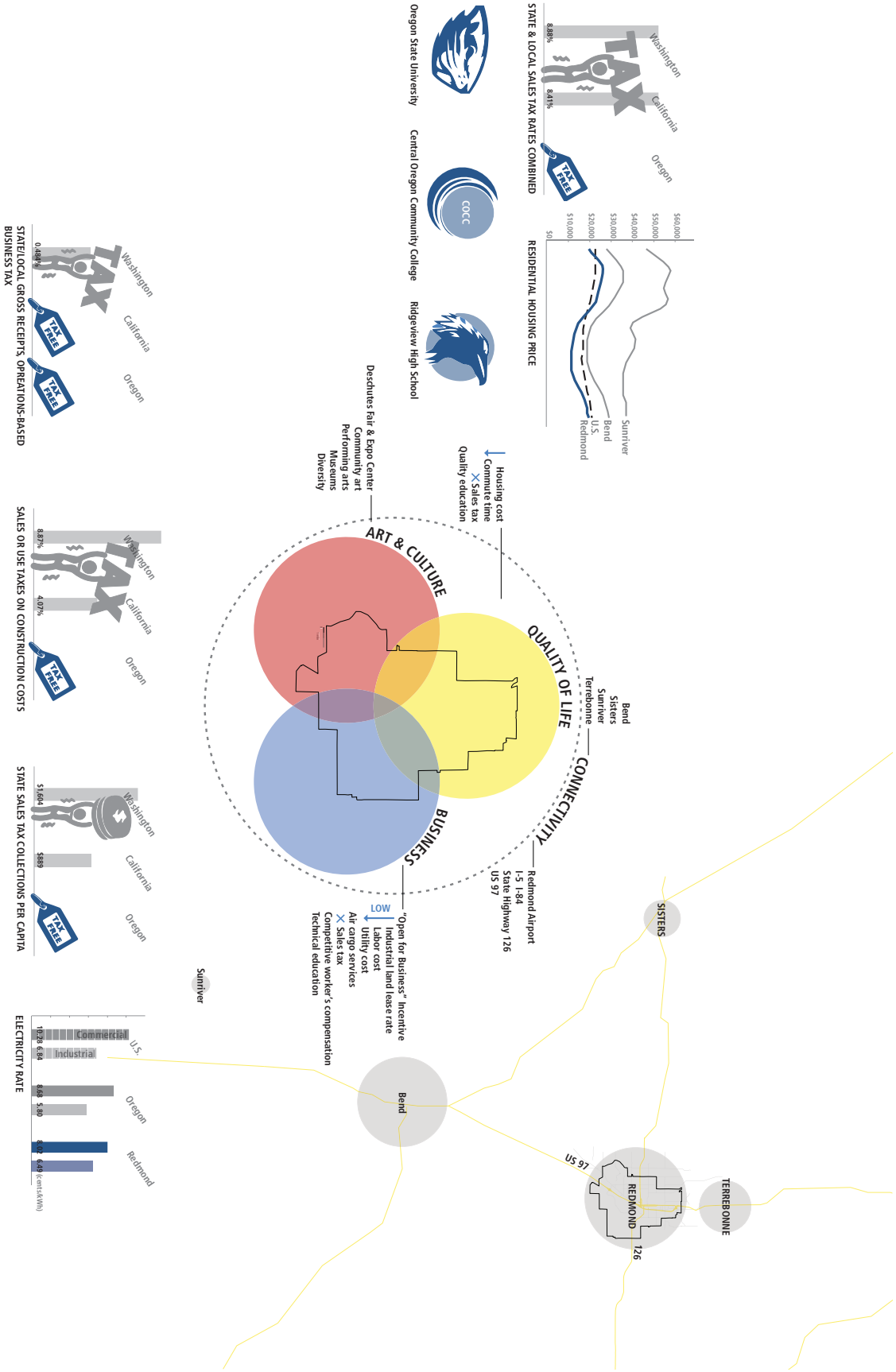


Figure 2-3. Site analysis: Livability

Sources:
Central Oregon Association of Realtors (COAR), National Association of Realtors

Tax Foundation, Oregon Employment Department, Washington State Employment Security Department, and California Employment Development Department, US Energy Information Association, Employer Health Benefits Survey, Premium rate ranking index, Oregon Insurance Division, 1 Washington does not have a corporate income tax but does have a gross receipts tax (Business & Occupancy Tax). While not strictly comparable to corporate income tax rates, it is imposed on revenues, not profits, resulting in noteworthy effective tax rates, particularly for small businesses and startups. 2 The average DMV car registration in CA is not easy to find as it includes a vehicle license fee which is based on a percentage (0.65%) of the purchase price.

U.S. Energy Information Administration; * 2013 EIA data.

Points of Interest

Flora Chen

Figure 2-4. Site analysis: Points of interest

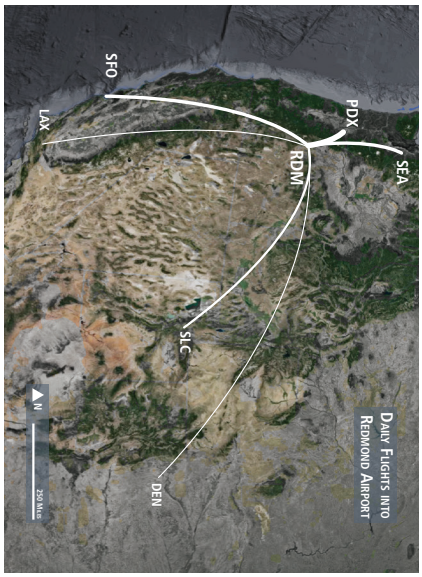
Open Space

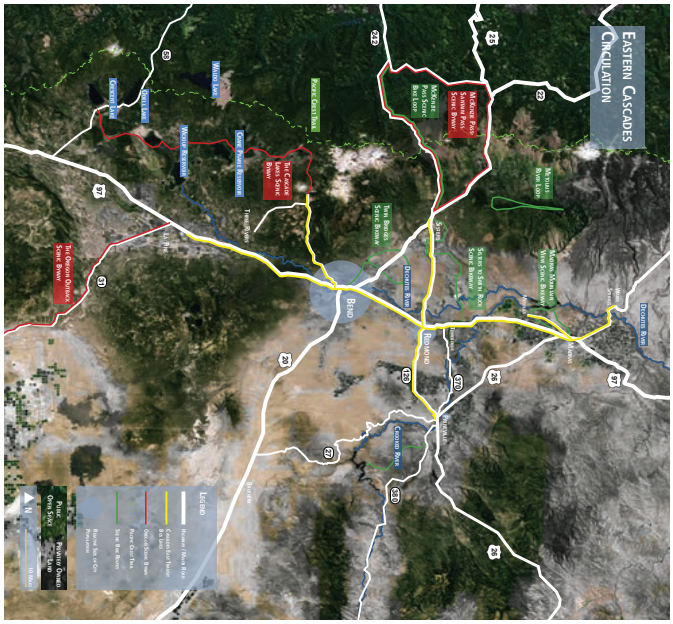
John Maxson

Figure 2-5. Site analysis: Open Space

Circulation

John Maxson





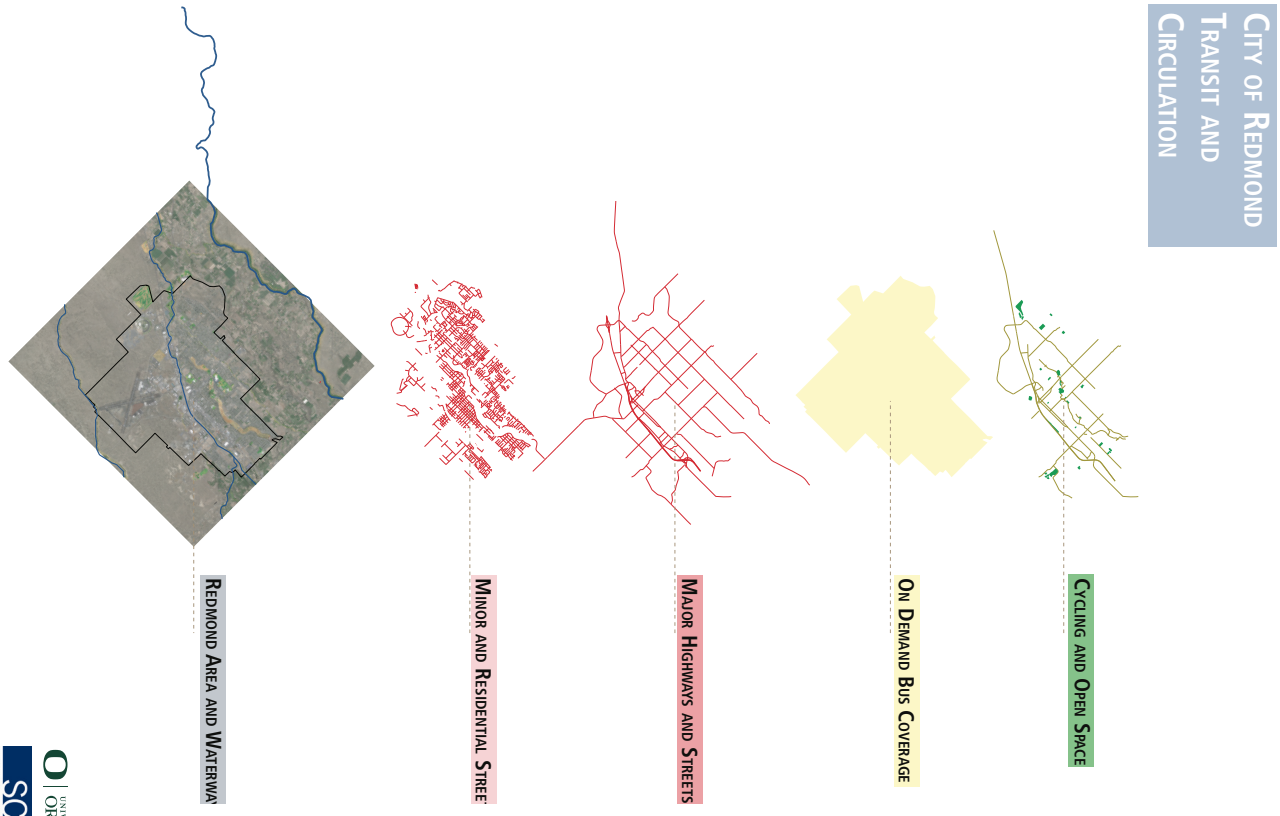
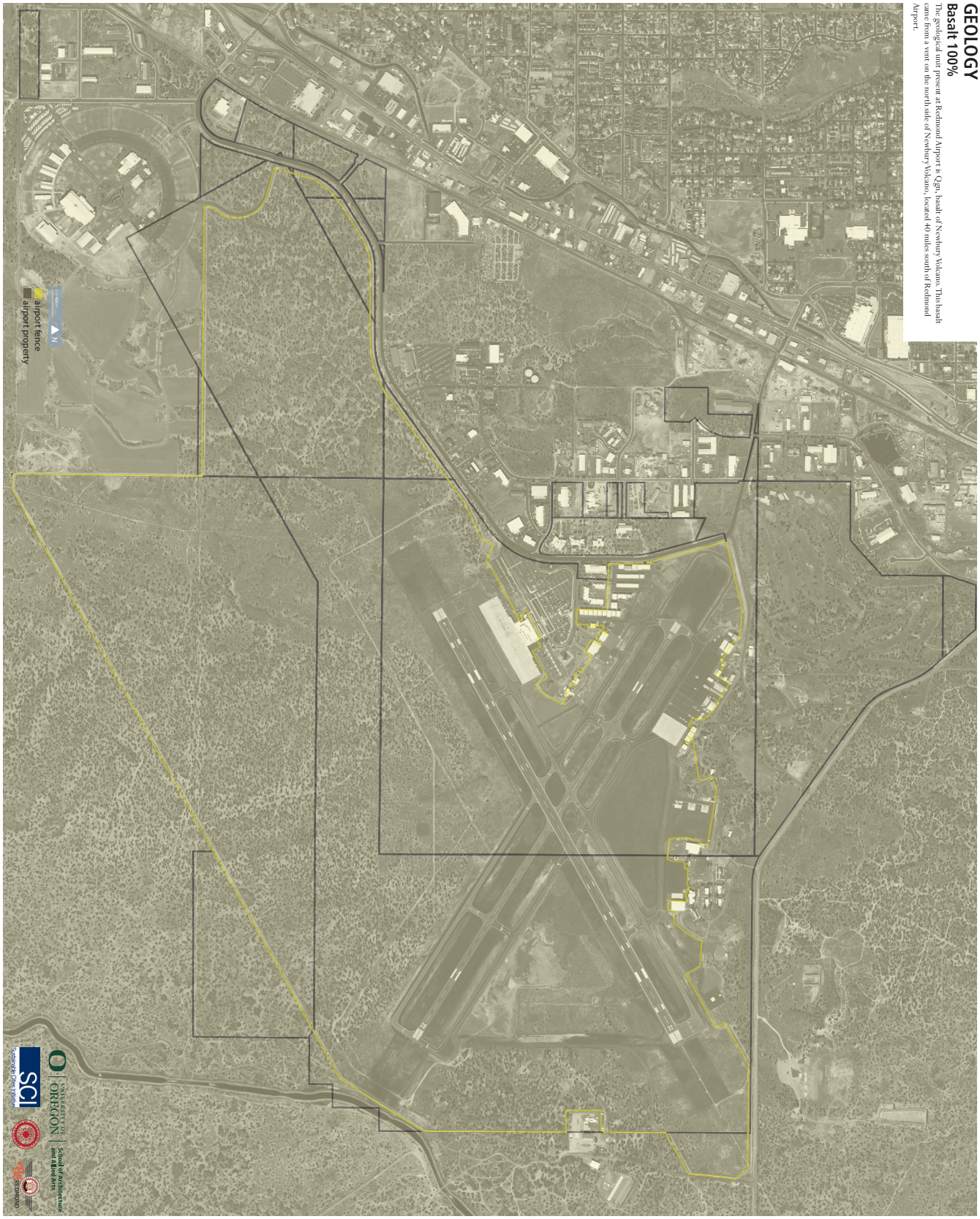


Figure 2-6. Site analysis: Circulation

Geology

Margo Barajas



Source: Custom Soil Resource Report for Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties

Figure 2-7. Site analysis: Geology

Soil

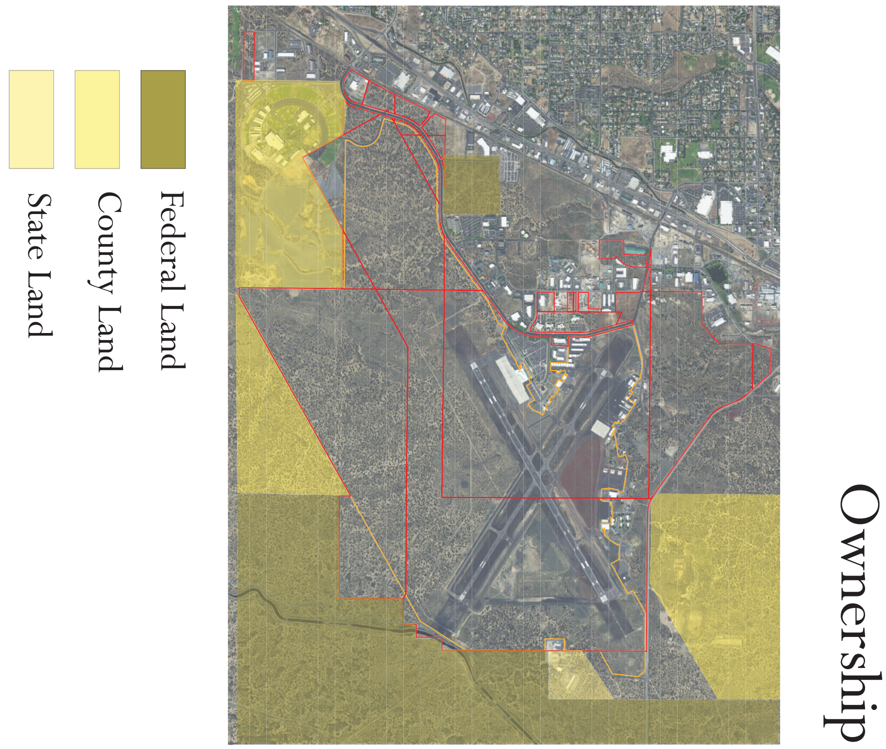
Margo Barajas

Source: "Custom Soil Resource Report for Upper Deschutes River Area, Oregon, Parts of Deschutes, Jefferson, and Klamath Counties." United States Department of Agriculture (2016): 1-27. Print.

Figure 2-8. Site analysis: Soil

Land Ownership and Zoning

Brittany Murphy



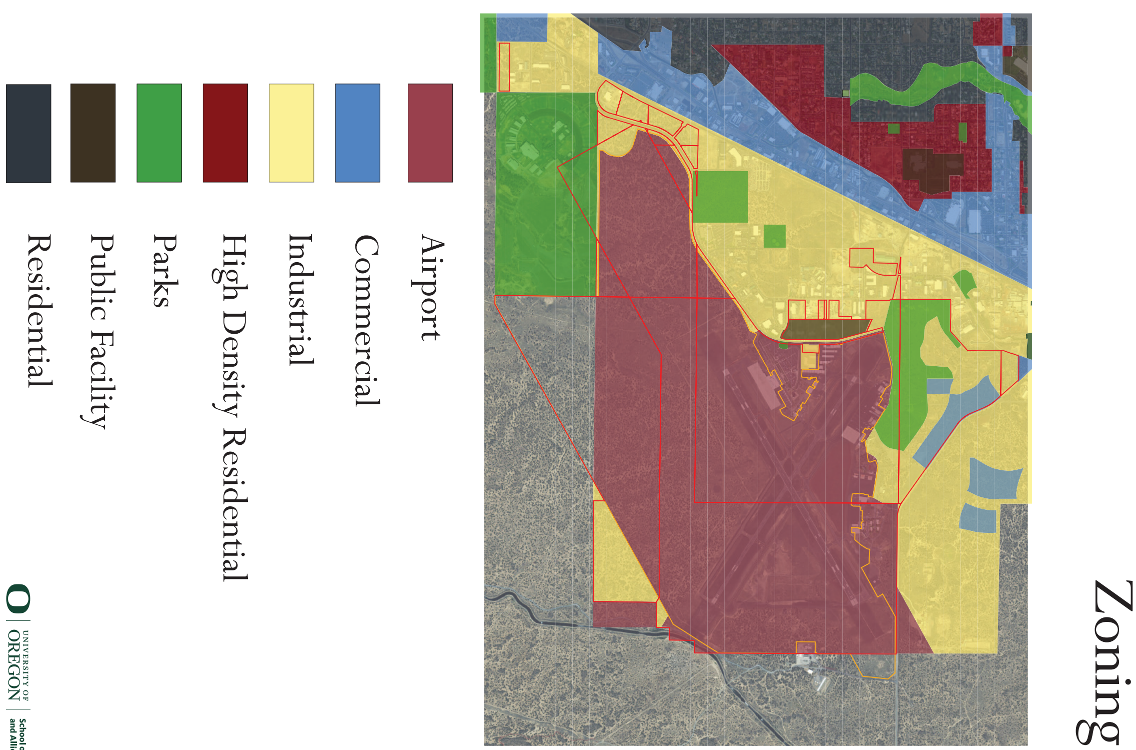


Figure 2-9. Site analysis: Land Ownership and Zoning

Climate

Justin Kau

Figure 2-10. Site analysis: Climate

Ecology:Flora & Fauna

Chad Hawthorne

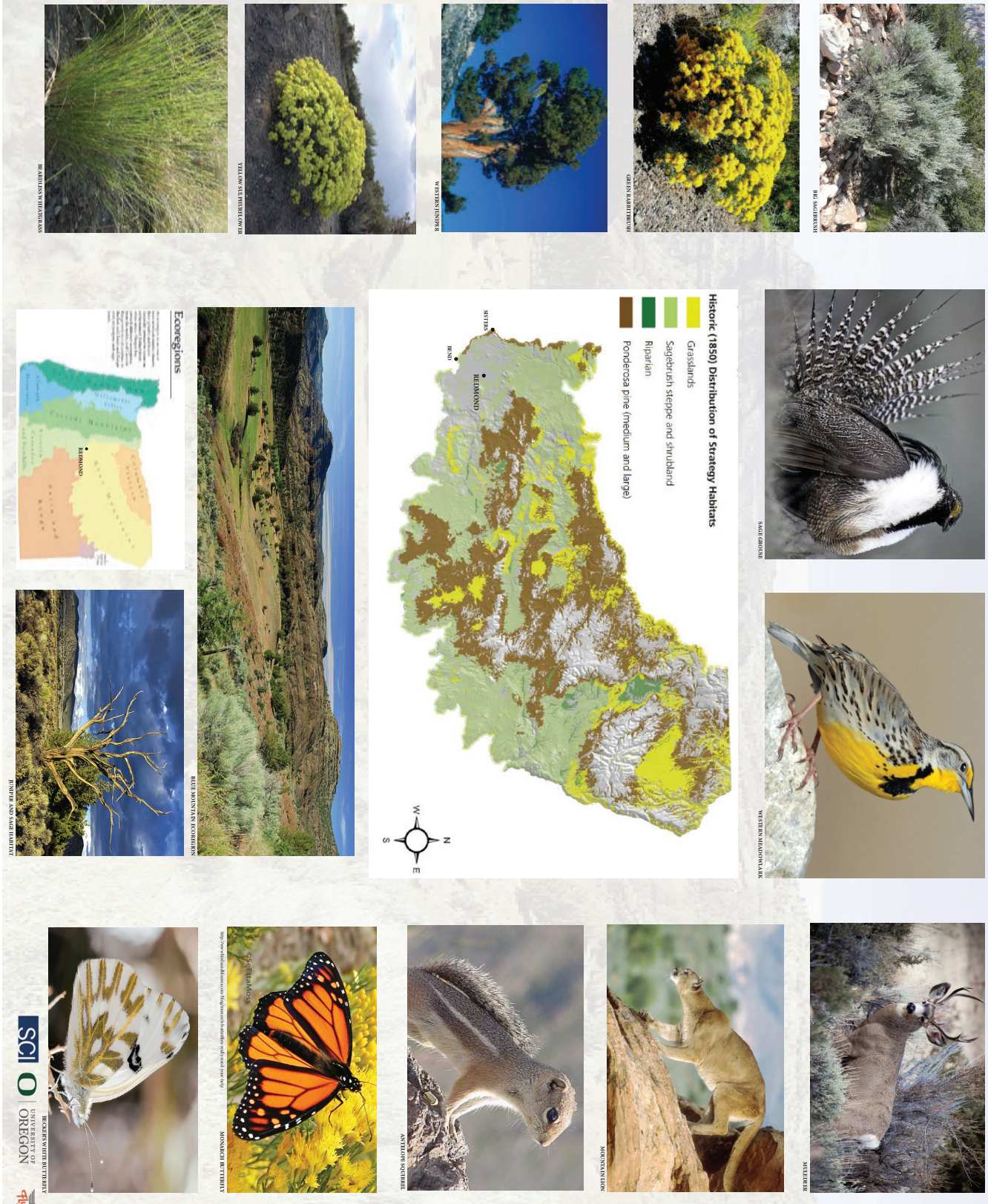


Figure 2-11. Site analysis: Flora & fauna

Natural Hazards

Nadja Quiroz

Redmond is situated away from most natural hazards including flood, landslides, tornadoes, earthquakes, wildfires, and severe storms within the Deschutes Basin [1]. Projections from FEMA's 100-year flood maps anticipate minor overflow of the Deschutes in the Redmond area with small patches of valley flooding east of Redmond Airport and little to no direct impact on Roberts Field [2].

While most of Central and Eastern Oregon is experiencing a drought, a slightly moister than average winter has lowered the region's rating from that of severe drought (D2) status in November 2015 to moderate drought (D1) status as of mid-January this year [3]. These severity classifications imply some crop and pasture loss. However, even with dry conditions, Redmond also experiences fewer wildfires than the surrounding areas which may be attributed to thinner, local vegetation. Four small fires have occured near the airport over the last 8 years but were extinguished quickly and were man-made [4].

Although Redmond is ranked #432 out of 484 for earthquake likelihood in Oregon [5], current monitoring data demonstrates that nearby Newberry Crater and Three Sisters are seismically active. Both systems have been the epicenter of 11 earthquakes in the last year and 16 earthquakes in the last 3 years (respectively). All of these earthquakes have been below a 2.8 magnitude [6].

The possibility of an explosive, volcanic event is not unlikely. The Cascades Volcanic Arc is characterized by effusive andesitic to basaltic eruptions from short-lived vents, which means slow moving lava flows that plug up quickly [6]. However, the Three Sisters are complex volcanoes, meaning they could unpredictably erupt and set off avalanches, landslides along steep slopes (though not necessarily seismically linked), very hot mudslides (lahars), variable pyroclastic ejections, lava flows from the peaks or opened fault lines, and ash fallout which could potentially cover Redmond in a few inches of tephra. These hazards could additionally trigger wildfires. It's impossible to predict which of these hazards will occur but most of them are expected to not reach Redmond, and if so, they will at a rate that will allow for full evacuation (i.e. lava, ash fall) [7]. On the other hand, Redmond is ideally situated to receive evacuees from communities like Bend and Sisters which are expected to be directly impacted by a volcanic eruption from one of the Three Sisters.

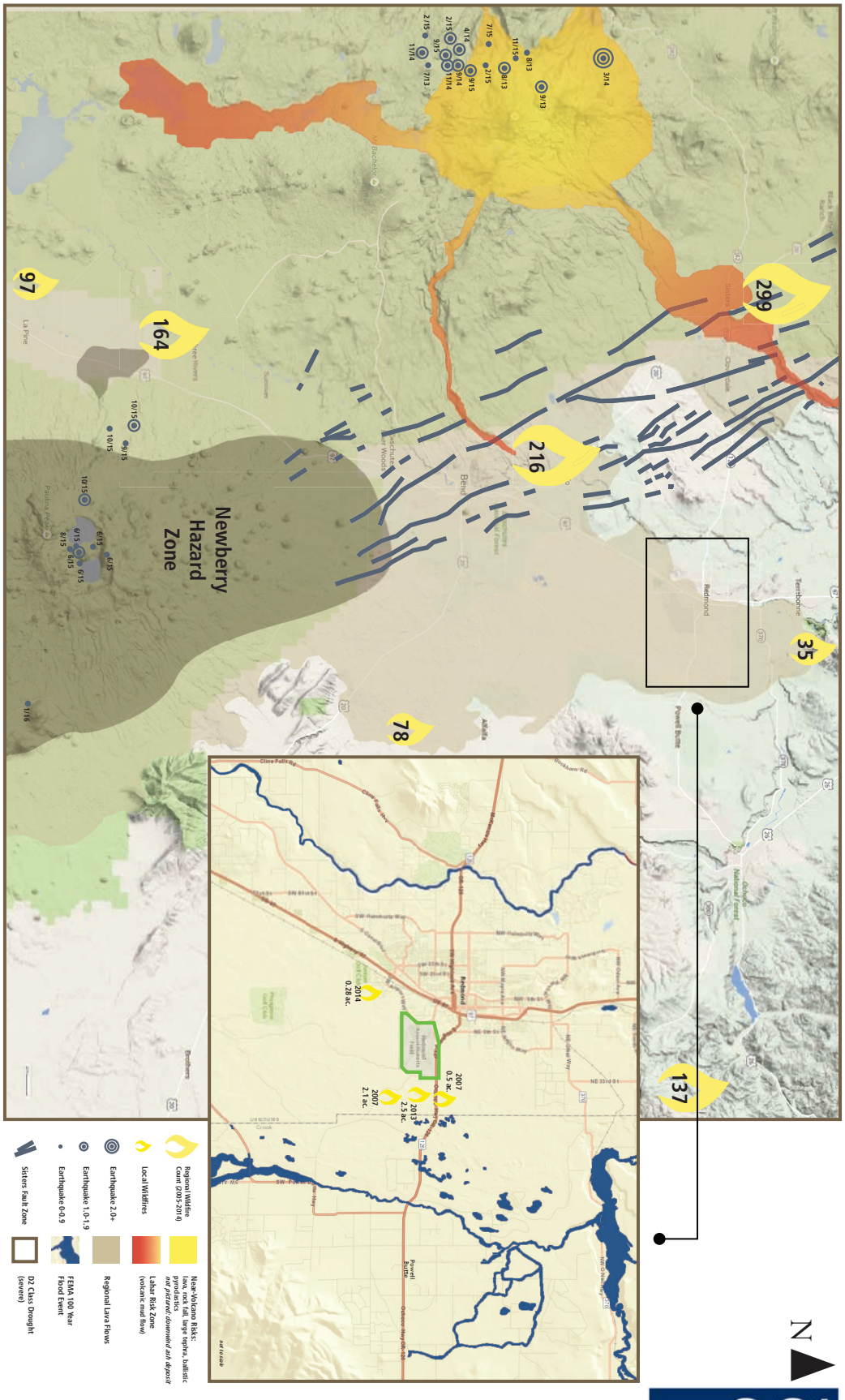


Figure 2-12. Site analysis: Natural hazards

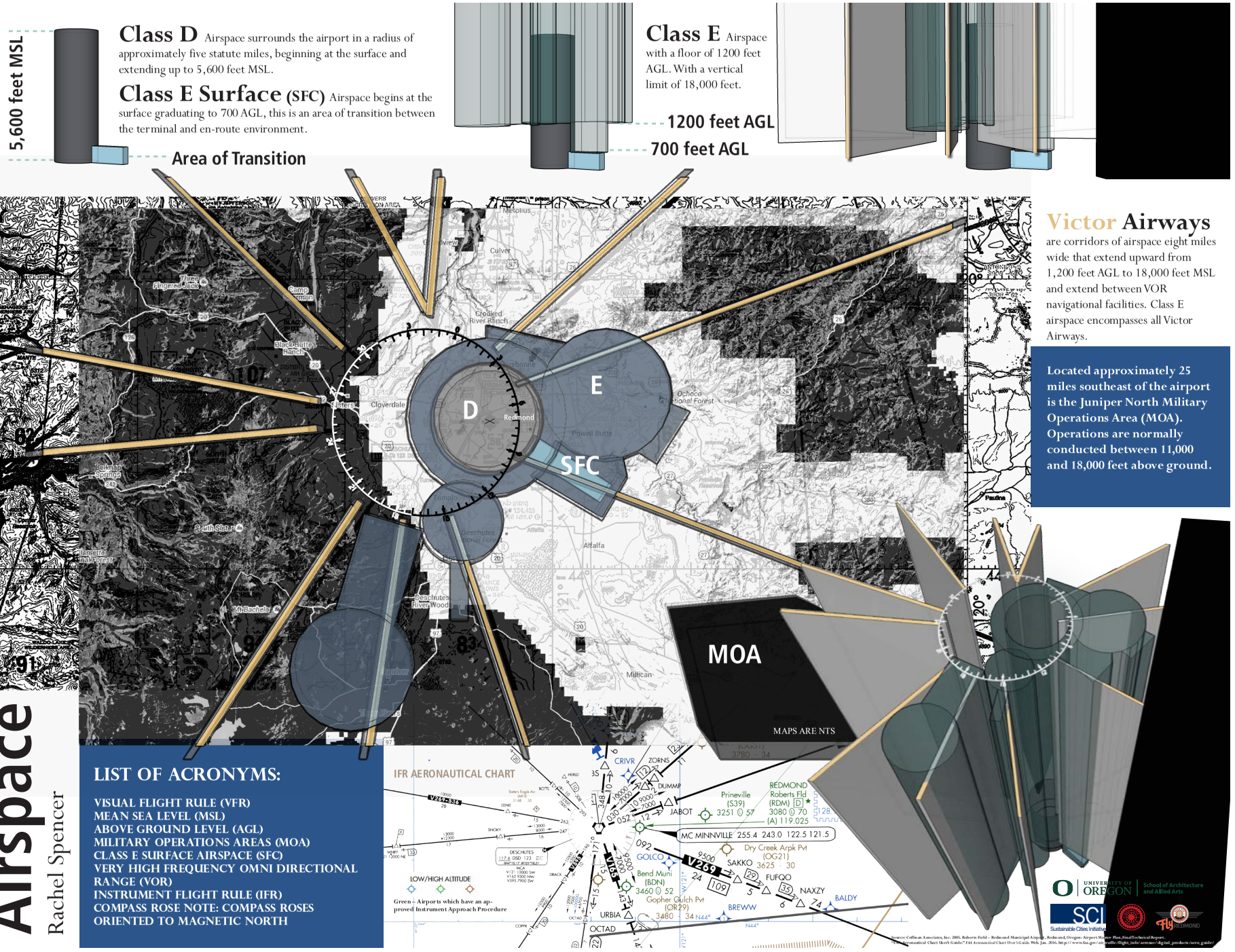
Airspace

Rachel Spencer

Class D Airspace surrounds the airport in a radius of approximately five statute miles, beginning at the surface and extending up to 5,600 feet MSL.

Class E Surface (SFC) Airspace begins at the surface graduating to 700 AGL, this is an area of transition between the terminal and en-route environment.

Class E Airspace with a floor of 1200 feet AGL. With a vertical limit of 18,000 feet.



Victor Airways

are corridors of airspace eight miles wide that extend upward from 1,200 feet AGL to 18,000 feet MSL and extend between VOR navigational facilities. Class E airspace encompasses all Victor Airways.

Located approximately 25 miles southeast of the airport is the Juniper North Military Operations Area (MOA). Operations are normally conducted between 11,000 and 18,000 feet above ground.

LIST OF ACRONYMS:

VISUAL FLIGHT RULE (VFR)
MEAN SEA LEVEL (MSL)
ABOVE GROUND LEVEL (AGL)
MILITARY OPERATIONS AREAS (MOA)
CLASS E SURFACE AIRSPACE (SFC)
VERY HIGH FREQUENCY OMNI DIRECTIONAL RANGE (VOR)
INSTRUMENT FLIGHT RULE (IFR)
COMPASS ROSE NOTE: COMPASS ROSES ORIENTED TO MAGNETIC NORTH

Figure 2-13. Site analysis: Airspace

Runways Use & Noise

Rachel Spencer

Noise Exposure

Day-Night Average Sound Level (DNL)

65 DNL has been identified as the threshold of incompatibitilty for Residential and Public Use.

The 70 and 75 DNL contours remain on airport property.

75
70
65

in Decibels
60
55

Sustainable Cities Initiative

Approach from SEA to RDM Altitude 4047 ft
2016-01-19 at 11.56.52 pm

Prevailing winds are Northeast-southwest direction, leading to greater use of Runway 5-23

During light wind conditions or situations when the crosswind to Runway 5-23 exceeds allowable thresholds, Runway 11-29 is used simultaneously with Runway 5-23.

Runway use is normally dictated by wind conditions. The number of takeoffs and landings are generally determined by the speed and direction of the wind. It is generally safest for aircraft to takeoff and land into the wind.

The primary runway is 5-23. This runway has a higher weigh limit, making it better suited for commercial air carriers and larger forest service planes.

SW
11-29
5-23
NE

Redmond Municipal Airport

The existing runway configuration at Roberts Field includes two intersecting runways. Runway 5-23, which is oriented in a northeast-southwest direction, serves as the primary air carrier runway and is 7,040 feet long and 150 feet wide. Runway 11-29 is 7,006 feet long, 100 feet wide, and oriented in a southeast-northwest direction. Both runways are constructed of asphalt.

University of Oregon | School of Architecture and Allied Arts
SCI Sustainable Cities Initiative

Source: Coffman Associates, Inc. 2005. Roberts Field – Redmond Municipal Airport, Redmond, Oregon: Airport Master Plan, Final Technical Report.
"FAA Aeronautical Chart User's Guide." *FAA Aeronautical Chart User's Guide*. Web. Jan. 2016. http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/aero_guide/

Figure 2-14. Site analysis: Runway use & noise

Regulatory

Jillian Stone

Waste

Compost containers with yard debris are permitted (Sec 2.2e).[1]

'Enclosed trash transfer stations' are permitted as long as not in runway protection zone (Sec 2.2d).[1]

Recycling centers that do not harbor food residue are permitted (Sec 2.2g).[1]

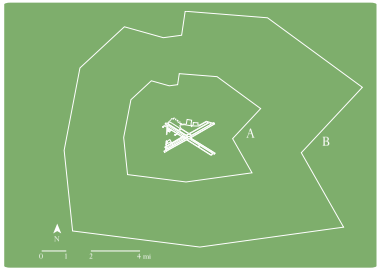
Construction and demolition debris facilities permitted (Sec 2.2h).[1]

+

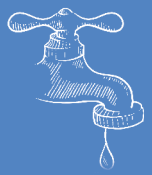
Food scrap compost must be 1,200 ft from AOA (Sec 2.2e).[1]

All new 'Municipal solid waste landfills' must be sited 5 miles from the airport's property (Sec 2.2a).[1]

–



Water



Existing 'storm water management facillities' are permitted as long as do not pose wildlife threat (Sec 2.3a).[1]

New storm water management facilities should be designed to not allow for standing water. When not possible, physical barriers may be built (2.3b).[1]

Construction and demolition debris facilities permitted (Sec 2.2h).[1]

Wetlands permitted, but FAA recommends siting them off of airport property (Sec 2.4).[1]

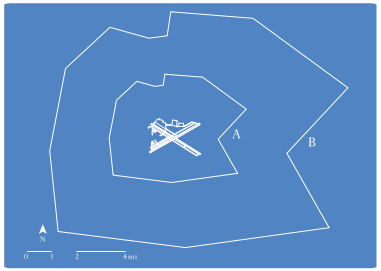
+

Where possible, detention ponds should not have standing water for more than 48 hours (Sec 2.3a).[1]

The FAA strongly recommends against using artificial marshes for stormwater filtration (Sec 2b).[1]

The FAA recommends against discharging wastewater on airport property (Sec 2.3f).[1]

–



Vegetation

Ornamental trees are permitted in landscaping plans.[2]

Woodlands surrounding the airport property should be monitored for wildlife habitat.[2]

Conifer trees are a good plant to use in the airport landscape as they do not increase wildlife hazards.[2]

Herbicides should be used to rid the landscape of plants that attract wildlife.[2]

+

Trees used in landscape should not be fruit, seed, or nut producing.[2]

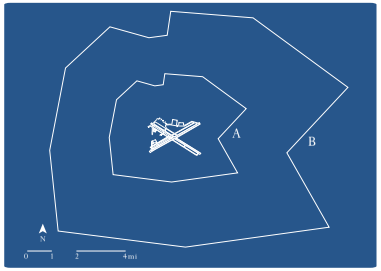
Airport should continue to reduce amount of woodland on the south and east sides of the airport.[2]

Tree crowns should not overlap or be planted in dense stands.[2]

Any vegetation encroaching on airport fencing should be removed.[2]

Tall vegetation intereferes with visibility and should not be planted.[3]

–



Land Use

If an airport depends on crop production, livestock management or aquaculture for financial viability, then agricultural activites are permitted (Sec 2.6a).[1]

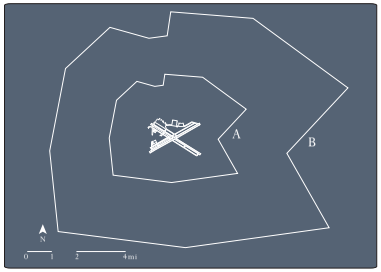
Exisitng golf courses are permitted but should be evaluated for wildlife attractiveness (Sec 2.7b).[1]

+

The FAA strongly recommends against agriculture. If agricultural land is used for hunting, a wildlife biologist must evaluate for hazards (Sec 2.6a).[1]

The FAA strongly recommends against the development of golf courses (Sec 2.7a).[1]

–



The Federal Aviation Administration (FAA), along with the Redmond Airport (RDM) and the United States Department of Agriculture (USDA), have come up with a series of guidelines for what kind of land use practices can occur on airport property. The main concern of all three organizations is safe flight operation. A number of reports have been issued advising ways in which to keep wildlife out of the airport operating area (AOA). Wildlife attractants bring birds and other animals into the AOA, which can lead to wildlife strikes. Other regulations deal with interference of radar or visibility. The map in the last column shows the two physical perimeters that these regulations deal with. The FAA strongly recommends keeping any wildlife attractants at least 10,000 ft from the AOA, or Permieter A. Permiter B, 5 miles away, applies to a few waste regulations. All vegetation regulations come from a wildlife hazard assessment Roberts Field was required to complete by the FAA.

AOA Airport Operations Area
FAA Federal Aviation Administration
+ Permitted within airport property
- Restrictions near airports
A Perimeter A, 10,000 feet from the Airport Operations Area
B Perimeter B, 5 miles from AOA

1 Hazardous Wildlife Attractants on or Near Airports. Rep. no. 150/5200-33B. Federal Aviation Administration, 28 Oct. 2007. Web. 7 Feb. 2016.
2 Wildlife Hazard Assessment. Rep. Wildlife Hazard Assessment. Redmond Municipal Airport, Sept. 2014. Web. 7 Feb. 2016.
3 Washburn, Brian E., and Thomas W. Seamans. Management of Vegetation to Reduce Wildlife Hazard at Airports. Proc. of 2004 FAA Worldwide Airport Technology Transfer Conference, Atlantic City, New Jersey. Print.

UNIVERSITY OF OREGON | School of Architecture and Allied Arts

Sustainable Cities Initiative

FLY REDMOND

Figure 2-15. Site analysis: Regulatory

Waste

Derek Rayle

KNOW WASTE PRODUCED FROM REDMOND AIRPORT

Figure 2-16. Site analysis: Waste

Water Systems

Alden Carr

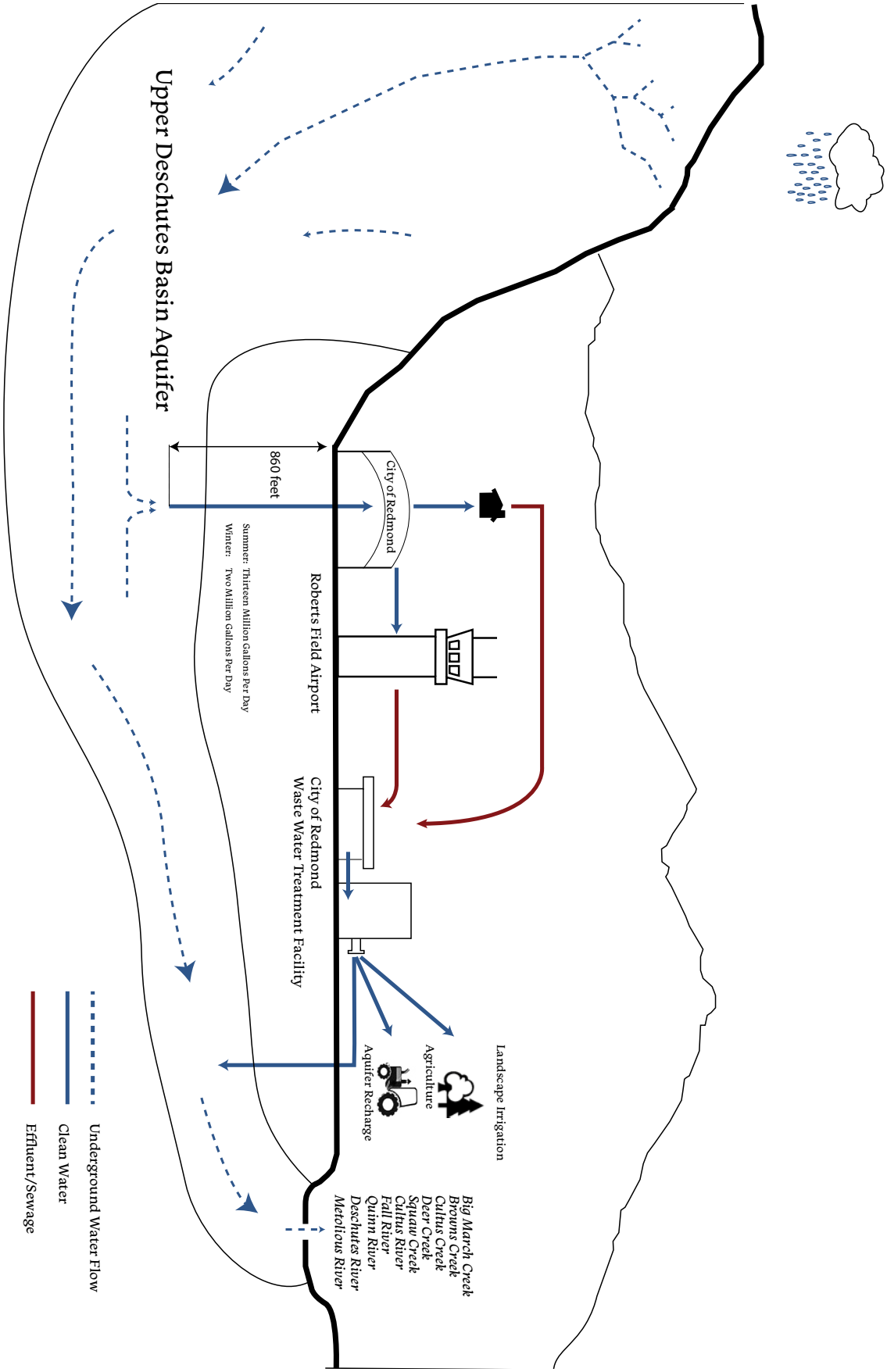


Figure 2-17. Site analysis: Water systems

Water Infastructure

Alden Carr

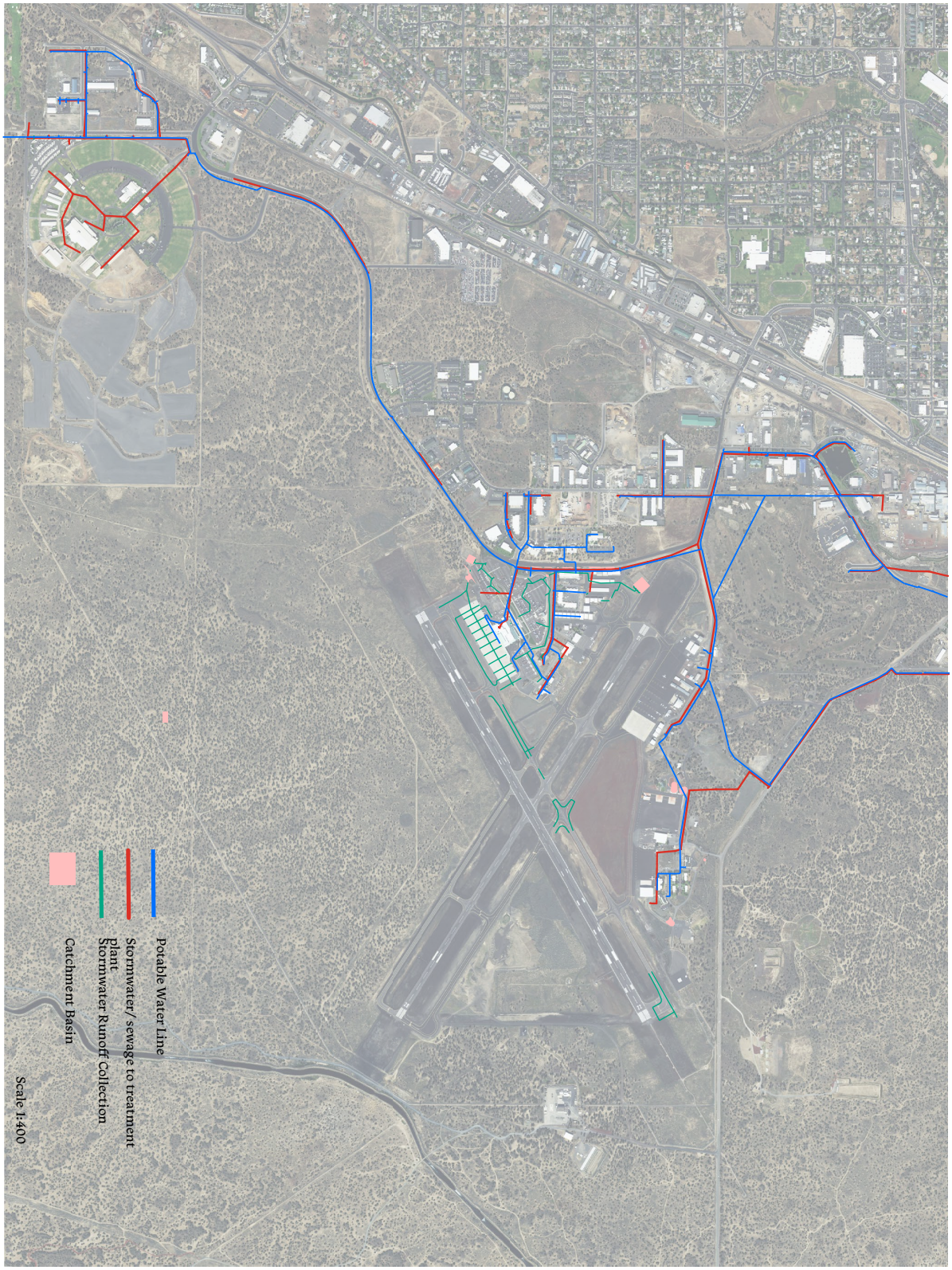
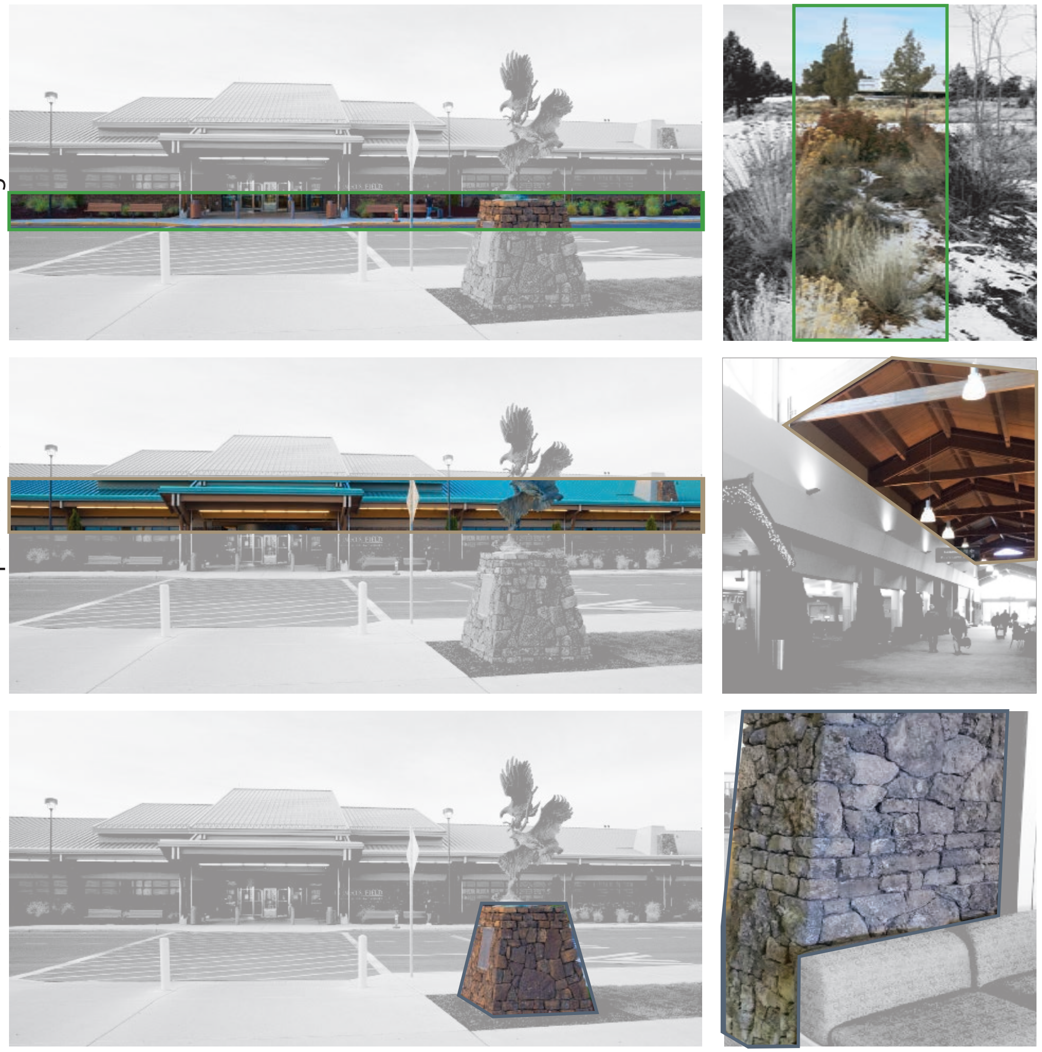


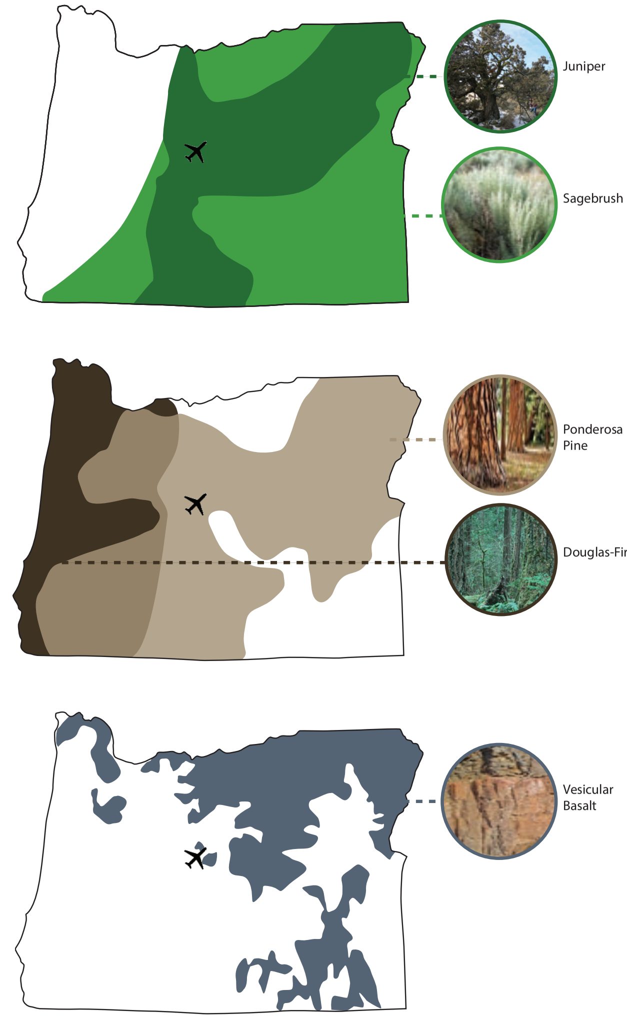
Figure 2-18. Site analysis: Water infastructure

Materiality

Jamie Willeke



Distinguishing features of Central Oregon's landscape are reflected in the materials commonly used at the Redmond Municipal Airport. These include Sagebrush and Juniper in the area surrounding the airport, exposed timber beams likely made of wood from Douglas-Fir and Ponderosa Pine trees, and vesicular basalt stones as landscape and architectural accents.



Distribution of materials within Oregon in relation to the Redmond Airport.

Image Resources: Flora Chen, Jamie Willeke, https://s-media-cache-ak0.pinimg.com/originals/c6/e2/d7/c6e2d749a850c1999a2e44fc9b0f71d1.jpg, http://or.water.usgs.gov/projs_dir/crbg/photos/flowtop.jpg, http://www.fs.fed.us/pnw/forests/local-resources/images/OG-Closeup.jpg , https://washingtondnr.files.wordpress.com/2010/05/ponderosa-pine.jpg, http://www.txarch.org/Activities/fschool/fs2009/images/Lesli-eBush/Sagebrush_1024x768.jpg

Figure 2-19. Site analysis: Materiality

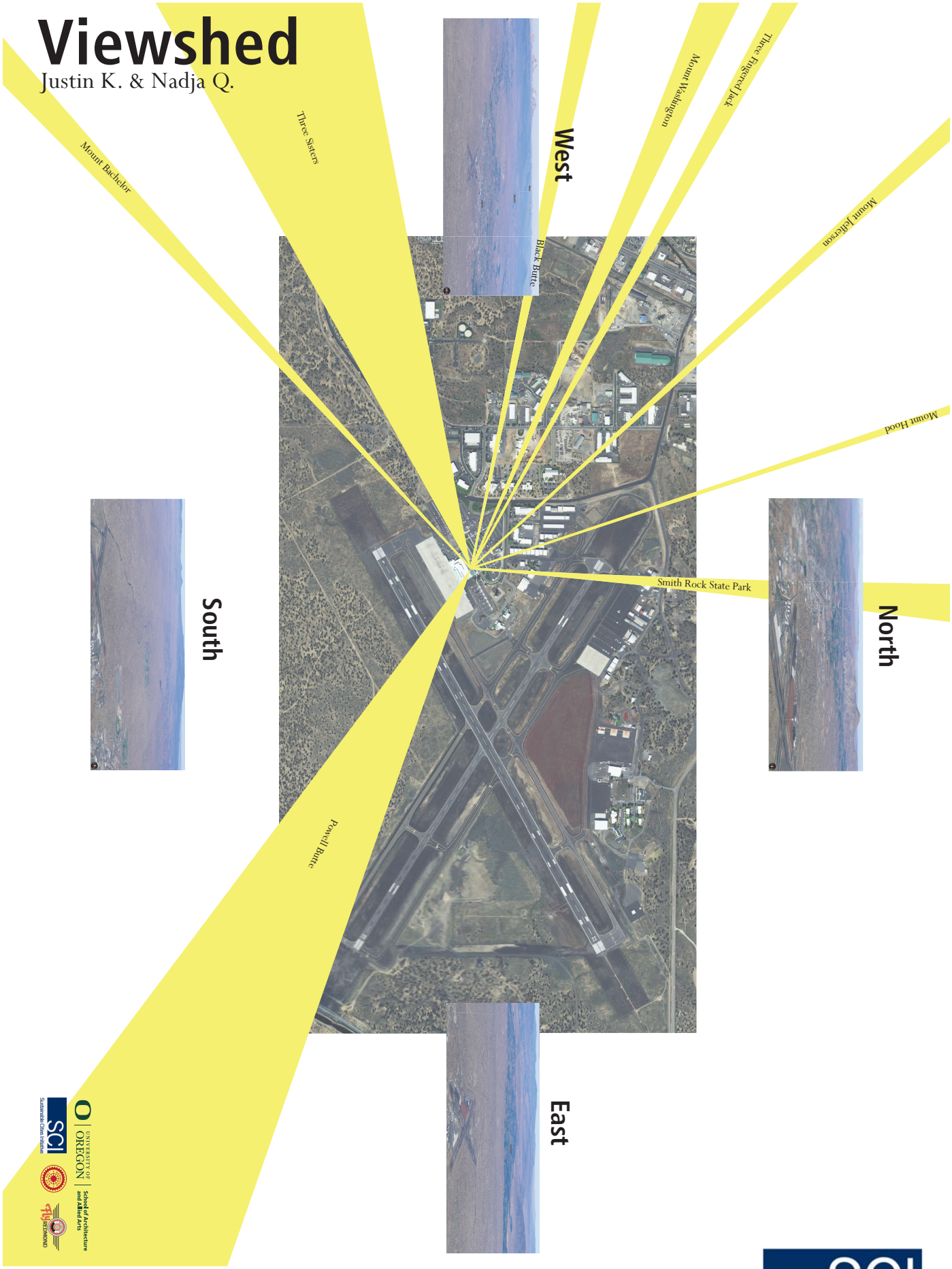


Figure 2-20. Site analysis: Viewshed

Chapter Three:
Landscape Master Plan Design Proposals

This chapter demonstrated each student's landscape master plan design proposal, which was grouped into four categories according to the goal of the design. These include: Connectivity, energy and natural resources, materiality, and views. Although some students had similar goals, the diverse approaches taken to achieve these goals demonstrate a wide range of possibility for RDM. Within each categories, students' projects are ordered alphabetically by their last names.

Within each project, student process work, a landscape master plan and a final design presentation is illustrated. Moreover, a design plan for a focal area, a phasing plan, as well as section and/or perspective drawings were included in figures captioned "final design presentation" to support the design concept. Student process work displays the transformation of these projects from preliminary to final design proposals.

Note: The landscape master plans were originally printed on 36" by 48" posters. In order to provide maxumum readability, they are all rotated 90 degrees clockwise for inclusion in this report.

3.1 Connectivity

Airports serve an extremely crucial role as a connecting hub for the adjacent areas. However, the separation of the City of Redmond and RDM by Highway 97 was addressed as one of the main issues to be resolved. Therefore, the goal to unify surrounding areas and the airport can be seen in projects including: ‘Desert Park’, ‘Extension’, ‘What Moves Redmond’, ‘Connect RDM’, and ‘The Hub’.

These projects drew inspiration from previous precedent studies, such as using green space, land art, and sculptural art forms to acheive this goal. Despite aiming to improve RDM’s connectiveness, many of the designs also responded to important aspects, such as ecology, views, user experience, and cultural sustainability.

Desert Park
Margo Barajas

The Redmond Airport is located on the east side of Highway 97 in the town of Redmond, Oregon. Currently isolated from residential areas and parks on the west side of town, the proposed design calls for the creation of a 12-foot wide multi-use trail to the airport that connects with the City of Redmond's current trail network. The former 80-acre golf course on the airport property will be converted into Desert Park, a picturesque park that will embrace the unique native features of the high desert landscape. The proposal of Desert Park drew inspiration from picturesque parks in New York City that were designed by Frederick Law Olmsted. In Desert Park, an allée of Ponderosa Pines frames the distant view of the Cascade Mountains, an open area of native wildflowers serves as a high desert 'meadow', and a path around the park's edge creates a journey on which intentional views of the borrowed landscape are framed.

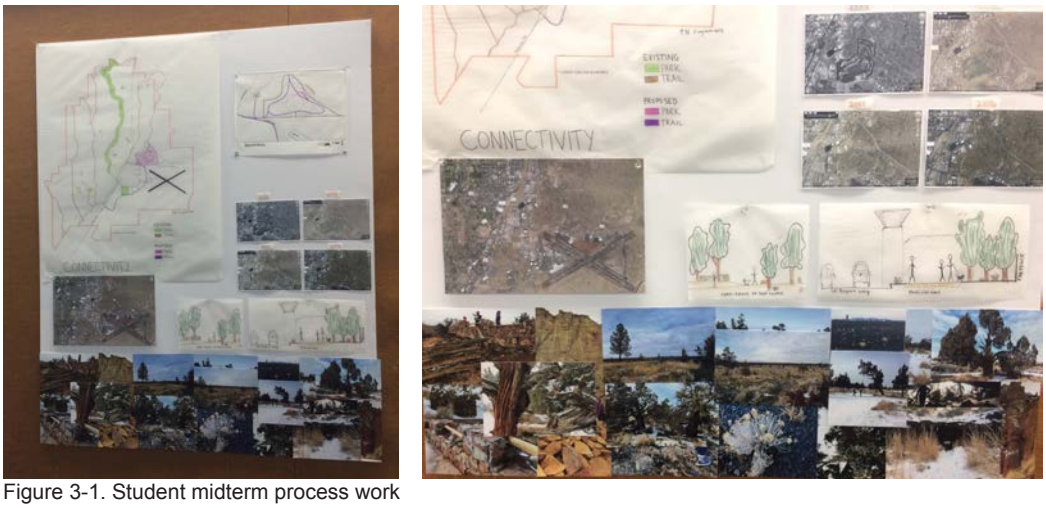


Figure 3-1. Student midterm process work

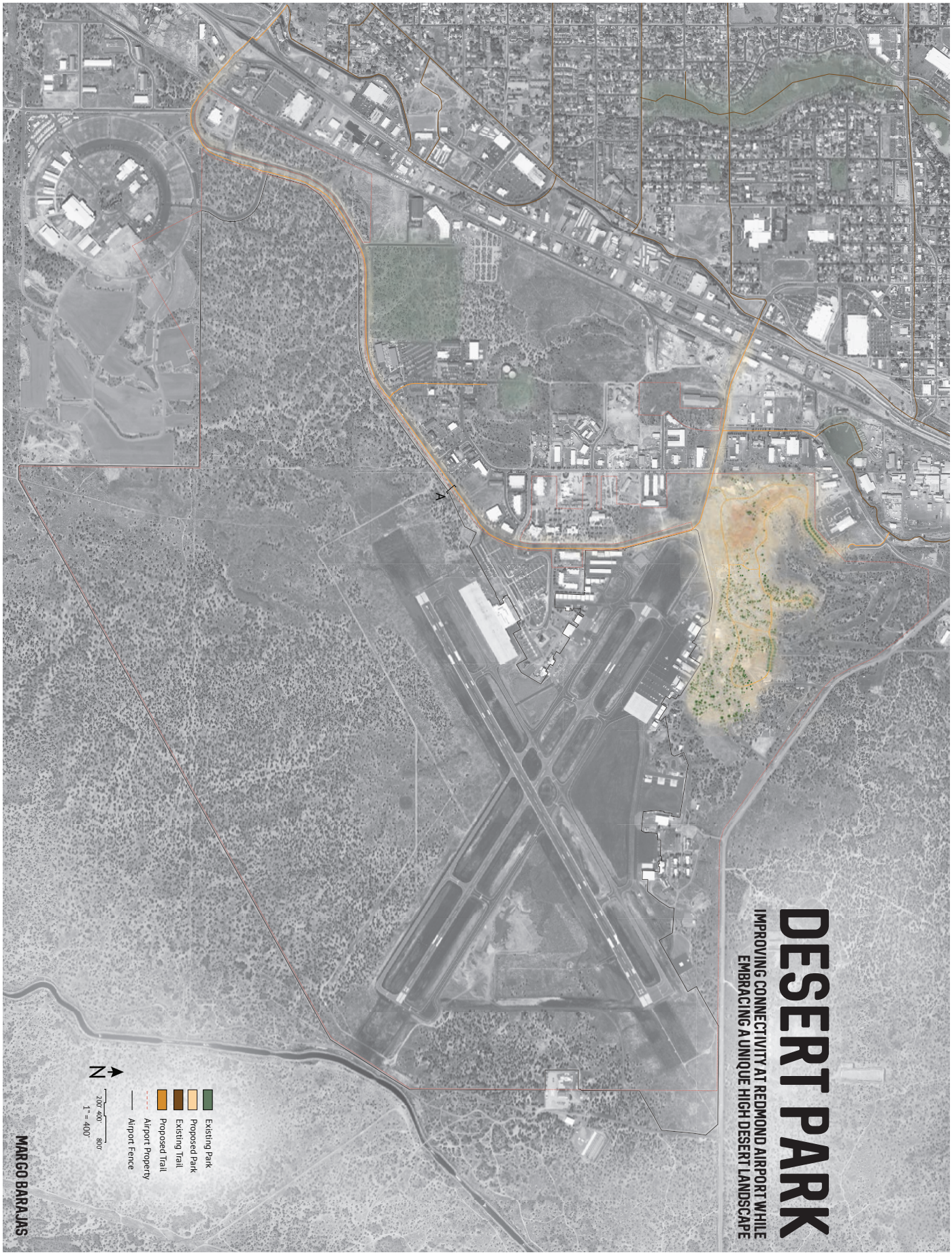
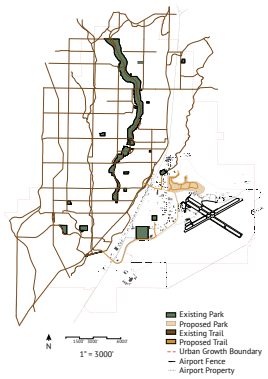


Figure 3-2. “Desert Park” landscape master plan

CONTEXT MAP

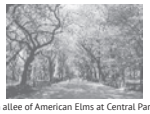


DESIGN STATEMENT

The Redmond Airport is located on the east side of Highway 97 in the town of Redmond, Oregon. Currently isolated from residential areas and parks on the west side of town, the proposed design calls for the creation of a trail to the airport that connects with the current trail network in Redmond. A former 80-acre golf course on the airport property will be converted into Desert Park, a picturesque park that embraces the unique native features of the high desert landscape.

INSPIRATIONAL IMAGES

Desert Park draws inspiration from picturesque parks in New York City that were designed by Frederick Law Olmsted. In Desert Park, an allee of Ponderosa Pines frames the distant view of the Cascade Mountains, an open area of native wildflowers serves as a high desert 'meadow' and the path meanders around the park's edge creating intentional views of the borrowed landscape.



An allee of American Elms at Central Park

The Long Meadow at Prospect Park

The curving paths at Prospect Park

SECTION A
ACCESS TRAIL TO TERMINAL

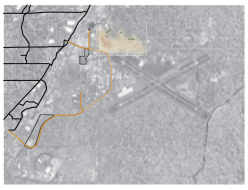
SECTION B
DESERT PARK AND TRAIL

SECTION C
DESERT PARK AND THE LONG MEADOW

MARGO BARAJAS

PHASING PLAN

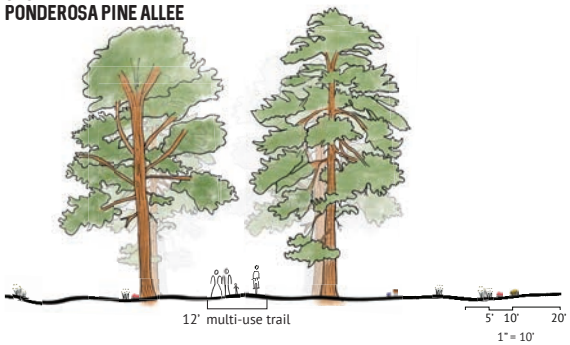
Phase 1: City Trail



Phase 2: Planting

Phase 3: Park Trail

SECTION D
PONDEROSA PINE ALLEE



MARGO BARAJAS

Figure 3-3. “Desert Park” final presentation

Extension
Lin (Flora) Chen

This design proposal aims to connect RDM with the City of Redmond through materiality, art, planting, and function inspired by the city and the surrounding mountains, to create a sense of place, as well as to draw people to the airport as a destination.

To represent the form of the city, overhead solar parking structures and green roofs using native ground covers were proposed for the building structures. In addition, responding to a future runway, strategic tree removal would be carried out through phases in the form of city blocks. These designs would create a sense of place when passengers are descending from the air.

To connect the functions of the city to the airport, a cultural park featuring Redmond's Native American and War World Two Aviation History in the form of sculptures is suggested for the abandoned golf course.

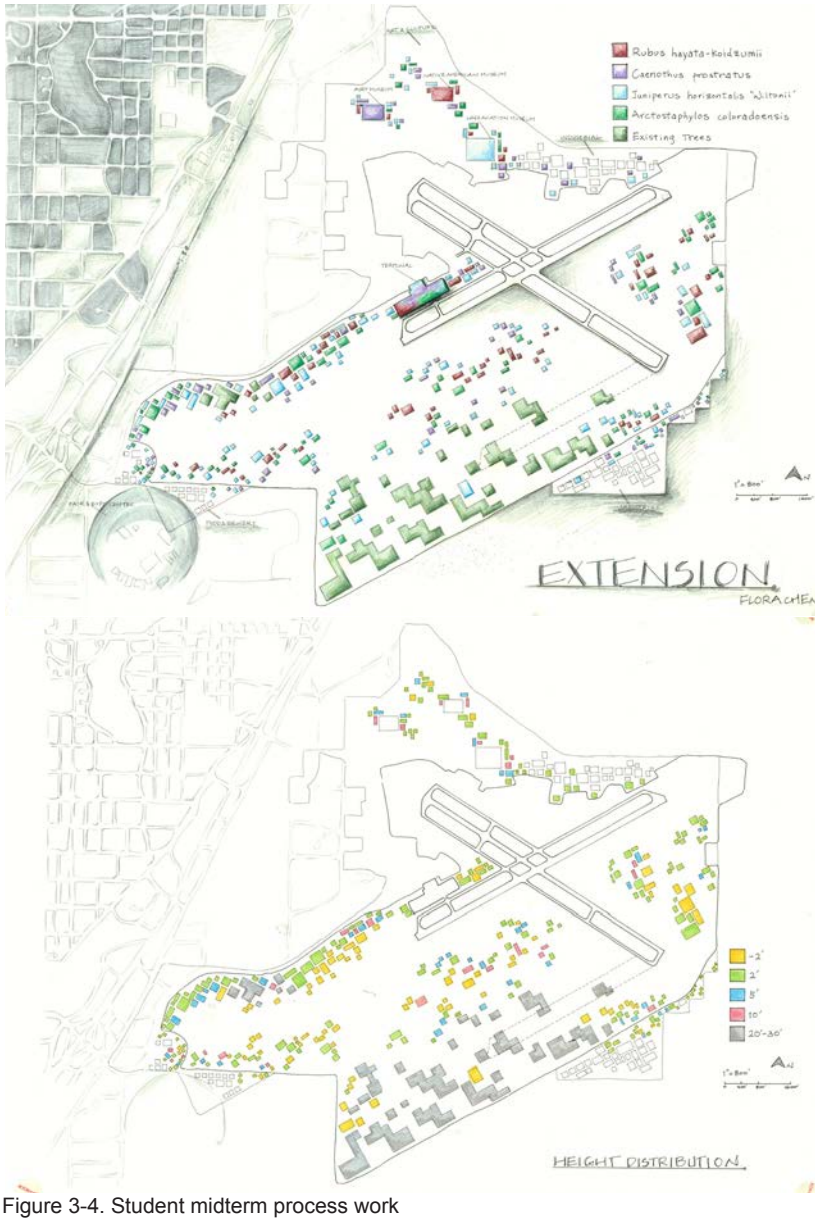


Figure 3-4. Student midterm process work

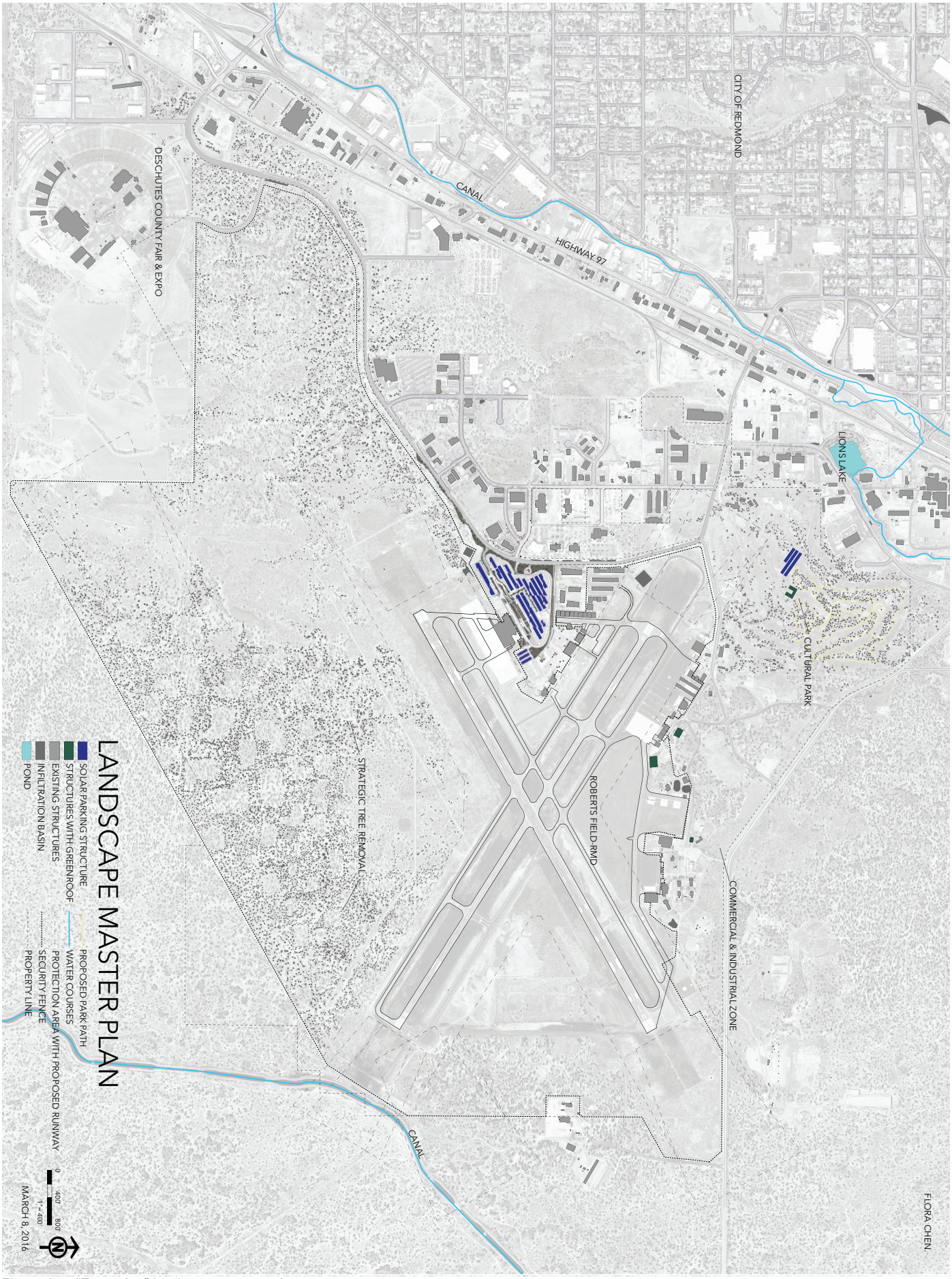


Figure 3-5. “Extension” landscape master plan

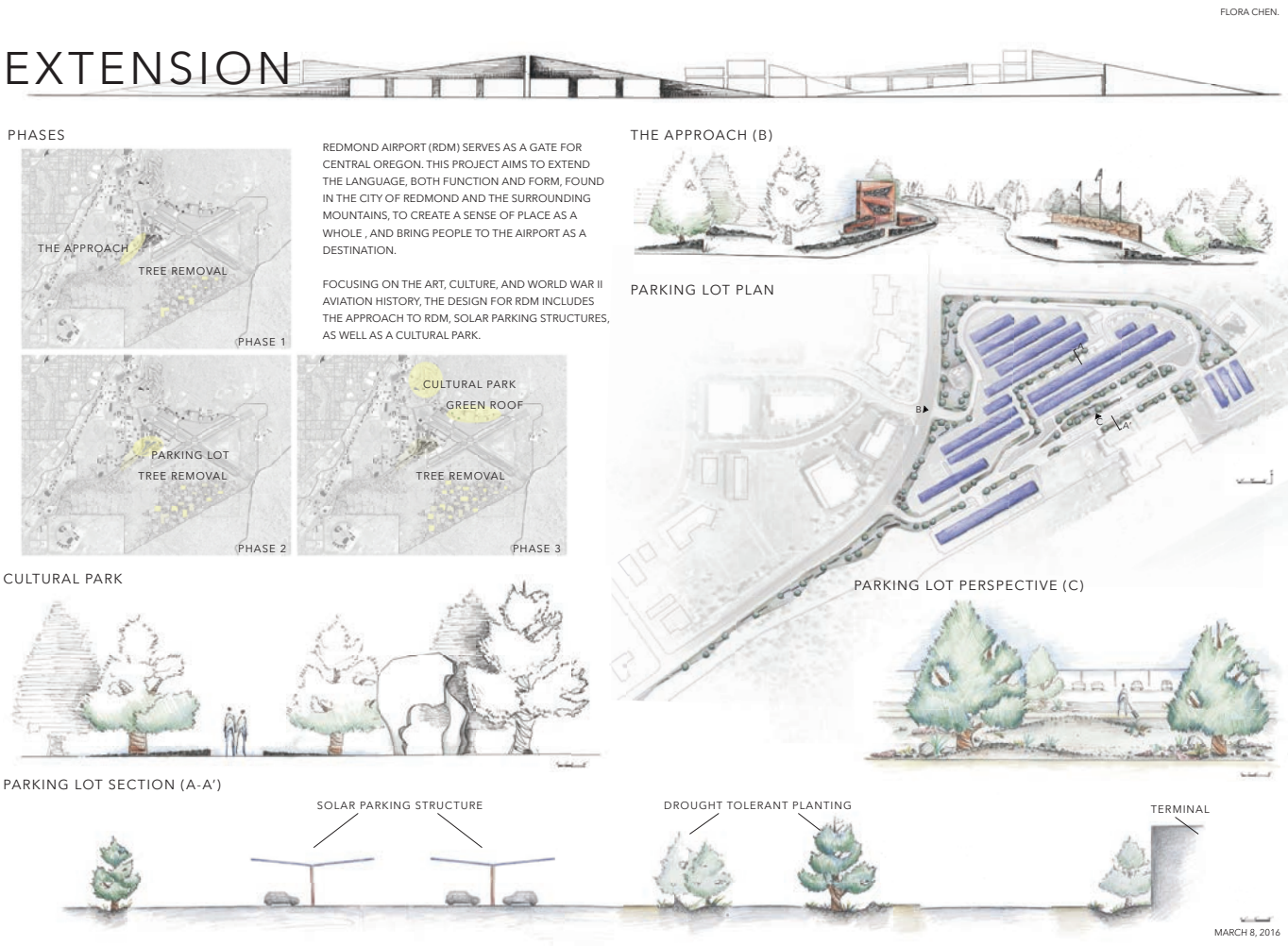


Figure 3-6. “Extention” final presentation

What Moves Redmond
Chad Hawthorne

Inspired by the active lifestyle of Redmond as well as the airport's philosophy of connectedness, this project centered on the idea of movement. These movements include people, energy, philosophy, art, and the movement towards a more ecologically-minded sense of place for the RDM.

Focusing on this concept, this landscape master plan demonstrated a proposed 12-mile loop multi-modal trail system that connects both the airport and the community as a means of an alternative mode of transportation to and from the airport. This trail system will allow people access to and around RDM. The landscape design plan focused around the terminal, and includes replacing expansive lawn with a more diverse and native plant palette. This new planting will reduce costs of maintenance, water usage, and create a sense of place for the airport. Because Redmond receives over 300 days of intense sunshine annually, an overhead solar parking structure to blanket the existing terminal parking lot was also proposed to provide shade, reduce heat indexes, and generate sustainable energy for years to come.

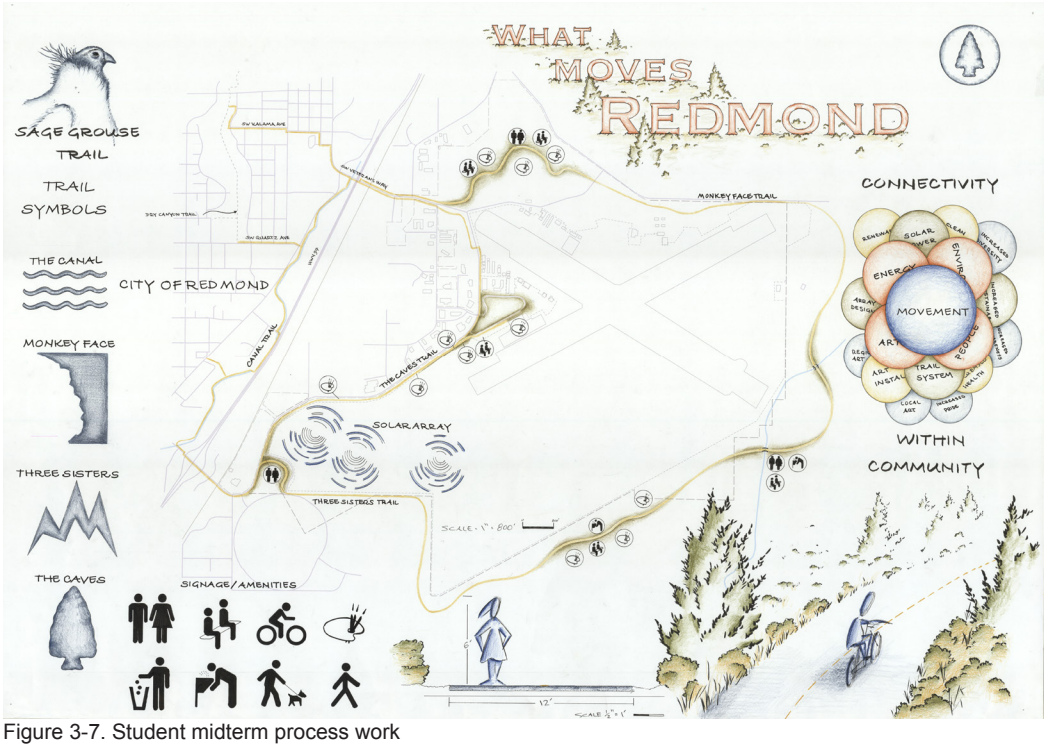


Figure 3-7. Student midterm process work

Figure 3-8. “What moves Redmond” landscape master plan

Figure 3-9. “What moves Redmond” final presentation

Connect RDM
Justin Kau

The goal of “CONNECT RDM” was to connect the City of Redmond with its airport, RDM. The project focused on improving the lack of development, such as urban and green spaces, east of Highway 97. The design sought to remedy this problem by creating a park and recreation area that would attract visitors and residents of Redmond to explore the recreation opportunities, provided through this landscape master plan, on the airport’s property. The design featured the use of airplanes as art and play structures, trampoline sidewalks, and an extensive trail network linking with the existing infrastructure.

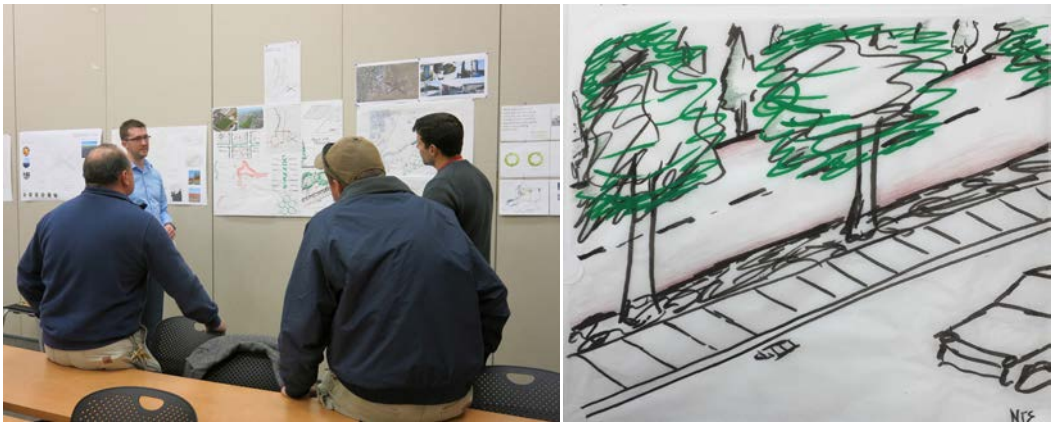


Figure 3-10. Student midterm process work

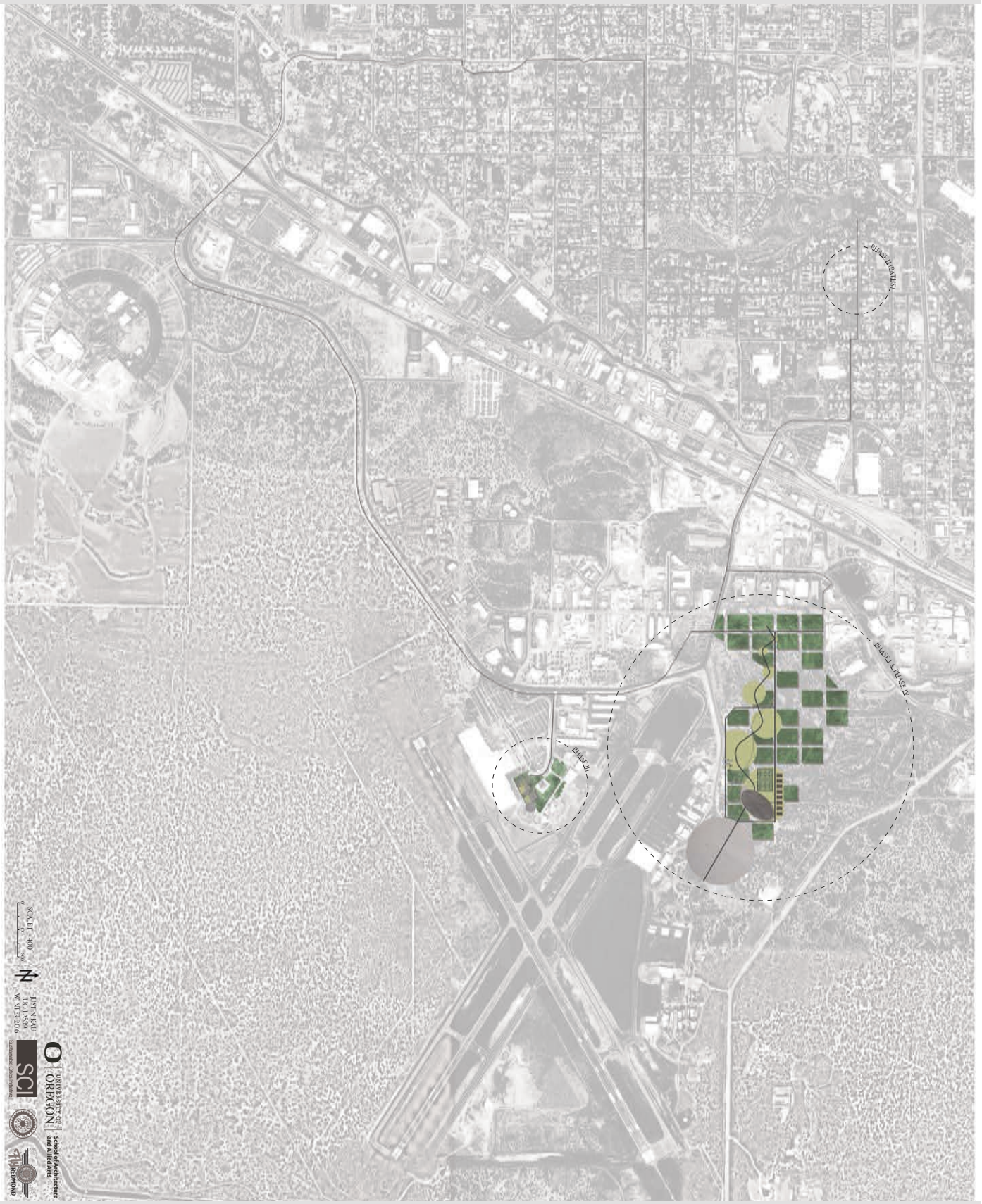
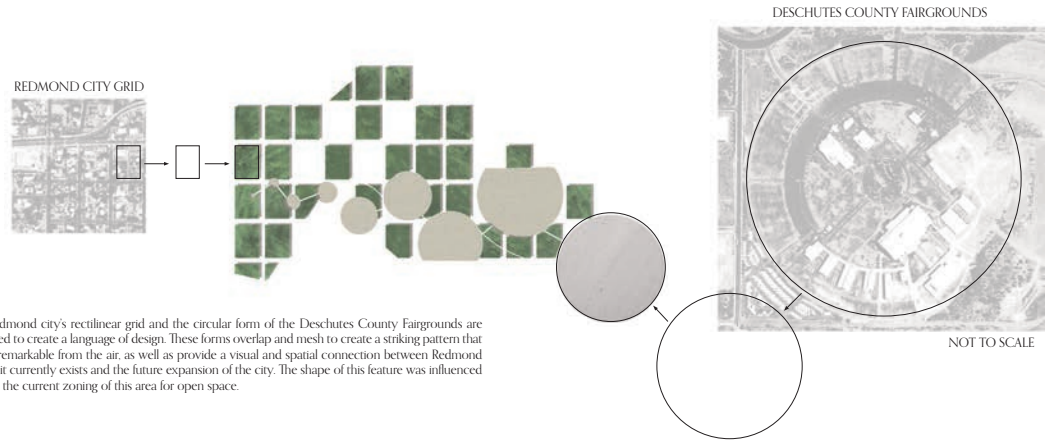


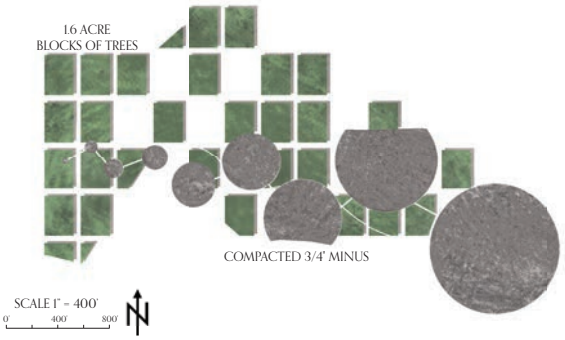
Figure 3-11. “Connect RDM” landscape master plan

PHASE I

AERIAL IDENTITY



Redmond city's rectilinear grid and the circular form of the Deschutes County Fairgrounds are used to create a language of design. These forms overlap and mesh to create a striking pattern that is remarkable from the air, as well as provide a visual and spatial connection between Redmond as it currently exists and the future expansion of the city. The shape of this feature was influenced by the current zoning of this area for open space.

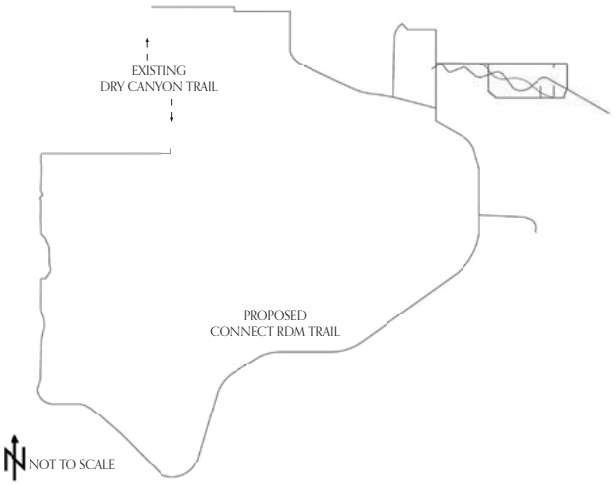


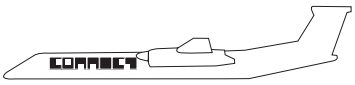
The blocks of trees are a significant portion of the land art that will create a unique experience for visitors flying into Redmond Airport. The trees also help to create a unique forest-like environment that will become a place for people in the city to retreat to and recreate. Lastly, the trees can be harvested on a rotation to enhance the visual aspects of the land art while simultaneously generating revenue.

The circular areas are spaces designated for recreation within the park. Due to the high cost of this large recreation area, the initial phase of the design is to prepare the site with compacted 3/4" minus gravel in the appropriate locations to prepare the site for future installations, but also to immediately maximize the impacts of the feature from the air. This site preparation with the gravel with allow for easy expansion of phase IV as funds allow, but is also a key piece in creating a unique identity for Roberts Field Airport.

PHASE II

CONNECT RDM





The city of Redmond is bifurcated by Highway 97. This division shows through in development as well as in green space. Part of the goal of this project is to instigate a shift in development that draws residents of Redmond across the highway.

Dry Canyon Trail is an existing 3.7 mile bike/pedestrian trail that runs North to South through the heart of Redmond. The goal of Connect RDM is to tie into the existing infrastructure of the Dry Canyon Trail and provide a more extensive trail system that will eventually incorporate with other designed features on the East side of Highway 97.

A large focus of this element is the celebration of flight. Found extensively throughout the Connect RDM path are informational art pieces - artistic displays of pieces of aircraft with informational signage to celebrate the human achievement of flight and explore the science that makes it possible. Another feature of the Connect RDM path celebrating flight are the trampoline sections. These small sections of pathway are dedicated to experiencing flight as individuals defy gravity one bounce at a time. These trampoline sections of the pathway will create a unique draw that will encourage people to come and celebrate flight regardless of travel plans, and will create a unique draw to justify and encourage further expansions of recreation areas.

AIRPLANE ART

TRAMPOLINE WALKS

Figure 3-12-1. "Connect RDM" final presentation

PHASE III

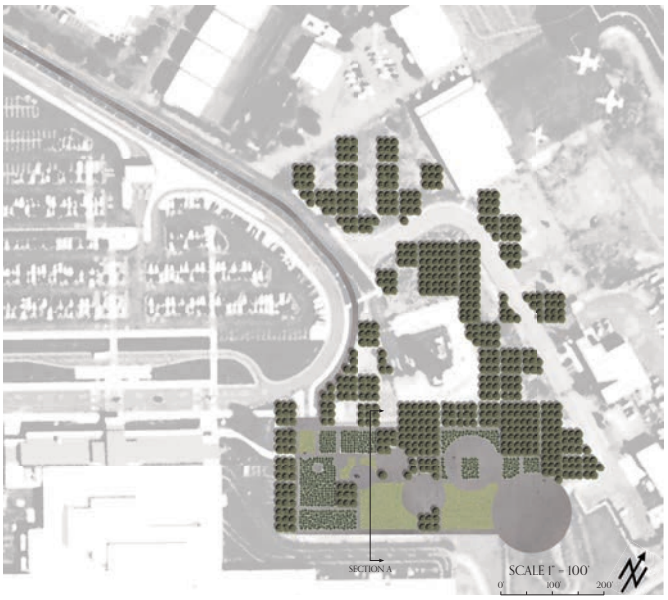
AIRPORT PARK

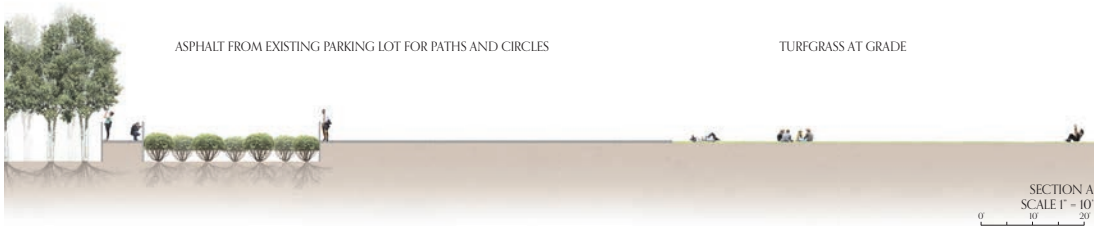
The airport park is located in what is currently the rental car parking lot. To develop this park it is necessary to relocate the rental cars to the parking lot of the Roberts Field Recreation Complex (RFRC). While the RFRC is not completed until phase IV, phase I prepared the site with base material which greatly facilitates ease of rental car relocation at this stage.

The Airport Park is designed as a place for weary travelers to have a place outdoors to relax and recuperate. While it is intended mostly for use by airport customers the Connect RDM pathway ensures access for Redmond residents as well.

The form of the Airport Park is an exact miniature of the land art that makes of the RFRC. The intention of this element is to reaffirm the identity of Roberts Field airport to visitors. The Airport Park is deliberately a very open space with significant focus on the ground plane, which allows patrons to experience the land art they will, or have, seen from the air first hand.

The Airport Park utilizes sunken gardens to reduce tree canopy height and to allow visitors to more fully observe the ground plane. These sunken gardens are fenced with a glass balustrade to ensure safety, and to reduce visual impedance.





PHASE IV

ROBERTS FIELD RECREATION COMPLEX

Roberts Field Recreation Complex (RFRC) is the culmination of all the other elements, and ultimately a culmination of the design. The goal of RFRC is to be the recreation destination of the city of Redmond. The path network, facilities, and vast amount of open space are the tools with which this is to be accomplished.

The iconic element of this park is the airplane play structure. The structure is created from a retired commercial jet, which is then placed on supports and fitted with swings, slides, and artificial flight controls. The structure is positioned immediately next to SE Veterans Way, directly in the route of the rental car services, which have been relocated to the parking lot at RFRC. This placement serves to pique interest of travelers who might not otherwise stay and explore Redmond.

The Roberts Field Recreation Complex is a place of unimagined potential. It would greatly serve the airport by generating revenue and increasing property value while also serving the Redmond community and travelers as a place to relax and recreate.

Figure 3-12-2. “Connect RDM” final presentation

The Hub
Nadja Quiroz

Redmond promotes itself as “The Hub” of central Oregon— a sentiment that is clearly displayed in its city logo. The city is a major destination for outdoor recreation as well as a growing hub for technology businesses. Naturally, the airport serves as the core of this persona; a landmark where activity, people, and the monumental landscape intersect. This design concept explored what it would mean to overlay the symbol of “The Hub” onto the airport property in the form of basalt gabions and earthworks. This bold statement would be visible both from the air and on the ground, creating a momentous greeting to incoming passengers while simultaneously situating it within the monumental landscape of Central Oregon.

The ‘spokes’ of the hub would align with larger landmarks beyond airport property, and the concentric ‘wheels’ would connect relevant places within and adjacent to the airport, such as, the entrance to the Redmond Caves and a pilot memorial. This concept would amplify the City of Redmond’s branding campaign, create an intriguing approach that reveals itself gradually, engage travelers on multiple scales, and potentially provide infrastructure for: Plant colonization research, airplane watching, a way-finding public art project, and solar panel expansion.

Figure 3-13. Student midterm process work

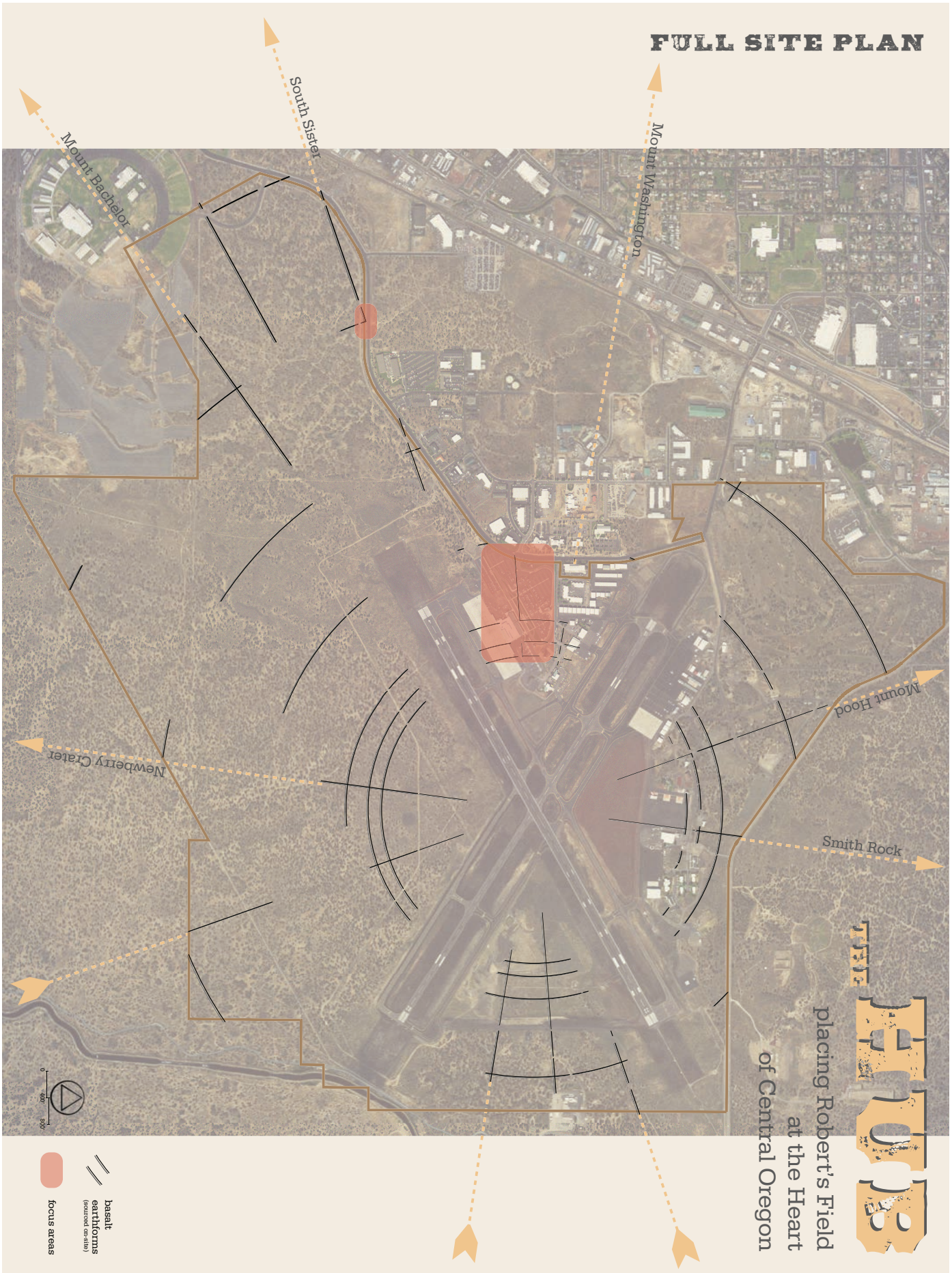
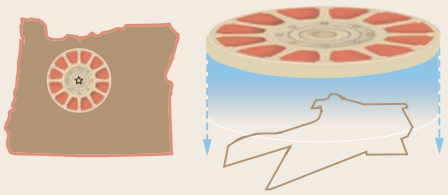


Figure 3-14. “The Hub” landscape master plan

CONCEPT



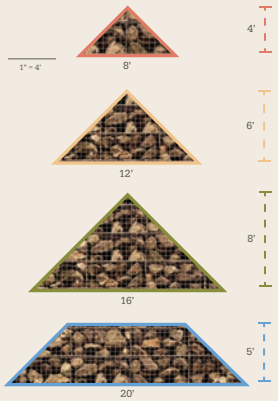
The City of Redmond's official logo is a wooden wheel with the words "The Hub" written around its rim- the self-proclaimed heart of Central Oregon. Naturally, Robert's Field plays a major role in this campaign effort as the confluence of business and recreational traffic for the region. Being "The Hub" is no small feat, and neither should be the framework for the airport's landscape master plan.

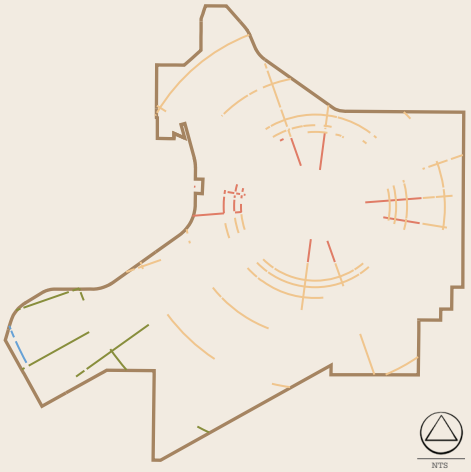
This design concept imprints Redmond's symbolic hub onto the airport's landscape in the form of "spokes" that radiate out to major landmarks and "wheels" that highlight features around the property. These earthforms, comprised of loose rocks and gabion reinforcements, create an allusive pattern that's visible from the sky. In the desert's clear skies, nothing else says, "You have arrived!" quite like this. Such a lasting impression is sure to place Redmond at the heart of Central Oregon and visitors alike.

EARTHFORM LAYOUT

Textured Concrete (paved surfaces)

Basalt Earthforms (unpaved surfaces)





DESIGN INSPIRATION

Inspirational **Buitenschot Landartpark**, by **Paul de Kort** in partnership with ***H+N+S Landscape Architects***, is located near Amsterdam's Schiphol International Airport. The landart forms were designed to reduce noise, however, the most prominent aspect of the design is its monumental aerial approach and lasting impression of the airport's surrounding landscape.

Vesicular basalt is a locally-abundant building material that is found throughout the airport's landscape and architecture. Copious amounts of it are made available through the airport's regular maintenance activities. This landart design capitalizes on this surplus while staying true to the local vernacular.

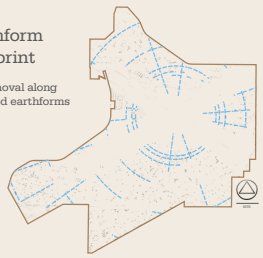
SITE PLAN: FOCUS

At the airport's terminal and parking lot (above), textured concrete is used to create continuity where gaps in earthforms are necessary for safety and traffic flow. This change in the surface will alert cars and pedestrians to the larger pattern in the landscape by hinting at the congruent structures nearby.

CONSTRUCTION PHASES

I. Earthform Footprint

tree removal along proposed earthforms

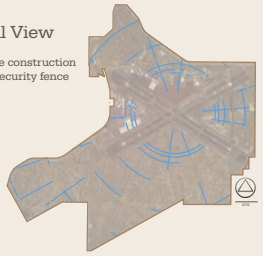


II. Approach

implementation along SE Airport Way

III. Aerial View

complete construction within security fence



PROGRAM POSSIBILITIES

Research
monitor plant colonization of earthforms (NGO partnership)

Engage
add signage at terminal explaining earthform waypoints

Branding
aerial view of hub as monumental source of identity

Plane Watching
roadside forms as viewing platform attraction

Solar
utilize southern faces for solar cells

ROADSIDE VIEW

A "spoke" and "wheel" (not visible) earthform converge and point from across the street to the entrance of a local treasure: The Redmond Caves.

TERMINAL VIEW

Figure 3-15. "The Hub" final presentation

3.2 Energy and Natural Resources

Improving energy efficiency is one of the most critical aspects when it comes to achieveing sustainability. Despite not having experienced insufficient water and or natural resources, such difficulty will increase due to climate change. Moreover, the natural processes in the ecosystem have been drastically modified after human development. Design projects: ‘Synergetic Filtration’, ‘Bring Water to the Surface’, and ‘Without Fire’, sought to bring awareness of these environmental issues to the public, which would simultaneously create a sense of place through experiencing the landscape of RDM.

Redmond Solar Share
Whitney Holt

This project proposed a central design idea for implementing a Community Solar Garden and Solar Sculpture installations at RDM. The Community Solar Garden would enable individuals to use solar energy without having to install photovoltaic panels on their property. Participants could rent or lease an allotment of photovoltaic panels and receive electricity credits through virtual net metering. The airport would invest in the installation of the photovoltaic panels and receive monthly payments from renters to recoup their initial investment. The Solar Sculptures would celebrate the open, rocky, high desert terrain characteristic of Central Oregon visually, and would also provide electricity to participating members of the Redmond community. Clusters of non-reflective photovoltaic panels were designed in geometric, crystal-like arrangements and would circumscribe the axis of the runway. The photovoltaic panels would take advantage of Redmond's 300 plus days of sun in addition to providing a unique, visually interesting aerial view.

These Solar Sculptures could be seen at the terminal entrance as well as the airport approach. The onyx glass composite and photovoltaic panel solar sculptures sited at the entrance of the airport terminal would be abstract forms of the surrounding mountains. The sculptures would also veil the parking lot from travelers as they exit the airport terminal. Visitors pass through and/or around the sculptures in order to access the parking lot. The way-finding sculptures are lit from within and illuminate the roads leading in and out of the airport property. They signify arrival and departure from the airport and establish a cohesive sense of place.

Figure 3-16. Student midterm process work

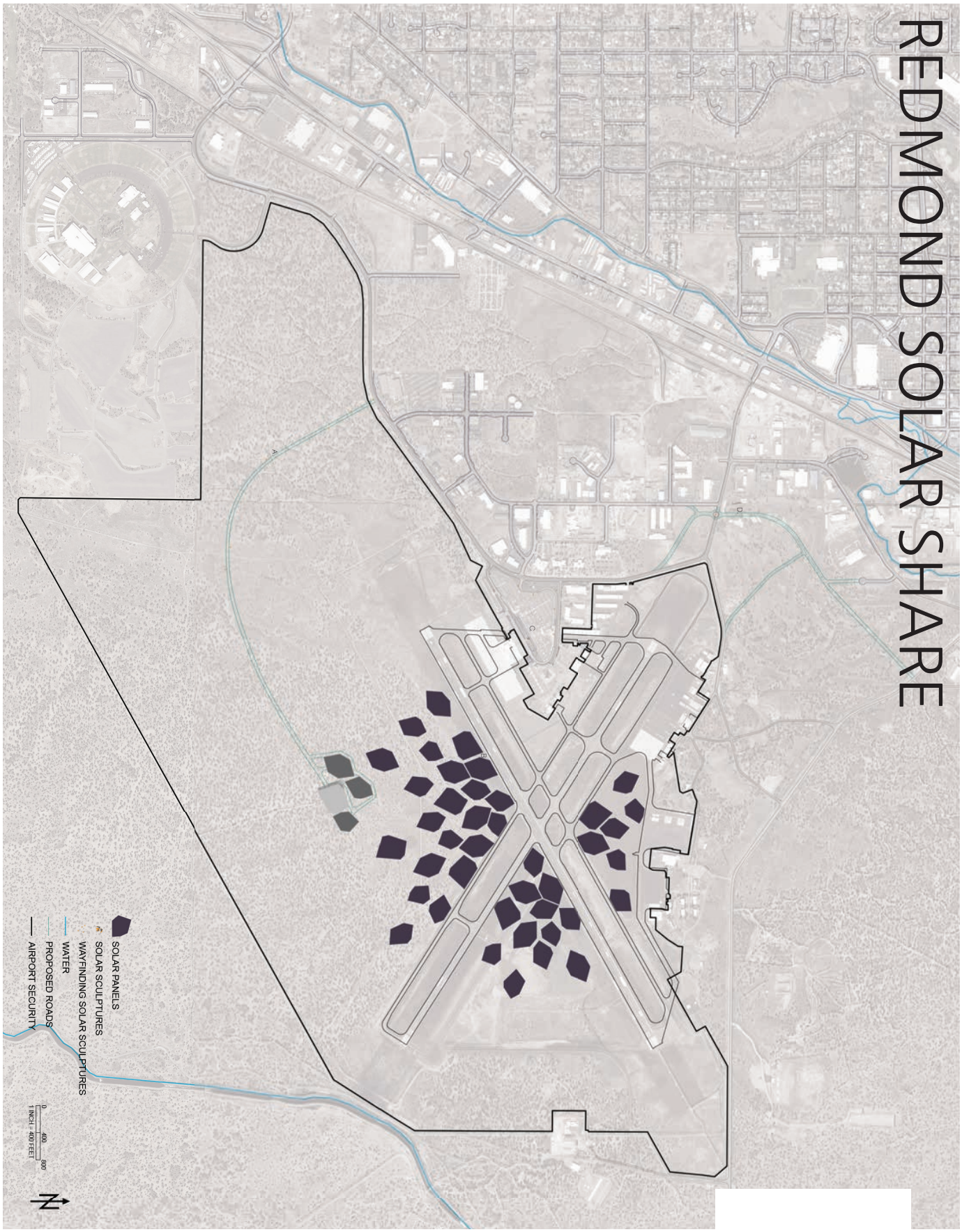


Figure 3-17. “Redmond Solar Share” landscape master plan

WHY COMMUNITY SOLAR?

Redmond, Oregon receives an average of 300 sunny days/year.

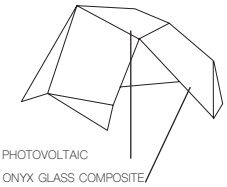
A shared renewable energy plant, or community solar plant, provides an alternative to conventional energy sources. It generates local jobs and promotes increased public understanding of solar energy. Additionally, community solar programs enable renters and other non-residential property owners to share the benefit of solar power.

A 32 acre community solar plant at Redmond Airport will provide a year of power to 1,000 homes.

AERIAL IMAGE OF TERMINAL ENTRANCE & PARKING LOT

A. ILLUMINATATED WAYFINDING SOLAR SCULPTURES

SOLAR SCULPTURE



PHOTOVOLTAIC
ONYX GLASS COMPOSITE

B. UNIT OF GEOMETRIC SOLAR FIELD

PHASING PLAN

PHASE ONE

PHASE TWO

PHASE THREE

Figure 3-18. “Redmond Solar Share” final presentation

Synergetic Filtration
Derek Rayle

As a result of recent algal outbreaks in Redmond waterways, negative stigmas are often associated with algae. Furthermore, high water demands within the Redmond airport have continued to increase expenditure on water usage and treatment of black, grey, and de-icer water. This project employed the use of algae-- which challenged these negative viewpoints and demonstrated the potential of a landscape that would able to sustain the airport at various scales. The existing infrastructure would be embedded with algae, which would add attracting effects as algae are flowing as well as blooming, and simultaneously treating wastewater on site. The landscape would be transformed into an environment for understanding the beauty and potential of algae.

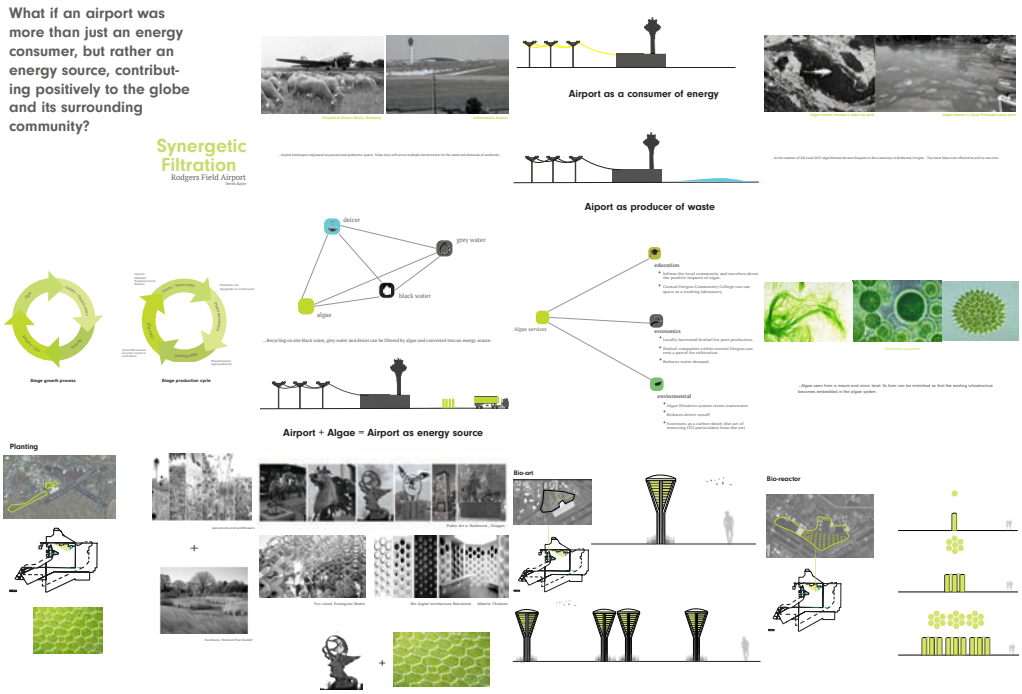


Figure 3-19. Student midterm process work

Figure 3-20. “Synergetic Filtration” landscape master plan

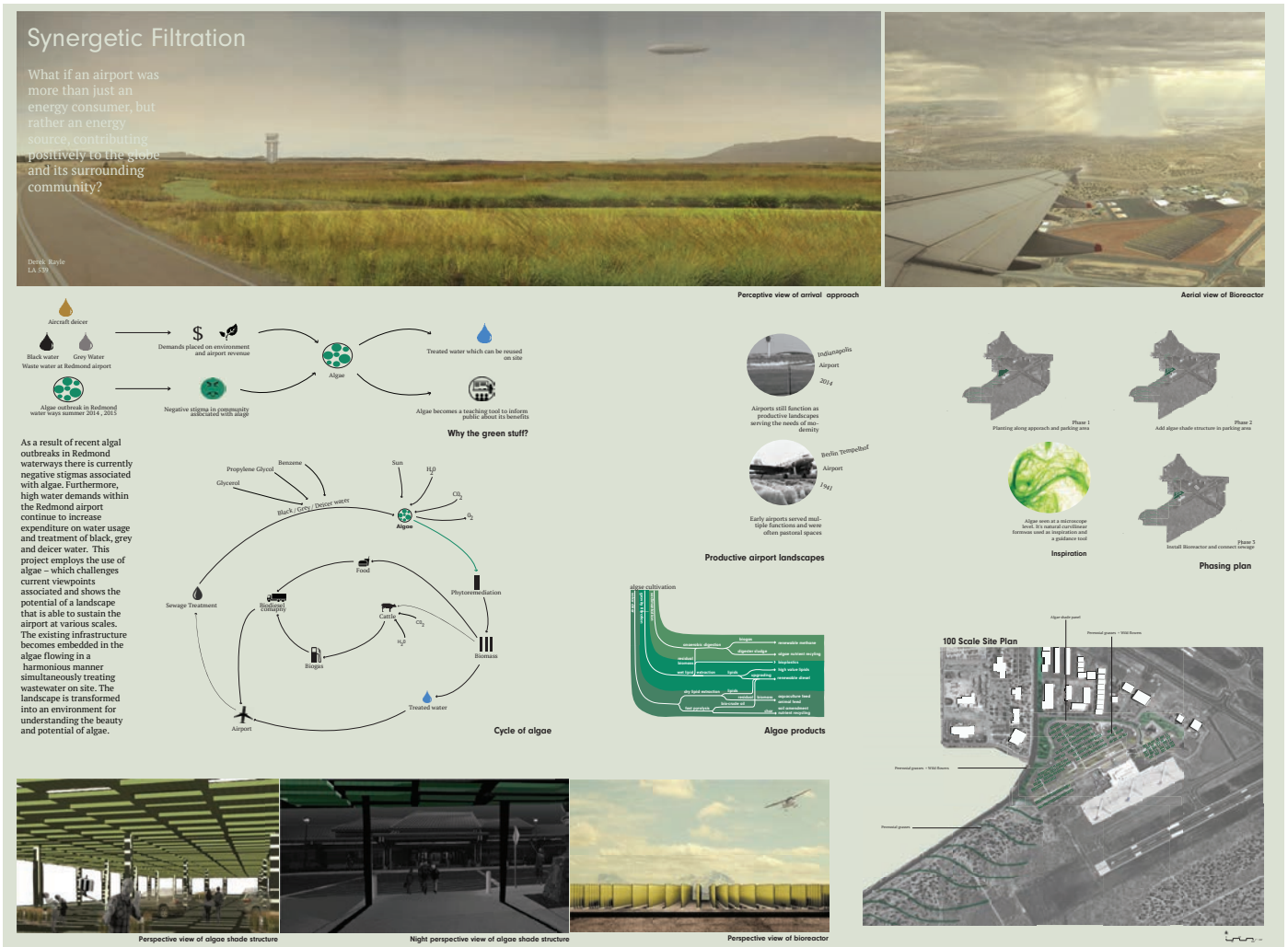


Figure 3-21. “Synergetic Filtration” final presentation

Bring Water to the Surface
Rachel Spencer

Flying over the arid desert, one would not be aware that vast amounts of water are moving in the Earth beneath the surface. Water is only present in the landscape as it is brought up through wells and sprayed through center pivot irrigation equipment, creating a circular pattern in crops when viewed from above.

The hydrological cycle plays an important role in the vitality of Redmond, Oregon, where surface water and groundwater are essentially one resource. The stormwater system in the city is designed to protect the purity of the groundwater aquifer, which is the sole source for Redmond's water supply.

This landscape master plan's goal was to connect people to the idea of water in the arid landscape, its importance, and how it moves. By bringing water to the surface, we can celebrate and become better connected to the relationship of surface water and groundwater. Design interventions included grey to green oasis gardens, in which grey water would be re-used as irrigation; a seeping water entrance wall; an interactive sculpture garden, where play and activities would be celebrated and simultaneously representing the movement of water; as well as planting moisture farming and self-sowing desert wildflowers and Alfalfa hay, which is often used to protect groundwater.

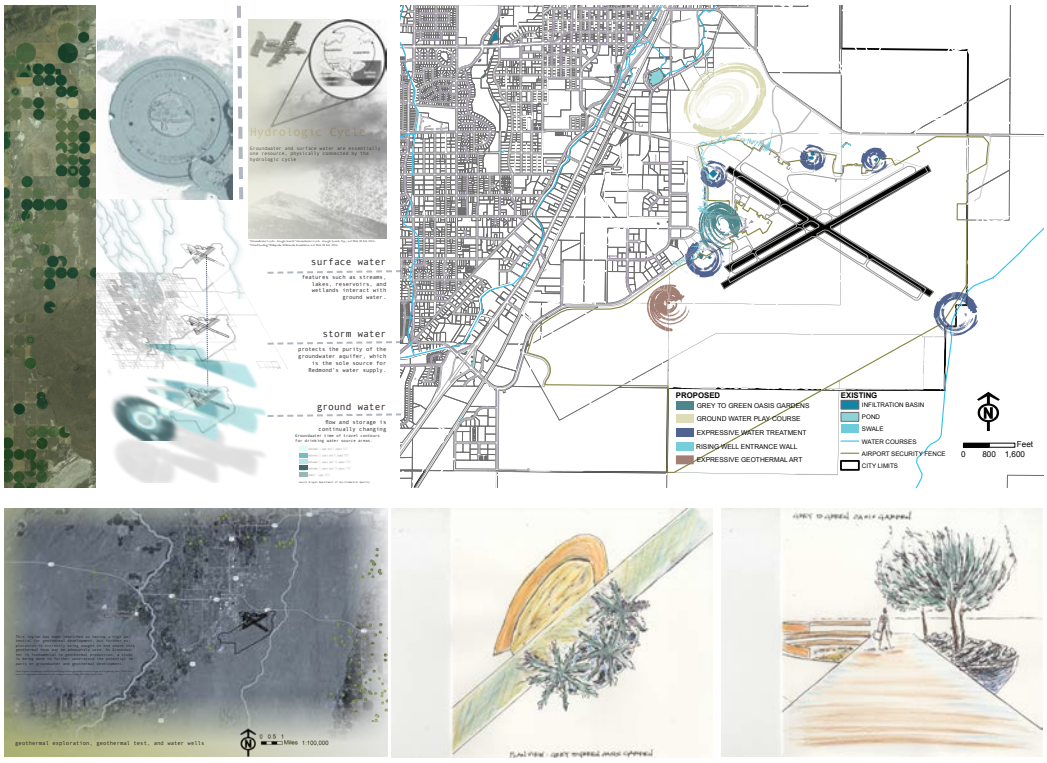


Figure 3-22. Student midterm process work

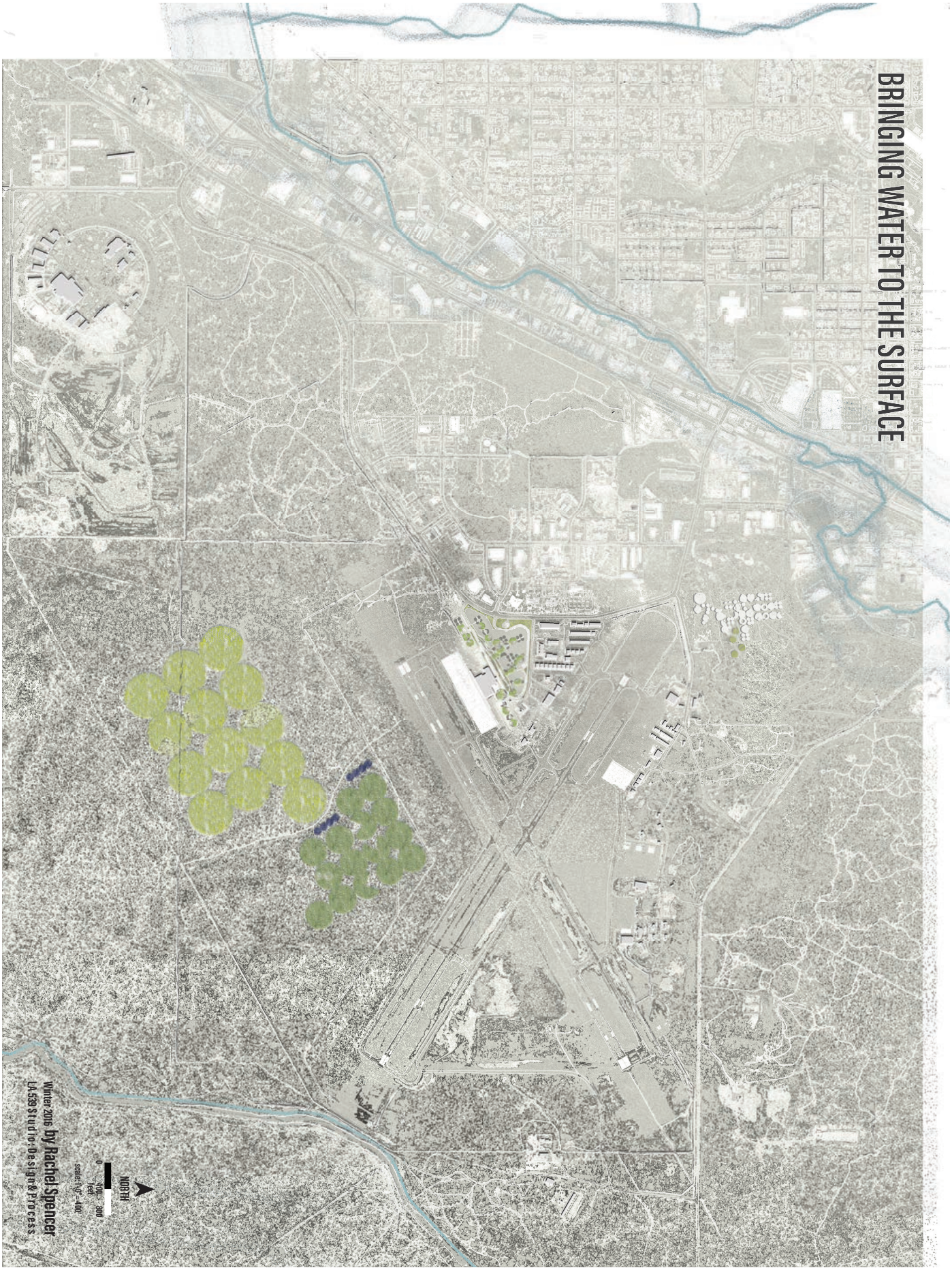
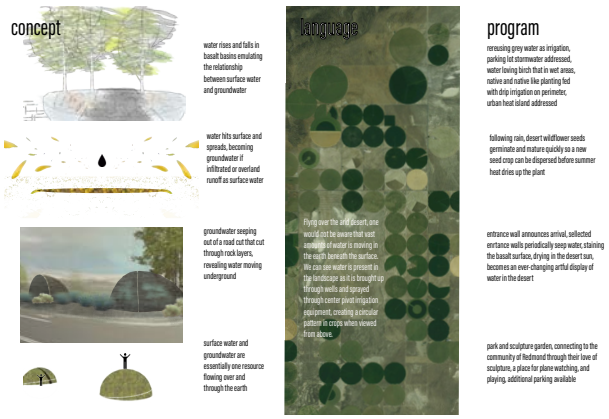
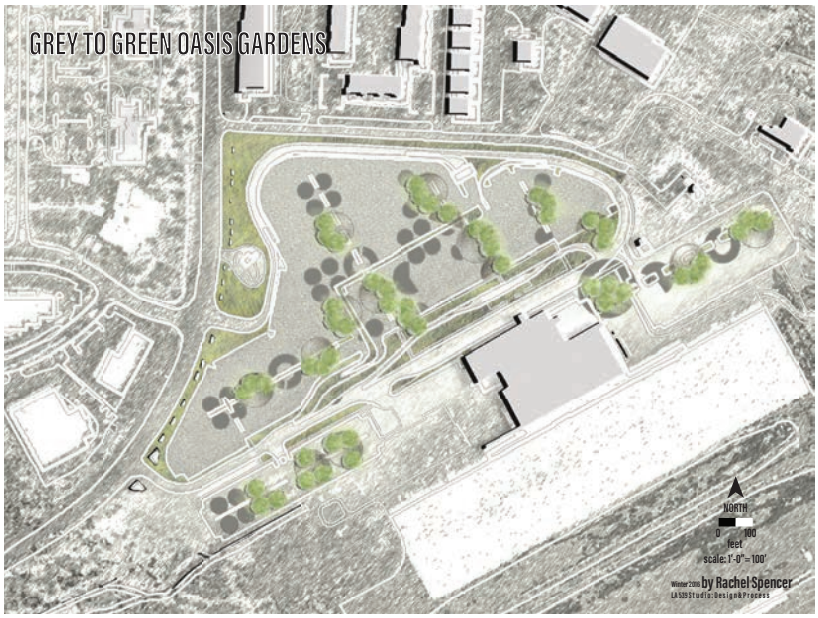
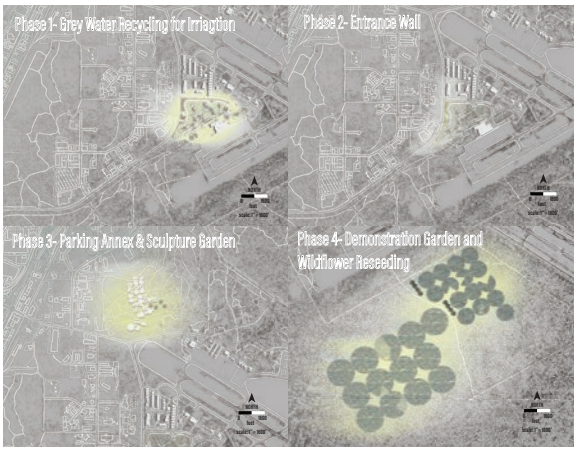


Figure 3-23. “Bring water to the Surface” landscape master plan

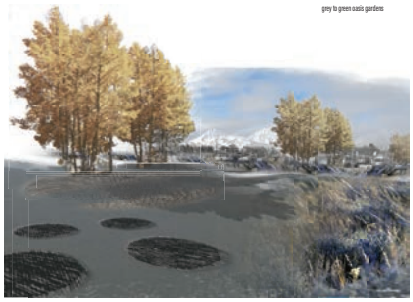




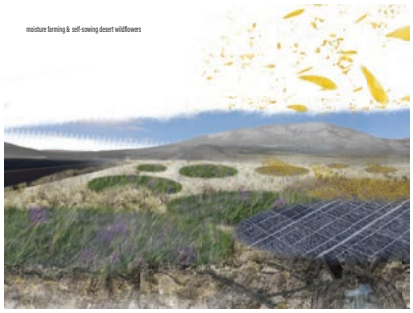


seeping water entrance wall

grey to green oasis gardens



moisture farming & self-sowing desert wildflowers



interactive sculpture garden

Figure 3-24. “Bring Water to the Surface” final presentation

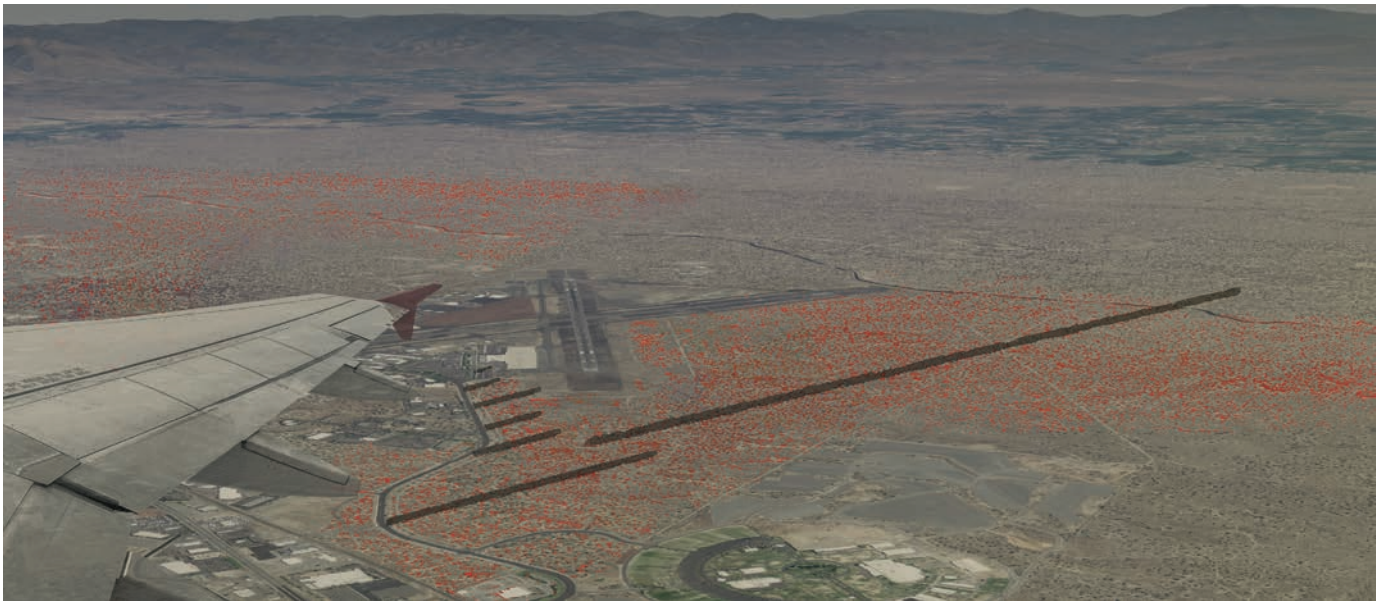
Without Fire
Jillian Stone

RDM has a rich ecological history as a sage-steppe ecosystem. However, due to the suppression of wildfire, much of this sage steppe mosaic has been lost to large woody species such as the juniper tree. This design proposal attempted to restore the sage steppe landscape while opening up a dialogue about fire ecology in the American west. The encroachment of juniper has not only harmed the area's biodiversity but has also greatly increased fire danger. By eradicating the juniper and reseeding with the native perennials, forbs and grasses, the hope for this proposal is to restore the area's native habitat.

These goals will be achieved by using the desert Globe Mallow, a Central Oregon native, contrasts sharply with the Wyoming sagebrush in a symbolic representation of fire. In order to represent the healthy effects of periodical burns, a series of fire breaks alongside the road work in conjunction with a native plants garden, which illustrated plant communities that would regenerate after fire events. These interventions were designed around the airport and the parking area to create an announce entrance to the airport.

Figure 3-25. Student midterm process work

Figure 3-26. “Without Fire” landscape master plan



THE AREA SURROUNDING ROBERTS FIELD AIRPORT IS HIGHLY SUSCEPTIBLE TO WILDFIRE. THE ENCROACHMENT OF JUNIPER IN THE ABSENCE OF REGULAR WILDFIRES HAS SIGNIFICANTLY INCREASED FIRE DANGER. RESTORING THE AREA'S NATIVE SAGE-STEPPE ECOSYSTEM WILL GREATLY REDUCE FIRE DANGER WHILE INCREASING BIODIVERSITY.

Figure 3-27. “Without Fire” final presentation

3.3 Materiality

Local materiality is one of the major components that landscape architects draw inspiration from to comprehensively understand a landscape. ‘Paving the Way’ and ‘Nature’s Pattern’ analyzed the environmental impacts of certain materials that are largely present at RDM. Inspired by many precedent studies, these proposals presented design solutions by creating art, enhacing user experience, and establishing a sense of place at RDM.

Paving the Way
John Maxon

Asphalt is integral to Redmond Airport; its role in the landscape must be addressed when creating a landscape master plan for the airport's future growth. This project aimed to directly impact airport users' experiences by changing the asphalt-dominant landscape. Asphalt's negative qualities, such as solar heat gain, would be addressed at the airport's large parking lot with pavement cut-outs, shade structures, and planting designs. Asphalt's recyclability is materialized by reusing the paths of the closed golf course to create multi-use recreational paths in a new park. Taking advantage of asphalt's surface runoff, an arrival sequence is punctuated by new wildflower blooms and fall foliage. Incorporating commercial development, Redmond Airport's landscape would become a beautiful and cohesive anchor point for the development of the town in the future.

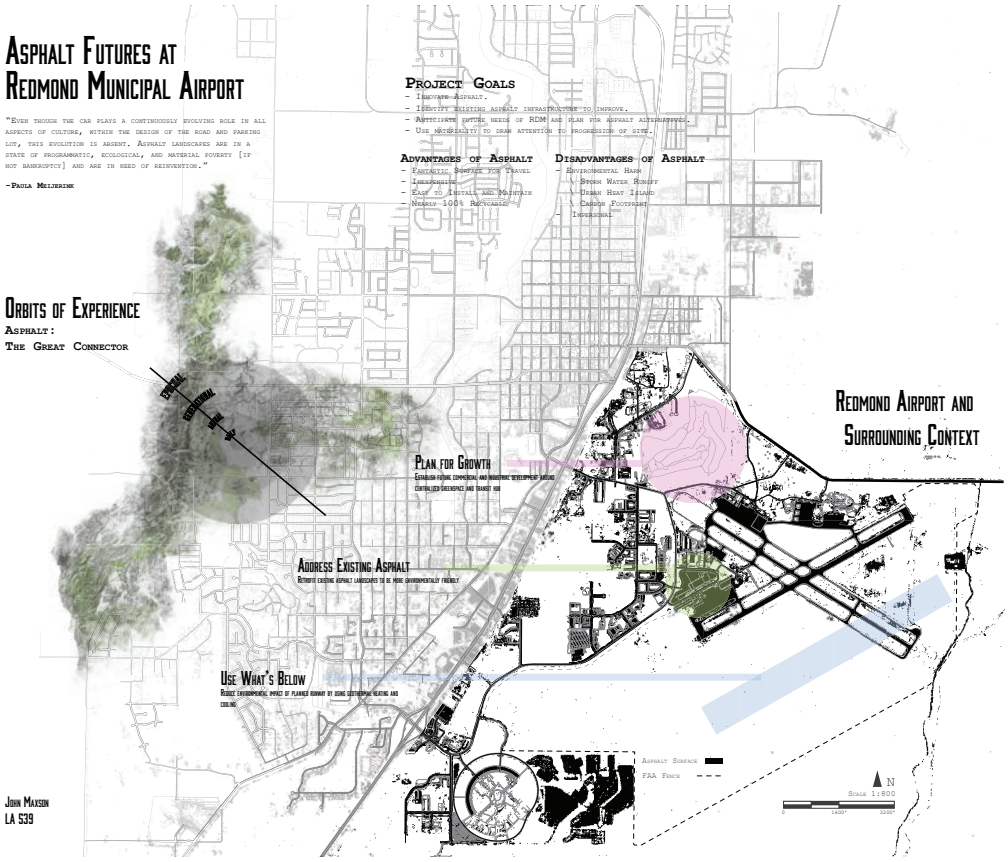


Figure 3-28. Student midterm process work

Figure 3-29. “Paving the Way” landscape master plan

Paving the Way

Redmond Airport Landscape Master Plan

Asphalt is a ubiquitous element in the airport landscape. This project aims to mitigate the negative aspects of asphalt while highlighting its positives.

Situated at the foot of the Cascade Mountains, located at the intersection of major highways, and adjacent to the Deschutes River, Redmond Airport operates at many scales. Through the alteration and utilization of asphalt, this project illuminates these different scales, while positively and directly affecting the near instant scale of human experience.

By celebrating the seasonality of the high desert, recycling materials on site, and promoting commercial growth, this master plan allows Redmond Airport to grow into the future.

Context

Orbits of Experience

Experience As Surface

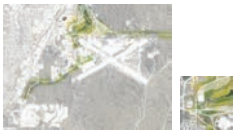
Phasing Plan

Highway Beautification
Year 0 - 1
Wildflowers are planted along Airport Way and Highway 126. Flowers are planted in swathes in response to micro-topographical changes.

Central Park Growth
Year 4 - 10
The untended landscape of the old golf course is revitalized with groupings of trees, grasses, and shrubs. Winding trails follow old fairways and provide ample recreational opportunity.

Recycling Surfaces
Year 2 - 4
Upsizing of RDM parking lot begins. On-site turf grass and asphalt is preserved and reused as sports fields and RAP paths in new Central Park.

Commercial Development
Ongoing
Anchored by the park, a parking garage, and new regional transit center, commercial development thrives. With all other landscape elements in place, the airport gives the east side of Redmond a strong identity.



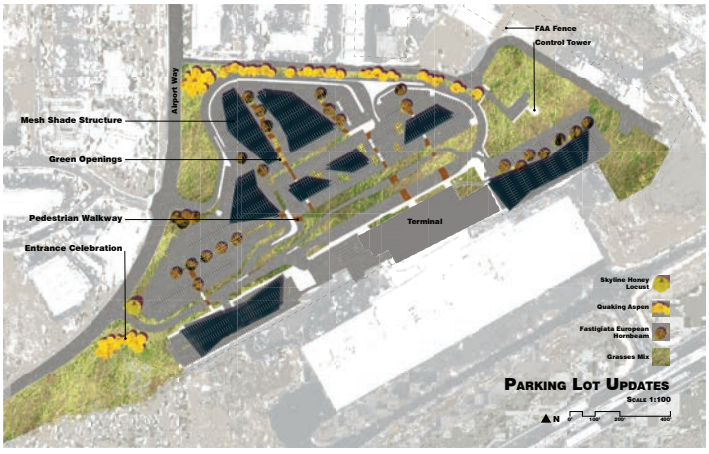


Figure 3-30. “Paving the Way” final presentation

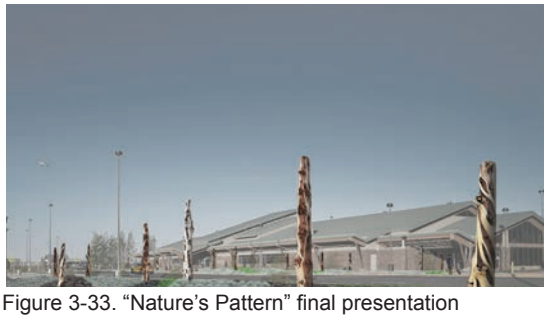
Nature's Pattern
Jamie Willeke

This project focused on using juniper, a persisting element seen in the landscape of Redmond. However, it is commonly seen locally as a nuisance; therefore, this design aims to repurpose juniper, making it aesthetically pleasing, and as a symbol of Redmond. Juniper's aggressive uptake of water enables it to also outcompete native plants, resulting in juniper spreading in densities greater than ever before. Aligning with RDM's future plan of airport expansion, juniper removal within the airport property would generate a large amount of timber. Therefore, this project proposed utilizing these materials to construct sculptures as a symbol of Redmond, reducing wildlife habitat around the airport, and alleviating water stress on native vegetation.

Figure 3-31. Student midterm process work

Figure 3-32. “Nature’s Pattern” landscape master plan

NATURE'S PATTERN



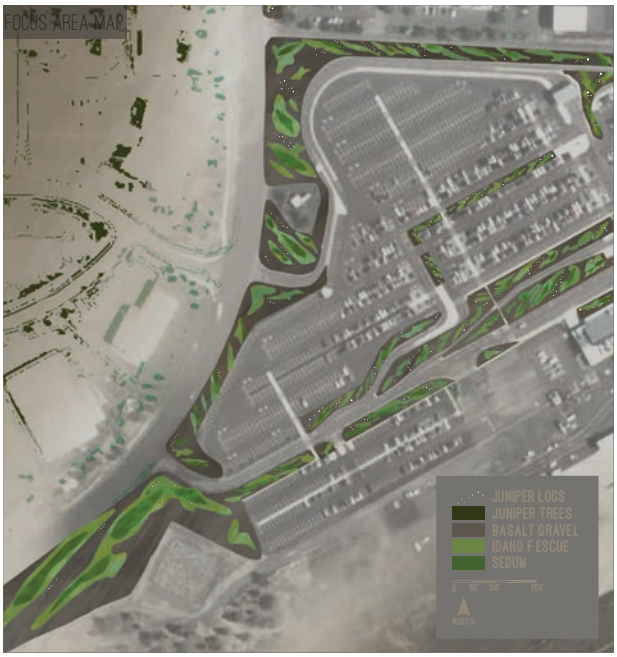


Figure 3-33. "Nature's Pattern" final presentation

3.4 Views

Airports have been extremely facinating places for people to watch airplanes and perceive unique experiences on airplanes. Design proposals such as ‘New Horizon’ and ‘Blending Earth and Air’ focused on enhancing the perspective of traveling by air as well as framing the grand views of Redmond’s surrounding mountains. The use of land forms to create viewsheds can be related to previous precedent studies.

New Horizon
Alden Carr

RDM is a regional hub as well as a gateway into the arid region of Oregon for a growing number of people. This project proposed the development of a trail system circumnavigating the perimeter of the airport, which would connect both visitors and residents to appreciate the large existing landscape through intentionally created windows around the airport property. The design utilized the construction of land forms as well as addition and removal of specific vegetation, which would allow people to integrate into the landscape of RDM and Remond as a whole.

Figure 3-34. Student midterm process work

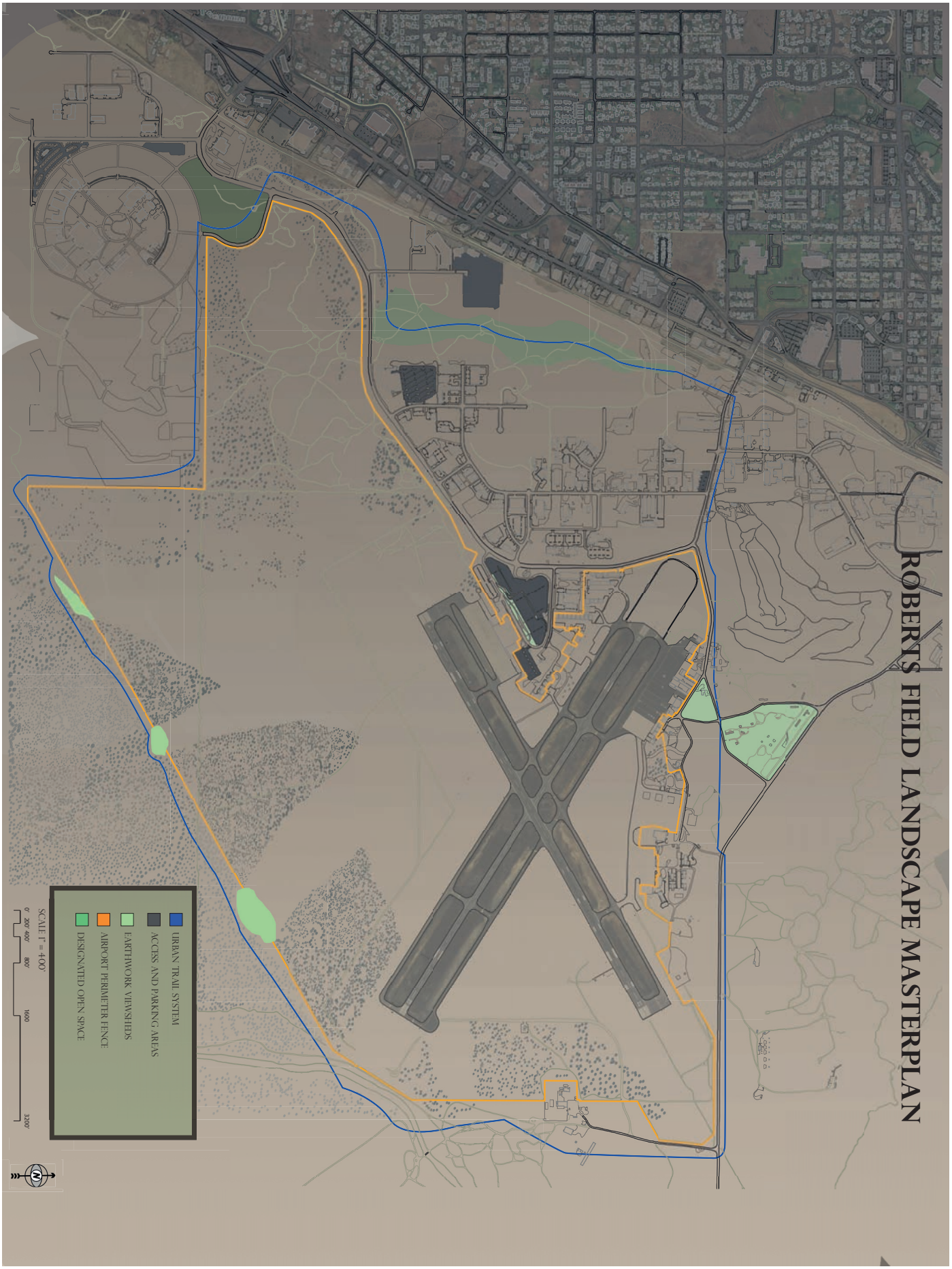


Figure 3-35. “New Horizons” landscape master plan

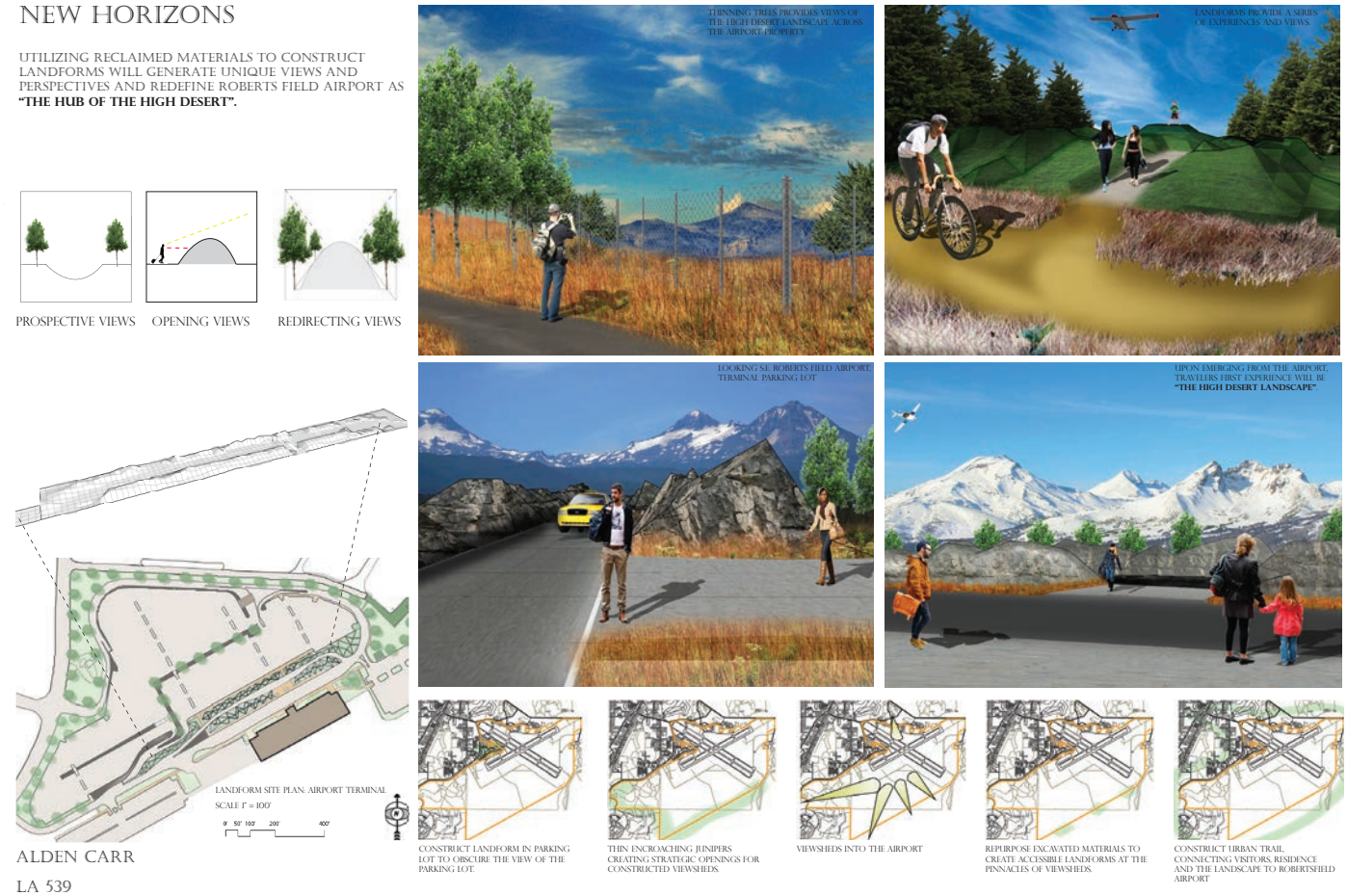


Figure 3-36. "New Horizons" final presentation

Blending Earth and Air
Brittany Murphy

This project was about celebrating the airport as a place where it is possible for people to move between earth and air. For almost all of human history, flight was nothing more than an impossible dream, and as such the elements of earth and air were considered diametrically opposed. With the invention of the aircraft, it was then possible for humans to pass between the realms of earth and air, but only through the very specific spaces of airports.

In imagining the Redmond airport as a portal between the ground and the atmosphere, this design attempted to create a space where the boundary of earth and air was softened and blurred. Taking advantage of the almost two mile approach to the airport entrance, plantings that would create an airy sense of movement and acceleration were designed in long bands that would get denser towards the entrance, which would draw the viewers gaze toward the airfield and heighten the sense of anticipation. By utilizing the movement of feathery grasses, buoyant ornamental onions, and quaking aspens in the wind, the movement of air was then visible.

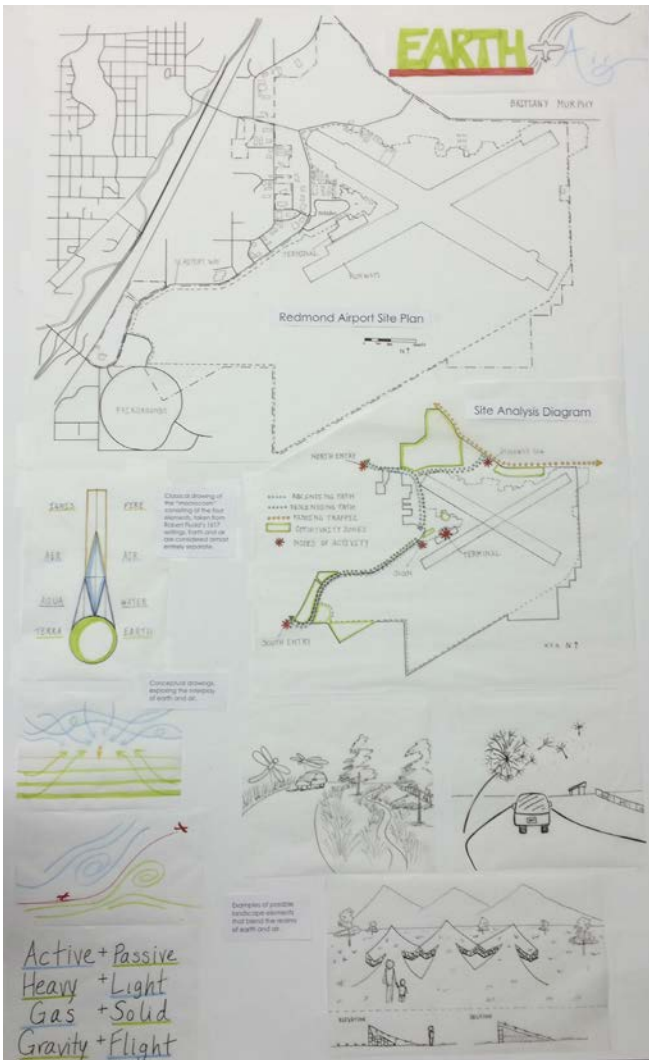
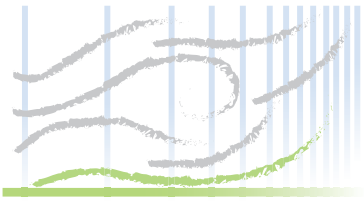


Figure 3-37. Student midterm process work

Figure 3-38. “Blending Earth and Air” landscape master plan



Blending Earth and Air

Brittany Murphy
LA 539-Winter 2016

Airports exist as zones of transition between earth and sky, unique places where travel between two previously distinct realms is possible. This design seeks to blend the distinction between earth and air by making the motion of air visible on the ground. Banks of airy grasses and flowers line the roadside, passing by with ever increasing frequency as you approach the airport entrance. The increasing density of plants gives a sense of accelerating motion that occurs at the lift off of an airplane.

White Awn Muhly
Muhlenbergia capillaris 'White Cloud'

This evergreen grass stands 3-4' tall and blooms in fluffy sprays in the fall and winter. Preference for full sun and low irrigation makes it perfect for Redmond, OR.

'Gladiator' Ornamental Onion
Allium 'Gladiator'

A perennial bulb featuring 6" wide globes of purple flowers in late spring to early summer. At 3-4' tall, it will provide interesting splashes of color along the road.

Quaking Aspen
Populus tremuloides

Mimicking existing planting at the terminal, sporadically placed aspens create a sense of movement in the vertical plane.

Road Perspective

Terminal Perspective

Trail Perspective

Figure 3-39-1. "Blending Earth and Air" final presentation

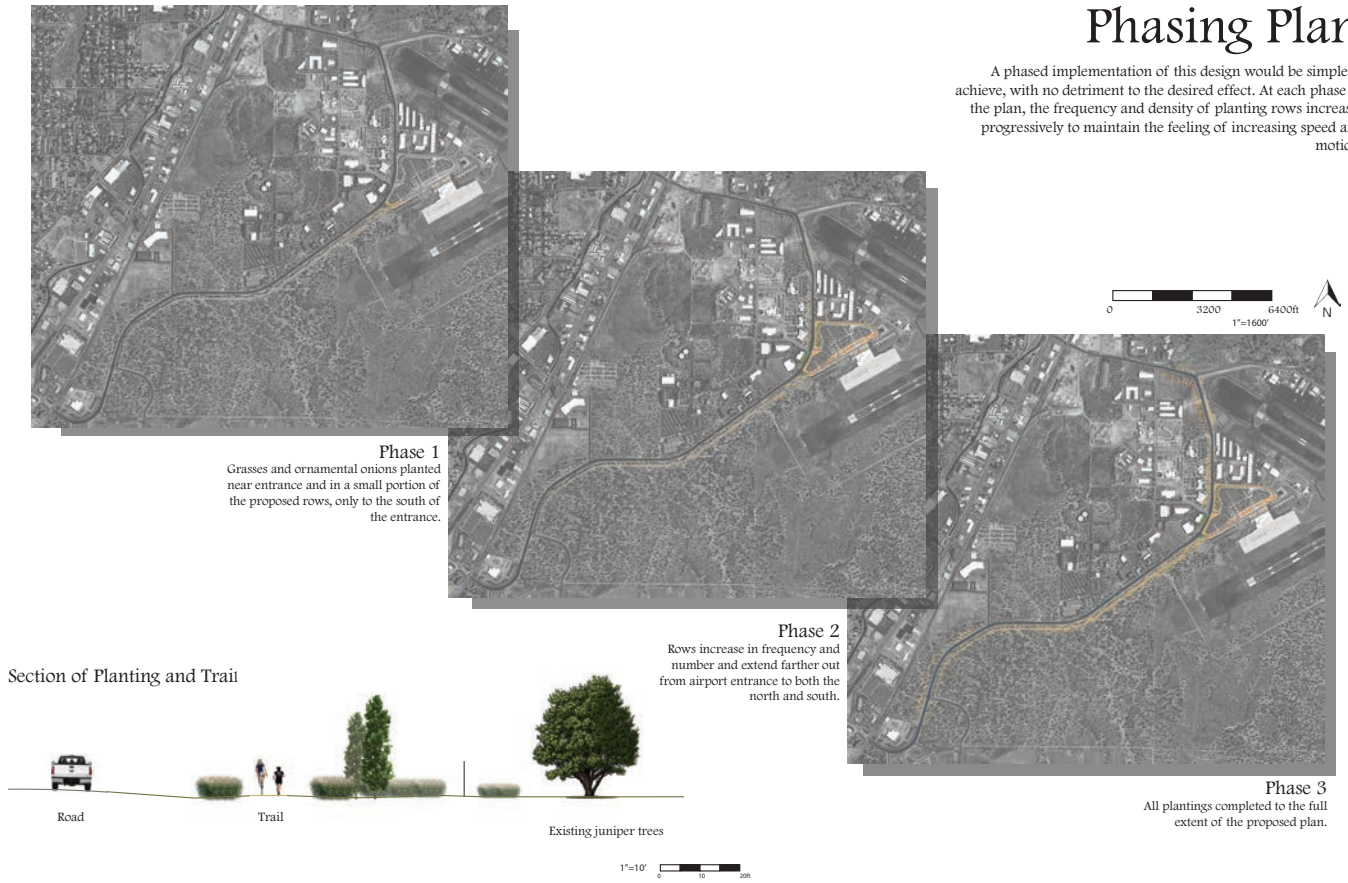


Figure 3-39-2. “Blending Earth and Air” final presentation

Conclusion

Through the process of the design studio, students progressed from site visit, to research regarding precedent studies and site analysis, preliminary design phase, and to the final landscape master plan proposal.

The City of Redmond and RDM's vision to be seen as "The Hub" and gateway to Central Oregon was an important goal to achieve when designing a landscape master plan for RDM. Moreover, students incorporated the surrounding mountains, local high desert landscape, aviation history, and public arts into design inspirations drawn from previous precedents studies.

The scope of students' final design goals could be categorized into addressing: Connectivity, energy and natural resources, materiality, and view. Although many students shared similar goals, the media and ways to realize these goals varied, which included but were not limited to: Art, materiality, vegetation, trail system, park spaces, land forms, and structures. These diverse approaches toward similar goals were a valuable demonstration for RDM and the City of Redmond that there are multiple possibilities for RDM's landscape to have a theme which would ground it in its location.

Within the landscape master plan, not only did each student provide an overarching design concept and plan for RDM's future expansion, students also took practicality, feasibility, and reality into consideration, which was presented through a proposed strategic phasing plan. Moreover, a finer scaled plan for a focal area addressed RDM's short-term goal to improve the approach to the airport and areas that are directly adjacent to the terminal.

In conclusion, Redmond's majestic surrounding landscape, rich local culture, and unique ecosystem presented a broad range of possibilities for RDM's landscape. Design proposals shown in this report are only a number of ways to approach the landscape of RDM. We believe that RDM presents numerous opportunities to becoming the leader of regional airports.