



DOCUMENTATION

SITE REDEVELOPMENT CONCEPT
TROUTDALE WWTP AND LLC PROPERTY





optirisk® goes America

TABLE OF CONTENTS

Table of Contents	03
Forward	04
Preface	05
Troutdale and the Model Site	06
Documentation of Site Inventory	08
Registration sheet	10
Inventory	11
Parcels and Ownership	12
Topography	13
Surface & Vegetation	14
Shadowed Areas	15
Infrastructure Provision	16
Traffic, Parking	17
Urban Planning: Potentialities	18
Urban Planning: Conflicts	19
Waste	20
Suspicion of Contamination	21
Impromptu Designs. Workshop	22
Sandy River Outpost	26
Playground for Community Life	27
The Joint	28
Aqua Delta	29
Shopping Bank	30
New Roof- New Face	31
Dynamic City Center	32
Blue Gate	33
Impromptu Designs	34
Workshop in Troutdale/Portland	36
Site Redevelopment Concepts	38
Alternative A: The Joint	38
Alternative B: The Roof	42
Alternative C: The Outpost	46
Alternative D: The Riverfront	50
Environmental Situation	54
Soil Contamination: Inorganic Pollutants	55
Soil Contamination: Organic Pollutants	58
Risk Forecast: Soil Contamination	61
Conflict Analyses	64
Optimized Design: The Outpost	68
Site Redevelopment Design	68
Soil Contamination Overlay with optimized Design	70
Options for Integration of renewable Energies	74
Epilogue	77
Project Team	78
Imprint	79

Forward and Preface

FORWARD BY DOUGLAS C. MACCOURT

In less than 40 years since the adoption of the first national laws establishing liability for improper waste disposal and hazardous substance releases, science and policy have been forcibly and unevenly merged to create an imperfect but important mandate for reducing the myriad of potential health and ecological risks from environmental contamination. During this time, advances in analytical technology have made it possible to identify and quantify chemicals and other conditions in soil, groundwater and air at levels previously thought undetectable. Development of public access and legal rights to enforce environmental regulations has permanently changed the way industry and commerce functions across the globe. With these advances, it would seem that the human condition, and indeed the planet, is safer and more sustainable.

One problem is that these optimizing conditions are shared with global land consumption that continues to grow at an alarming rate, even in countries with regions and great urban areas whose population is shrinking. The global economic crisis of 2008 permanently altered the stability of countries and institutions that were believed immune from unpredictable market forces, with the result that credit and financing has become significantly reduced and economic risks once thought to be manageable are avoided. Simply put, the pressure for greenfield development is escalating and low risk tolerance is preventing much brownfield redevelopment from ever getting off the ground. It has never been more important to unlock the profitability of recycling brownfield sites. Overcoming the obstacles to brownfield renewal is not easy, but it is made easier – and more cost effective – with tools like *optirisk*®.

optirisk® is one of the most advanced predictive modeling tools developed to date for brownfield redevelopment. I can say this because after over 30 years in the environmental remediation and restoration field, it is clear to me that every successful clean-up and redevelopment project shares several things in common. One of those attributes is creating and applying a design for reuse that integrates the best building and landscape architecture (informed by effective public input) with a comprehensive environmental risk assessment to form a new type of human and ecological terrain. In 2003 I coined this concept “Brownscape Design” – and took part in several projects to test the concept in the US and Germany during the remainder of the decade through the work of the US German Bilateral Working Group. Testing *optirisk*® in the City of Troutdale confirms the power of the innovation under real brownfield conditions in the US.

optirisk® allows the user to formulate cost effective redevelopment scenarios by comparing alternatives with different risk and cost profiles. It is a user-friendly application that requires the basic data that every brownfield site will generate or assemble in the process of site characterization and feasibility analysis. It is a tool that can be applied in a wide range of settings, from explaining development proposals in public meetings, to presenting development options to town councils and government officials, and to demonstrate financial feasibility and risk management to potential investors. *optirisk*® will play a role in the critical discussion of land recycling for years to come.



DOUGLAS C. MACCOURT,
ESQ., ATER WYNNE LLP

PREFACE

The goal of *optirisk*® is the optimization of the site redevelopment for polluted, unused properties based on identification and monetary valuation of liability and waste disposal risks. The result by using the method is the INTEGRATED SITE REDEVELOPMENT CONCEPT, which optimizes investment needs, improving the chances of reactivating polluted properties. For further detailed information you can also have a look at <http://www.optirisk.de>.

In the frame of bilateral cooperation between the US and Germany, some of the tools developed for revitalization of brownfields in the context of REFINA should be tested in the partner countries. *optirisk*® is one of the projects which already was presented on the bilateral workshop with TASK (the Centre of Competence for Soil, Groundwater and Site Revitalization in Leipzig) and the US Environmental Protection Agency (US EPA) in Denver, and which has attracted great interest of the American colleagues.

Based on this, *optirisk*® has been chosen as model project to apply a German method in the US. For this purpose, the model site WWTP and LLC Property in Troutdale, near Portland/Oregon, was selected. From April 2011 to January 2012 the *optirisk*® team (JENA-GEOS® and quaas-stadtplaner) exemplarily has tested the approach and tools of *optirisk*® at the model site, to the end that the method should be adapted to American conditions and the German *optirisk*® guide should be revised for an application in the US. The work at the model site in Troutdale was implemented step by step considering the tasks of *optirisk*®. This included a site inventory and research of general American standards, the development of urban planning designs and redevelopment concepts, the preparation of a risk forecast with regard to potential environmental risks, the implementation of a conflict analysis and optimization strategies to achieve the goal of reduction of remediation costs in the course of redevelopment, as well as the implementation of several workshops in Portland, Troutdale and Germany.

The summary at hand contains the documentation of the work at the model site in Troutdale, including achieved results and the workshops held in Germany and the US to obtain the work goals.



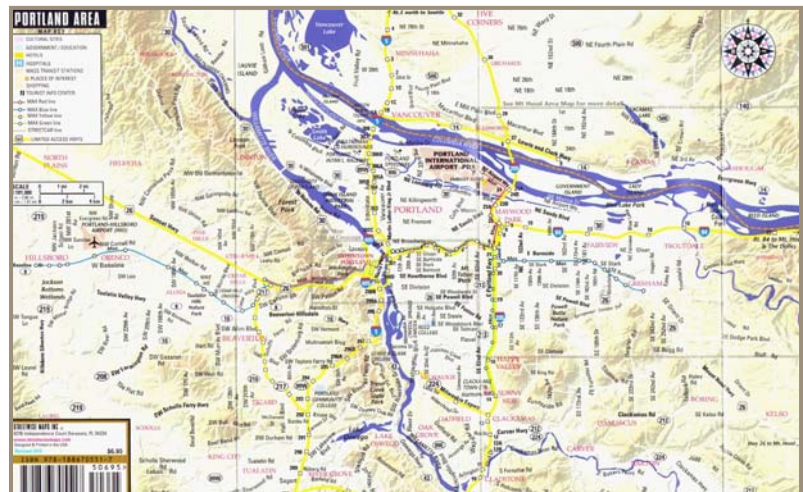
UNITED STATES OF AMERICA

Troutdale and the Model Site

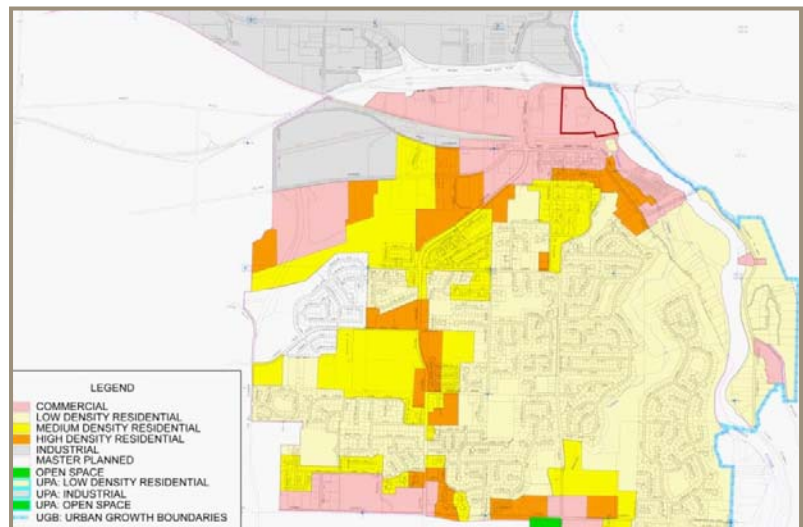
OREGON



METROPOLITAN REGION PORTLAND



CITY OF TROUTDALE





*HISTORIC COLUMBIA HIGHWAY
AND HISTORIC OLDTOWN*



SANDY RIVER

City:	Troutdale
State:	Oregon
County:	Multnomah
Population:	of 13,777
Model site:	WWTP and LLC Property, Troutdale/OR
Site owner:	City of Troutdale, private owner
Area:	approx. 19.6 acre
Last site use:	Municipal Wastewater Treatment Plant, Slaughterhouse, Wool Pullery
Current site use:	approx. 90 % vacancy / partially printing company
Proposed site use:	Mixed use - Housing, Commercial, Recreation

FACTS

Documentation of Site Inventory



IMPRESSIONS OF THE SITE

EXISTING SITUATION





IMPRESSIONS OF THE SITE

CONTAMINATION AND OTHER ENVIRONMENTAL ASPECTS



The master data forms the basis of further investigation as well as the exact cartographic orientation and graphical representation.

In the following, the inventory for the model site in Troutdale with regard to urban planning, environmental and renewable energy issues are documented. The index listed below is exemplary for such a data collection in the frame of *optirisk*®. In April 2011, Mrs. Thor and Mrs. Homuth travelled to Troutdale and Portland for the site assessment and data collection at WWTP and LLC Property, as well as to meet the City representatives.

REGISTRATION SHEET

INDEX

1. MASTER DATA
1.1. Address and Land Register
1.2. Location.....

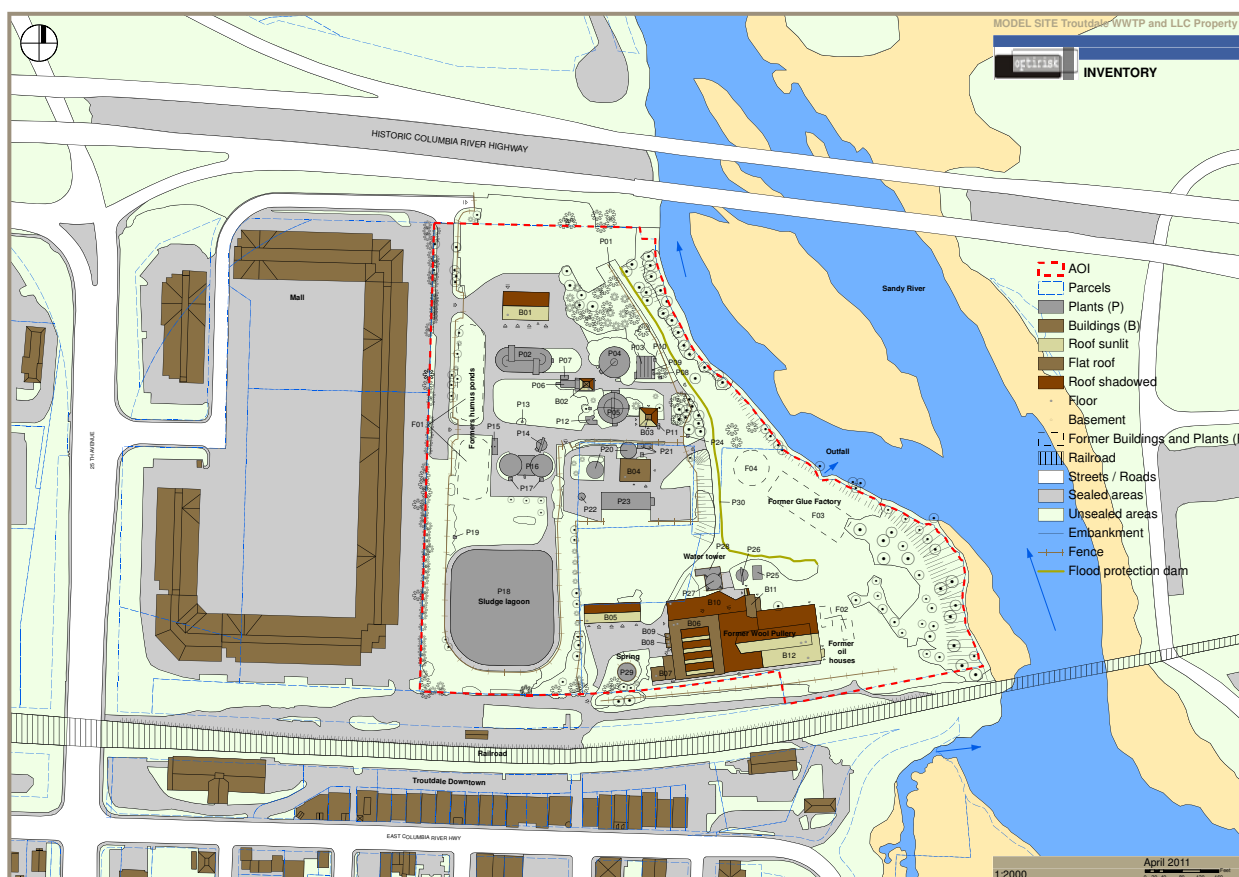
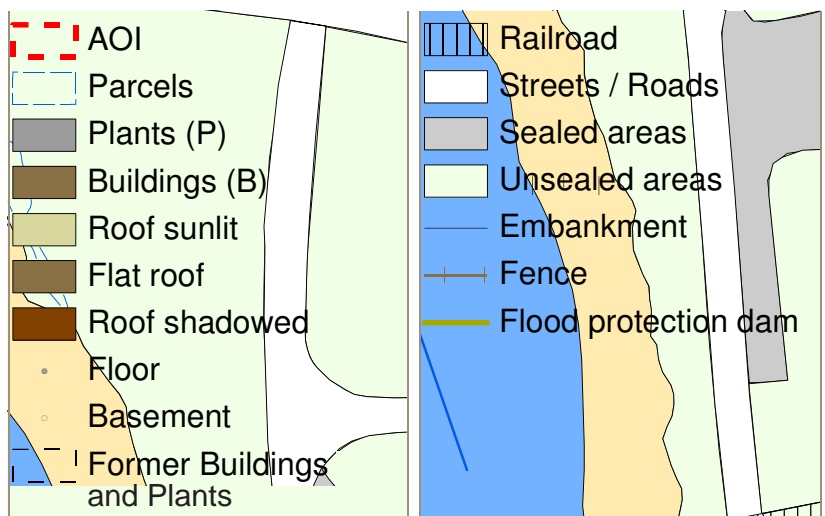
2. INFRASTRUCTURE PROVISION
2.1. Location inside settlement
2.2. Traffic infrastructure
2.3. Technical infrastructure.....

3. PROPERTY USE AND DEVELOPMENT
3.1. Property use.....
3.2. Restrictions on use from the point of urban development aspects
3.3. Area use
3.3.1. Development (buildings existing)
3.3.2. Other physical structures.....
3.3.3. Former Buildings and Plants
3.3.4. Sealed areas
3.3.5. Unsealed areas
3.3.6. Conspectus of areas
3.4. Regional and federal state planning
3.5. Urban land-use Planning
3.6. Project planning law
3.7. Required Permits (City).....
3.8. Other Relevant Plans/Studies (City)
3.9. Prospects of development / visions

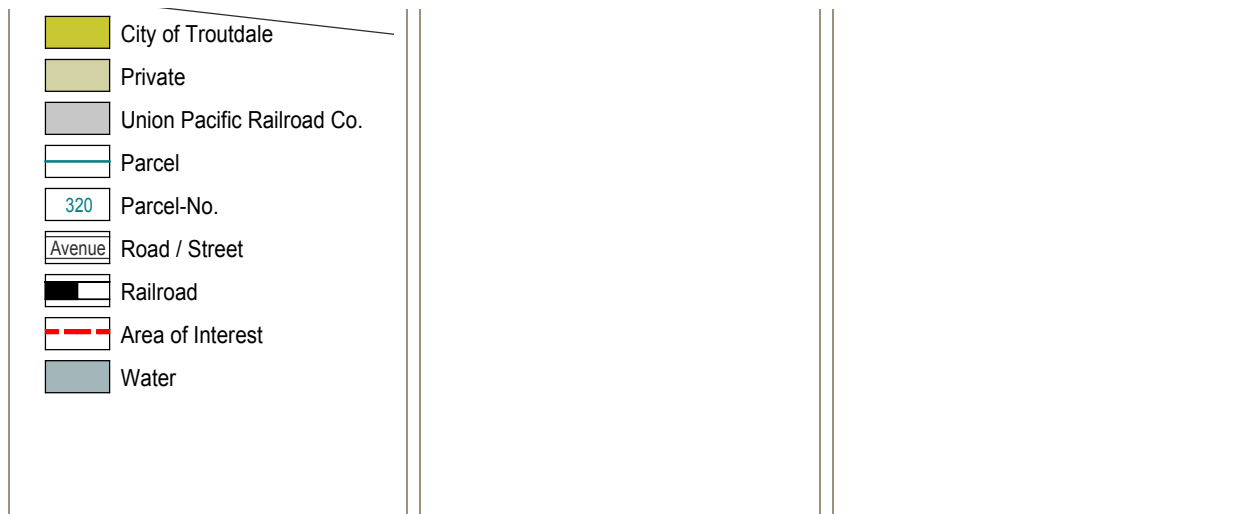
4. NATURE, ENVIRONMENT AND RENEWABLE ENERGIES.....
4.1. Landscape and natural space potential
4.1.1. Natural space, protection zones.....
4.1.2. Climate and hydrology.....
4.1.3. Geography/Geomorphology
4.1.4. Geology/hydrogeology/subgrade
4.2. Brownfield situation

5. APPENDIX: SITE-SPECIFIC REGISTER OF LITERATURE/ SOURCES

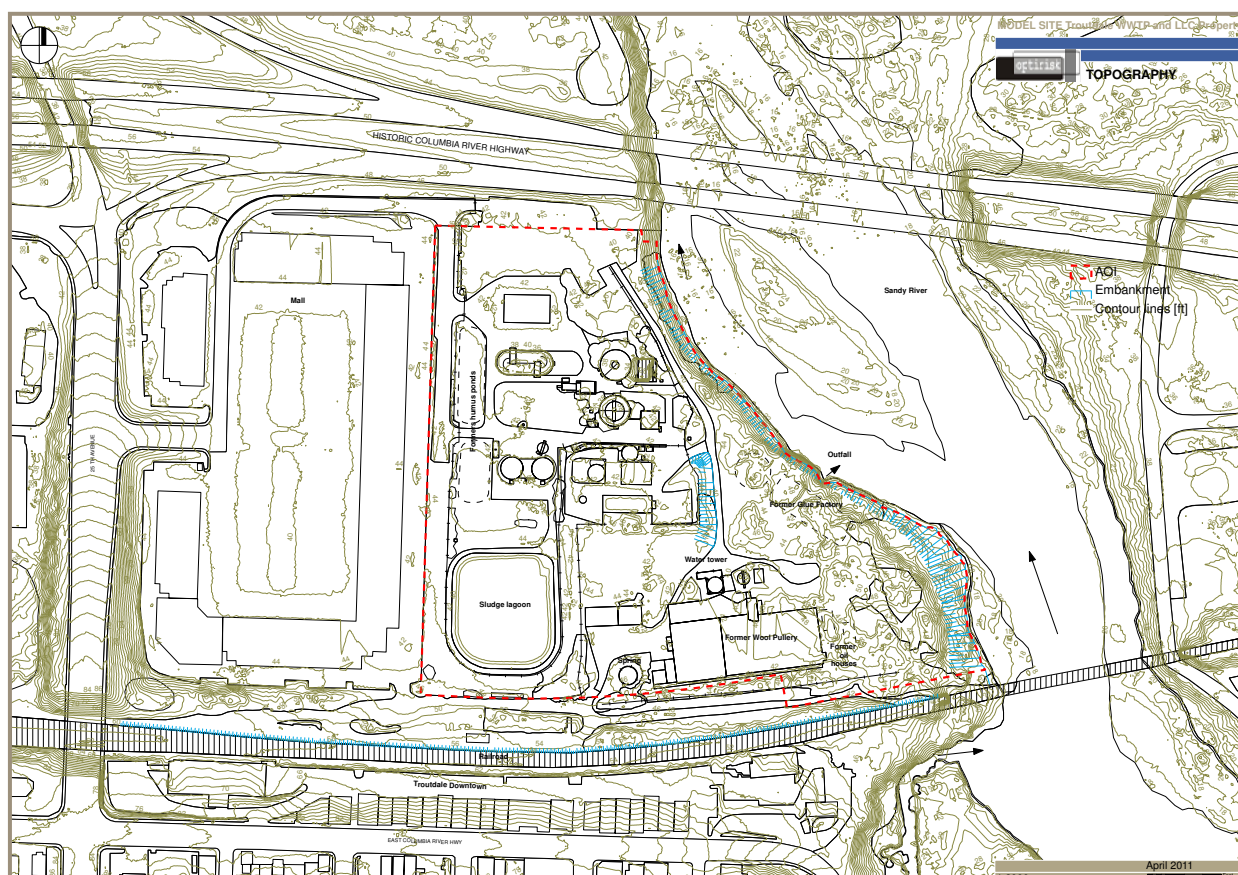
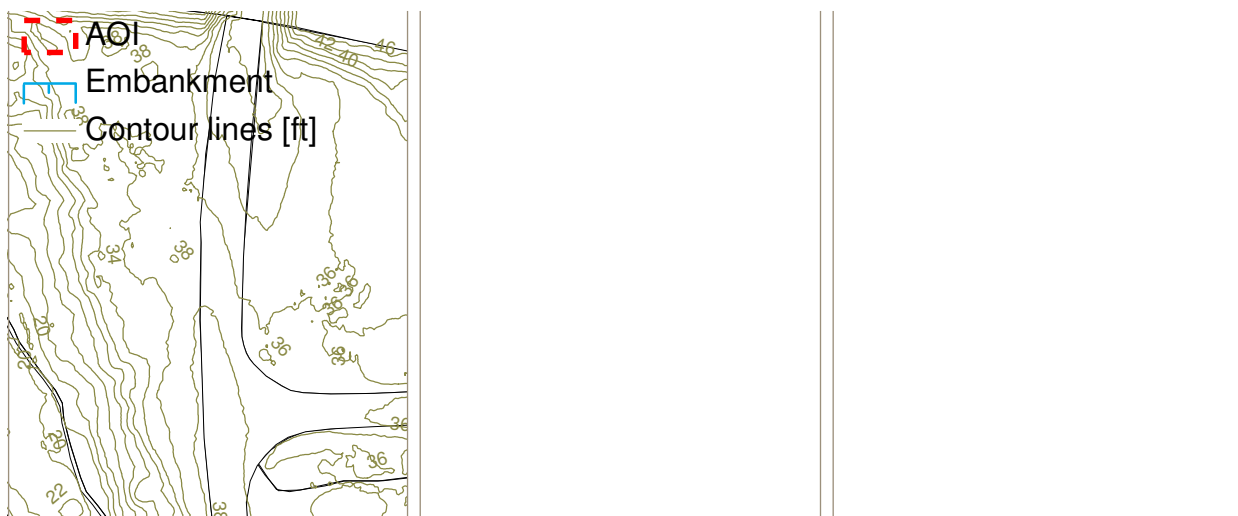
INVENTORY



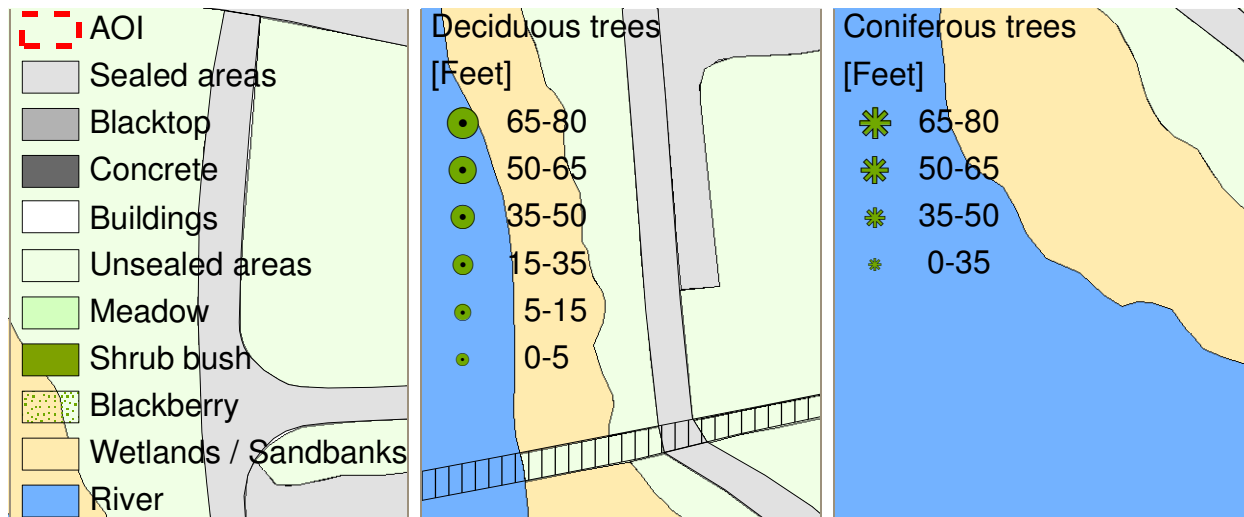
PARCELS AND OWNERSHIP



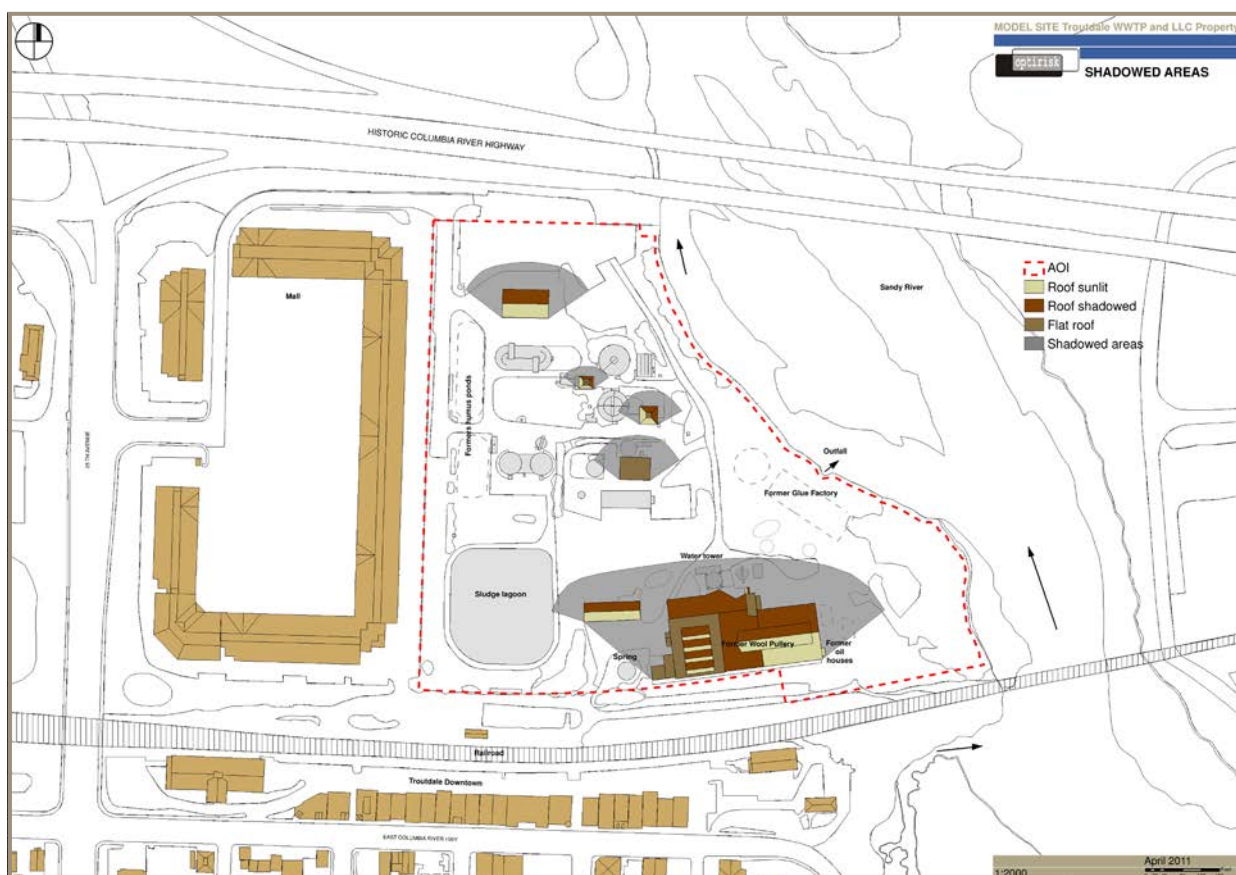
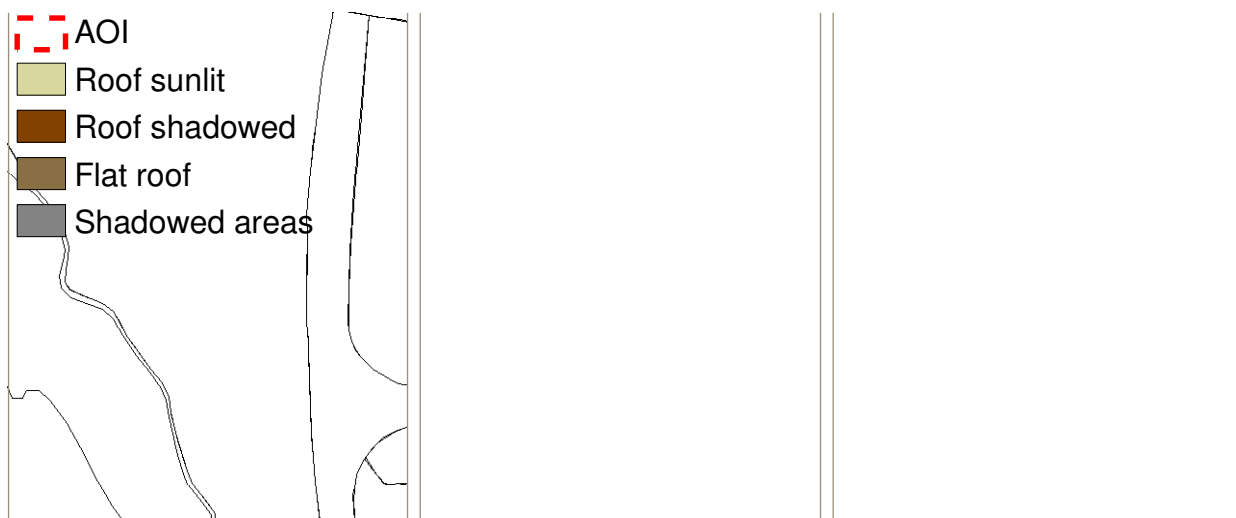
TOPOGRAPHY



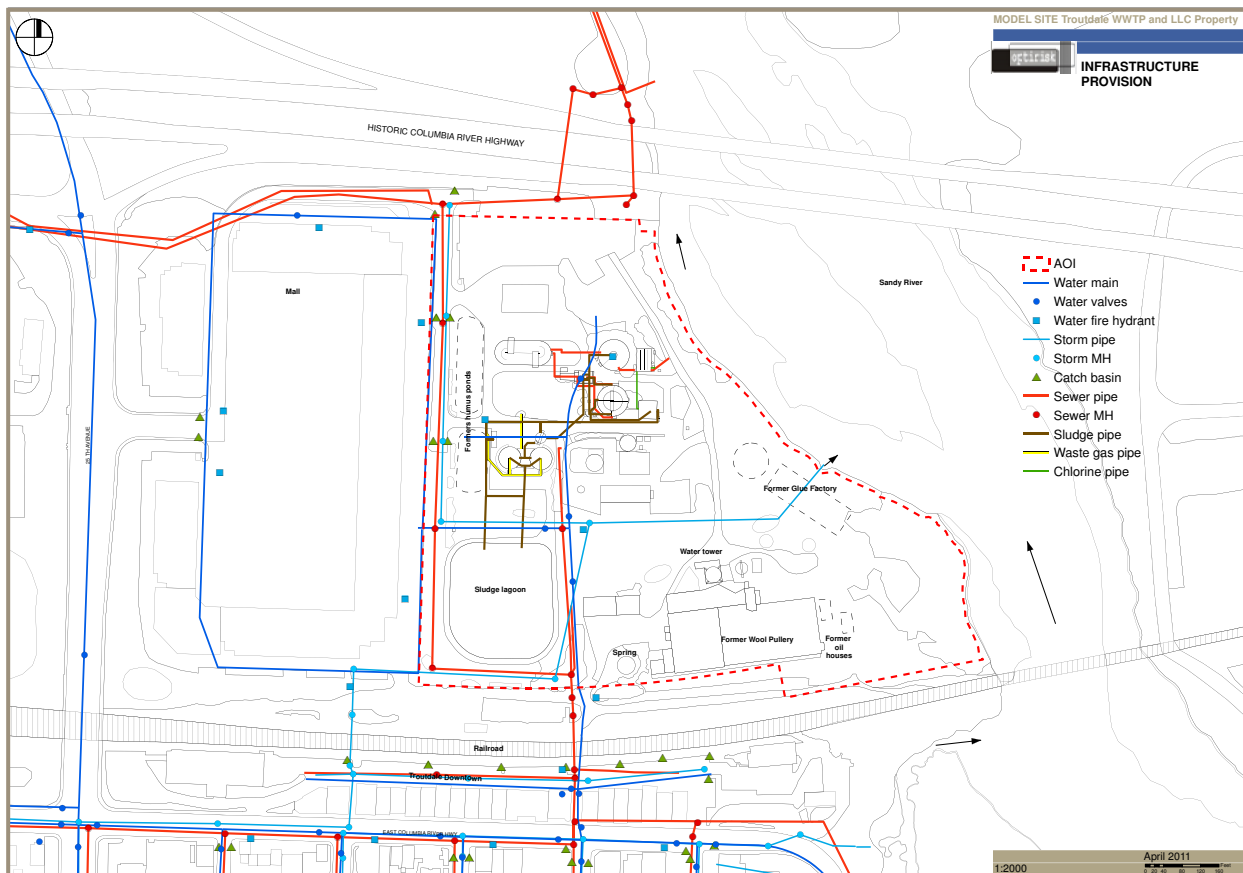
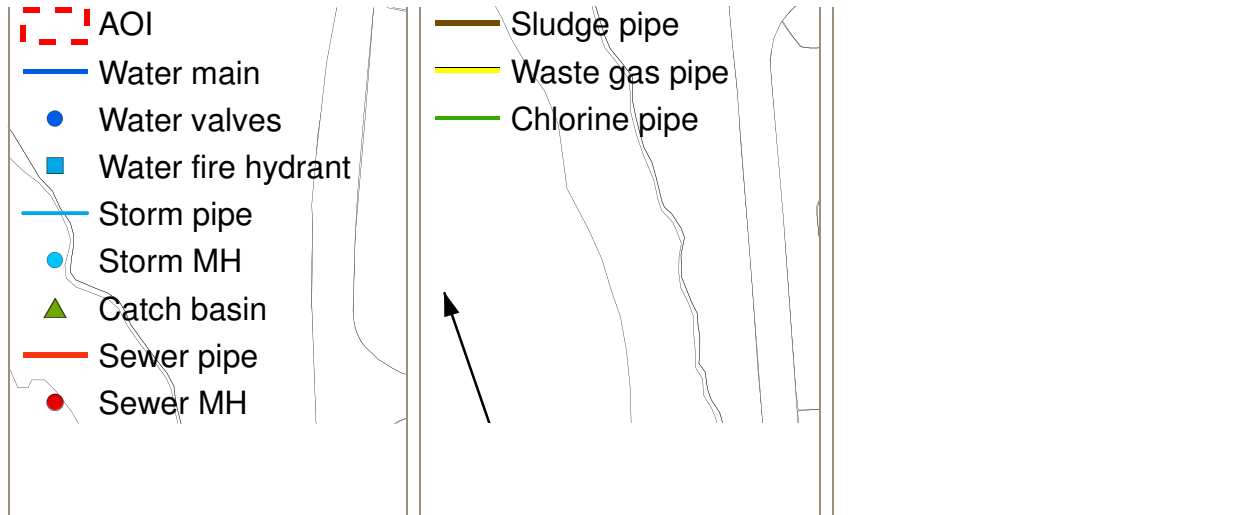
SURFACE & VEGETATION



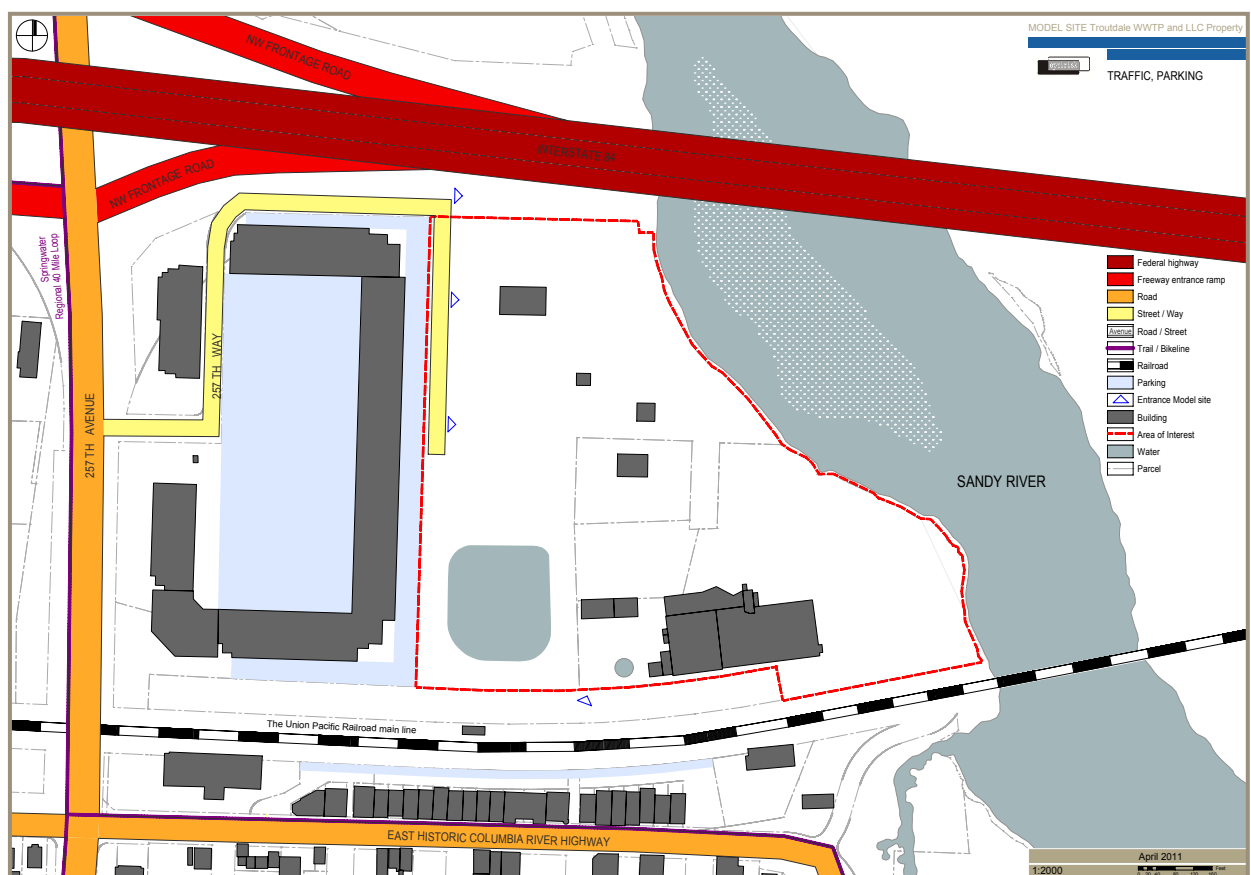
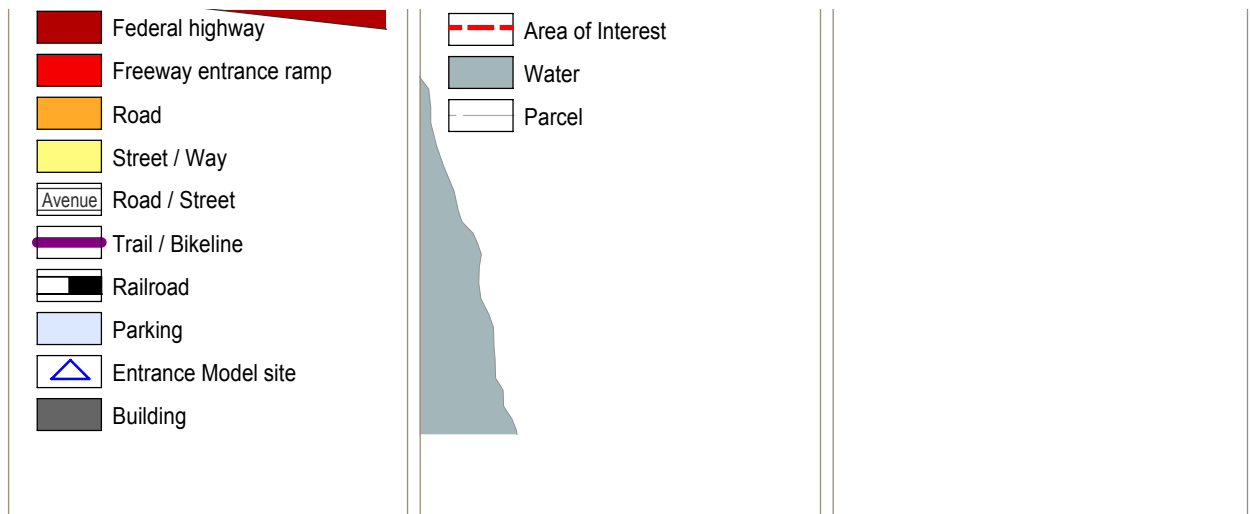
SHADOWED AREAS



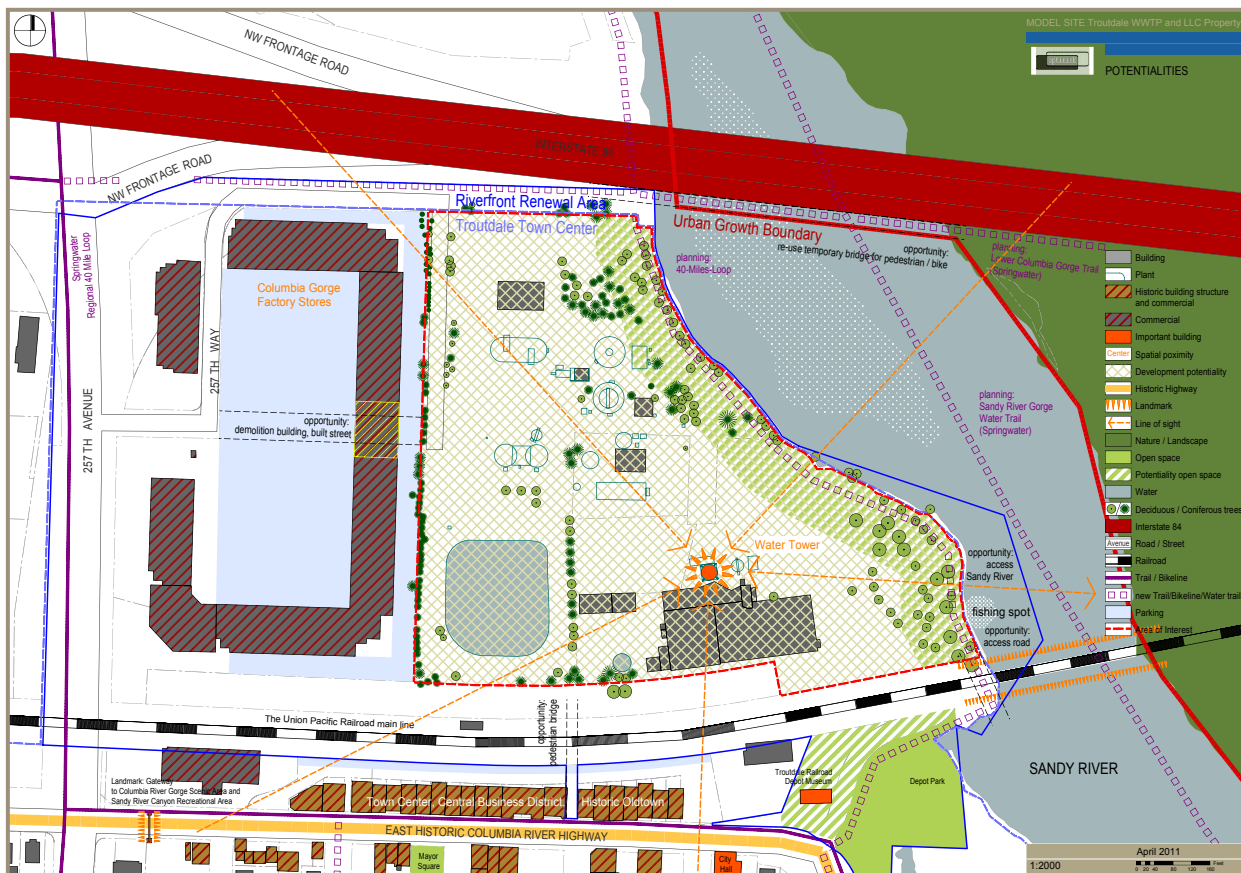
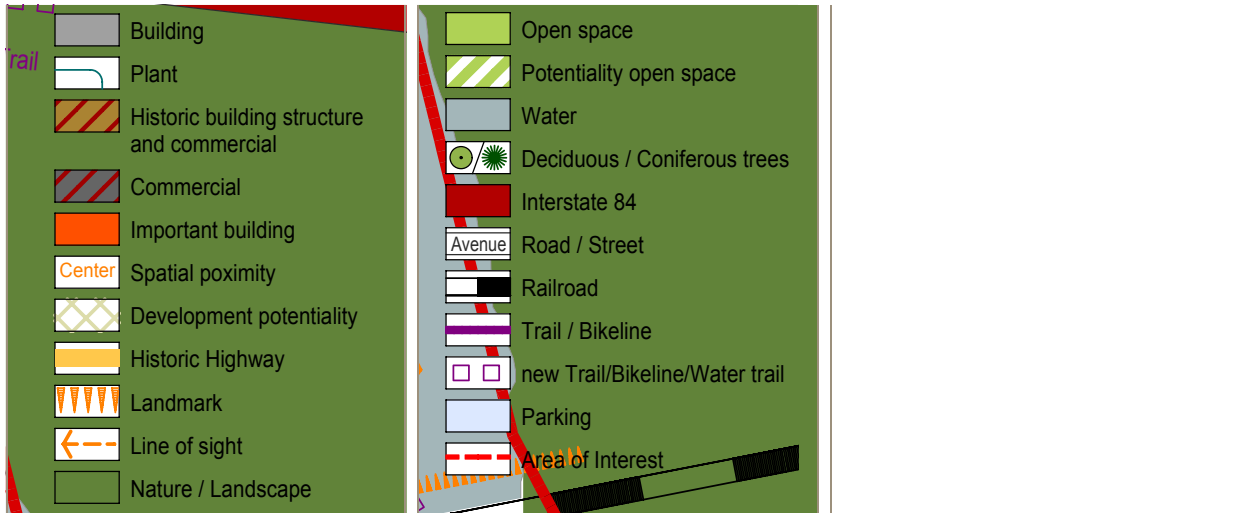
INFRASTRUCTURE PROVISION

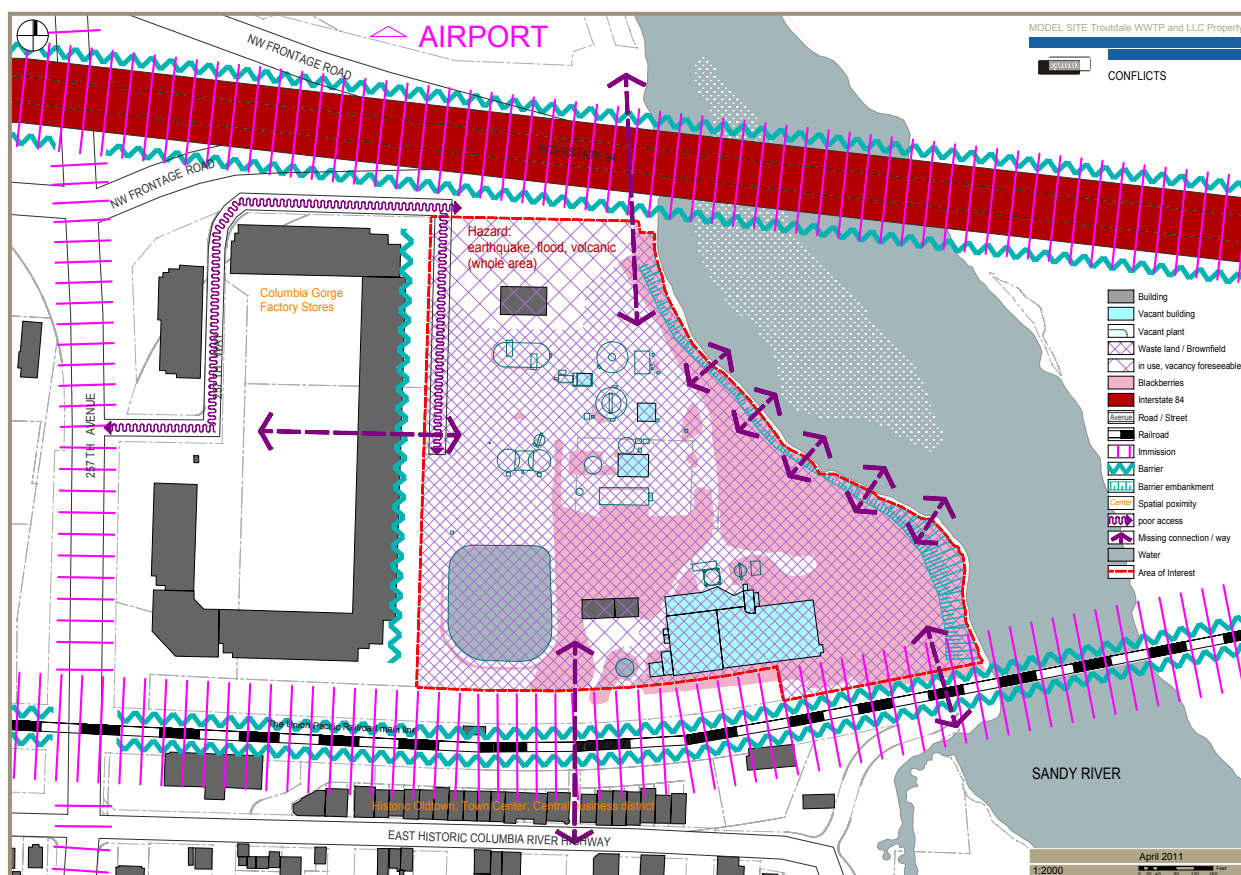
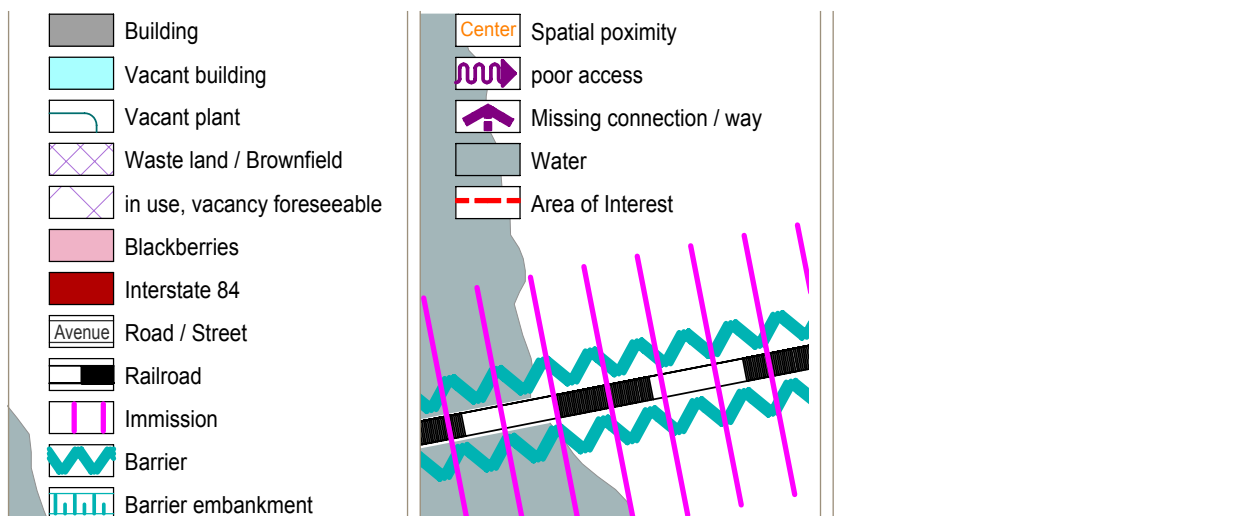


TRAFFIC, PARKING

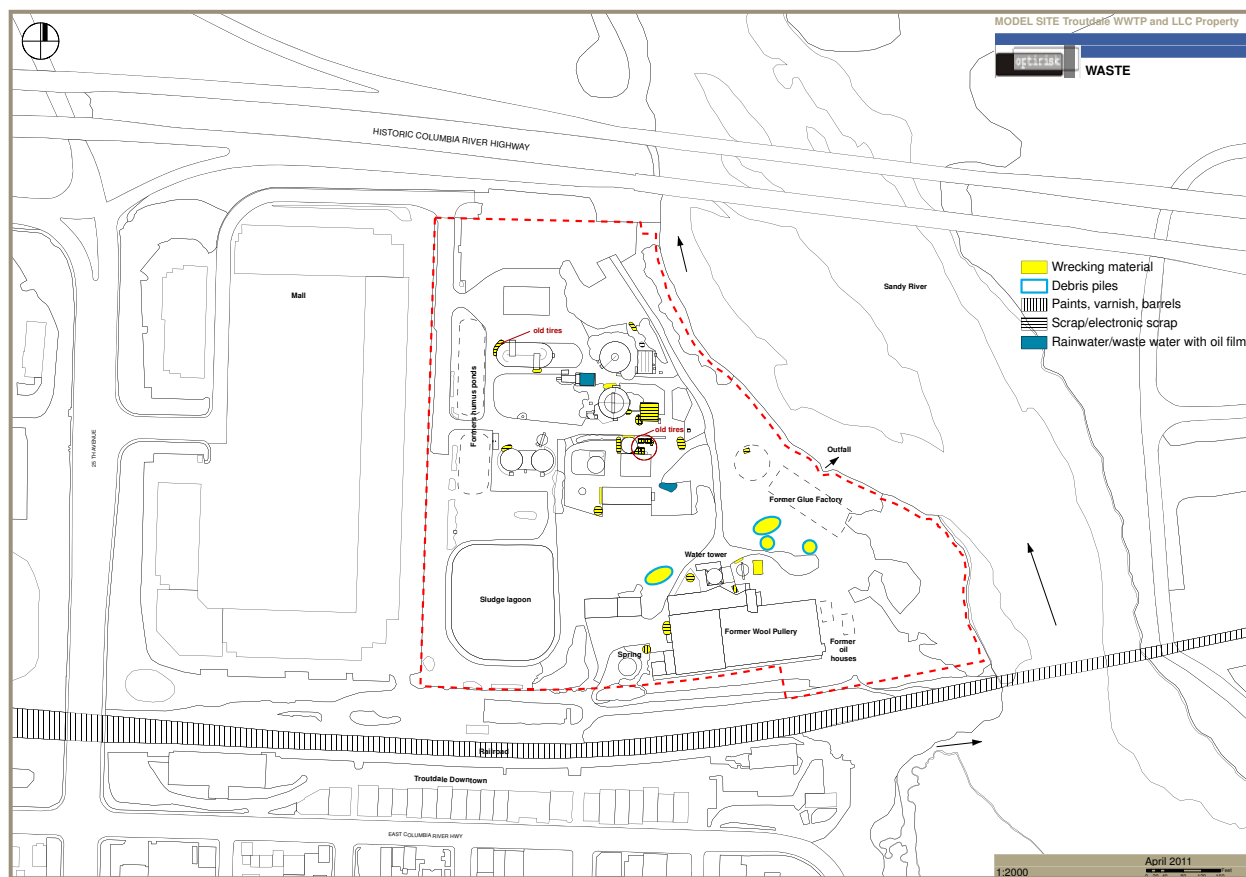
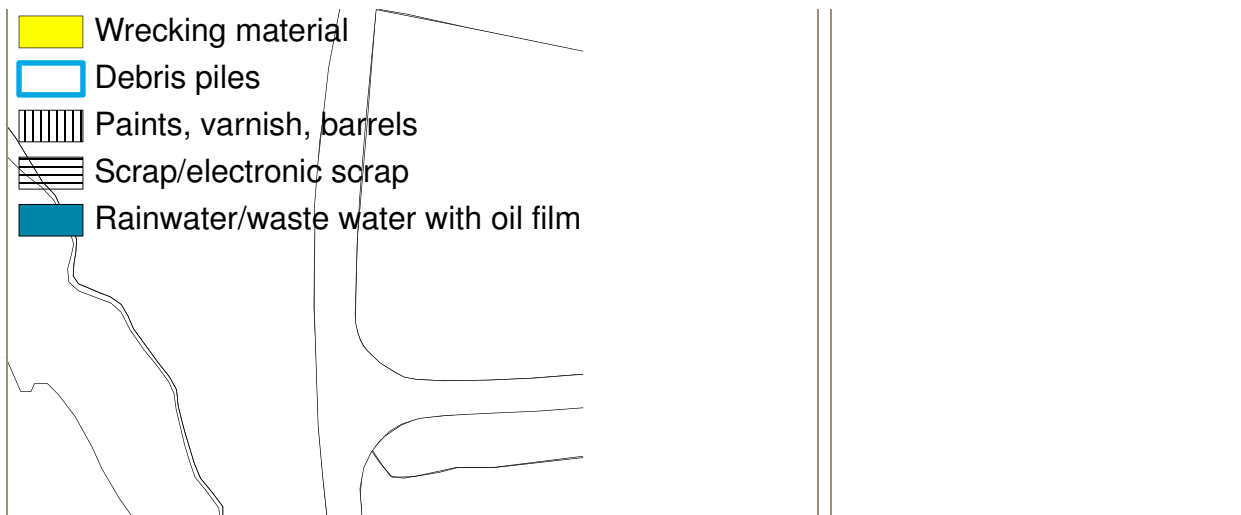


URBAN PLANNING: POTENTIALITIES

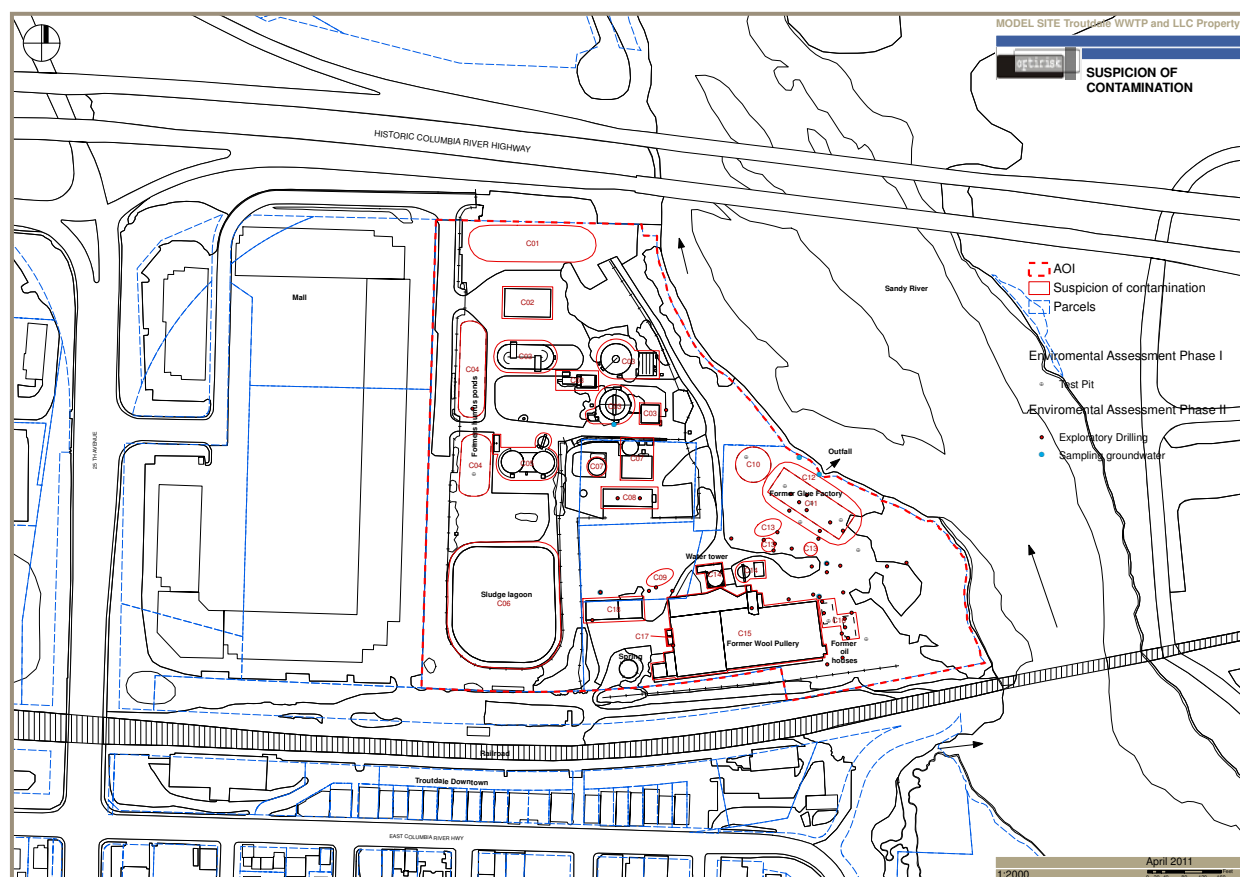
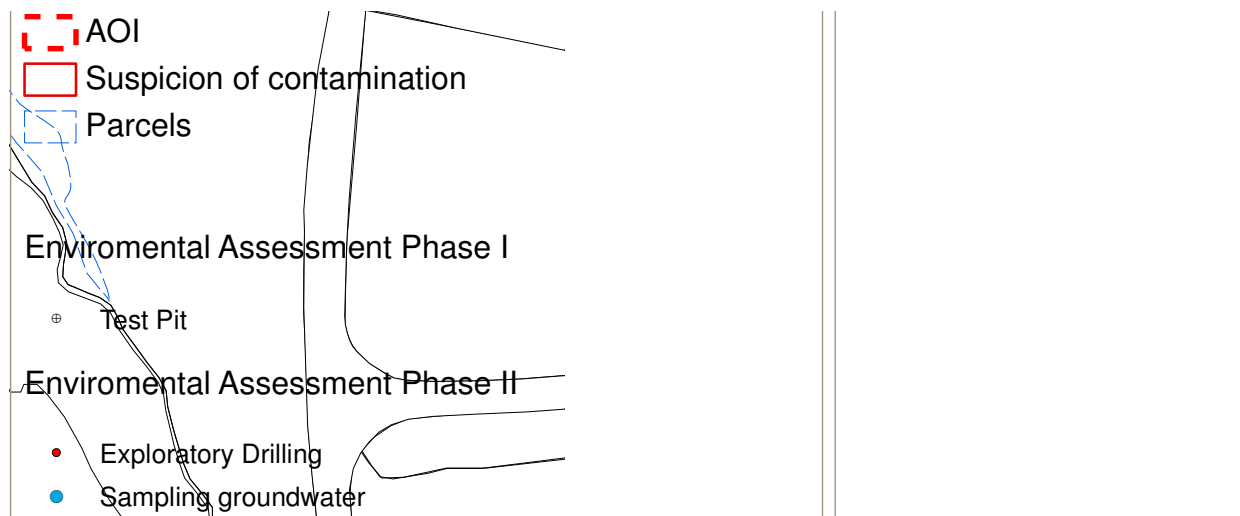




WASTE



SUSPICION OF CONTAMINATION



Impromptu Designs . Workshop

RAISING AWARENESS ABOUT SOIL AND ENVIRONMENT IN URBAN DESIGN EDUCATION: SUSTAINABLE LAND USE MANAGEMENT AS A TOOL FOR URBAN DEVELOPMENT.

Although in today's architectural and planning education the term of "sustainability" plays a prominent role, the main attention is usually drawn to technical knowledge while the basic issue of land consumption and land use does only play a minor role. As part of the German government's strategies for sustainable urban development, the REFINA program is targeting to reduce land consumption for new settlement- and transport-related areas from currently 115 to 30 hectares (284 to 74 acres) per day by 2020. Several instruments and tools have been developed and applied as part of this program in recent years to encounter this problem that is prevailing in many urbanized areas world-wide, in areas of high as well as of low density.

Regarding strategies to reduce land-consumption through brownfield revitalization, the *Institute for European Urban Studies* (IfEU) at the Bauhaus-University's chair of Construction Management and Building Economy (Professur Baumanagement und Bauwirtschaft) considered the question in how far urbanists can develop systematic and methodological thinking for sustainable design processes in brownfield revitalization. Starting with the term of "soil consciousness" an integrative urban study project titled "*Sustainable land use management as a tool for urban development*" in the summer semester 2011 offered a theoretical seminar, excursions, and a design studio focusing on developing two brownfield sites. The participants of the IfEU's master's program 'Advanced Urbanism' included fourteen students from our institute's partner-institution College for Architecture and Urban Planning (CAUP) of Tongji University Shanghai and three exchange students from Richmond University Virginia.

While in most of our study projects we are concerned about planning as a comprehensive and complex system that tries to primarily analyze conditions like urban texture, social conditions and demographics, connectivity and traffic, this project started to think about planning at a very 'grounded' level under the sometimes inflationary use of the term of 'sustainability'. We started with a text-based theoretical seminar to explore interrelations between scientific approaches of land use and urban development under various aspects. This part of the study project covered the topics of sustainable cities under sociological aspects (Dr. Bernhard Stratmann), strategies of brownfield revitalization and regeneration as a planning issue (Ingo Quaas), and the relation between (urban and technical) design-solutions and land use (Philippe Schmidt). The texts spanned from smart grids to biological remediation (like phytoremediation) and economic issues (like tradable development rights).



The students were well-prepared to work on the impromptu workshop about the Troutdale riverfront. Starting with a half day of lectures, this part was jointly prepared with my colleagues from quaas-stadtplaner, Weimar, as part of a bi-lateral exchange between the German Federal Department for Education and Research (BMBF) and the United States Environmental Protection Agency US EPA. The city of Troutdale is located 22 kilometers

east of the centre of Portland, Oregon, and has a city population of nearly 16.000. The brownfield area, located between Troutdale's historic main street, an outlet center, Columbia River Highway, rail-tracks and Sandy River is a gate to the region's rich natural environment and a starting point for many outdoor activities. The area formerly served as a sewage treatment plant and a rendering plant while the new uses, according to the land use plan, could provide space for commercial, mixed office/housing and open space.

The task though was to create an urban design scheme for a contaminated site, based on the *optirisk*® tool, one of the instruments developed in the REFINA research program. The special chance of the planning approach laid in the cooperation with experts from the co-partner JENA-GEOS®, specialized on research and consulting in geosciences. They provided detailed information about industrial remnants on the 8 hectares (20 acres) site, including built structures and areas of soil contamination of different grades. These factors would be influential on design schemes for prospective uses of the brownfield. Their identification as liability factors were considered and implicated in the design process to reduce cost factors and development risks for an adaptive re-use of the site. Almost no limits were given in favor to design creatively – expect those restrictions that evolved as a valuable learning experience: the consideration of limits that were given by the pre-conditions found in and on the brownfield site's soil. Those set an additional factor in the design process, while many questions arising during that process about handling toxic conditions as a planner could be answered through Anika Hohmuth from JENA-GEOS®. Learning, in this project, not only meant to bring forth a variety of so-far unconsidered planning determinants: Understanding that a site, almost cleared from buildings or structures, is not only some developable land for any kind of plans, but that understanding the substance of soil itself becomes an essential part of a plan where every cause and change means a consequence for the living environment.

Questions that could restrict the individual designs were successfully tested through the *optirisk*® tool in the final presentations. At the end, it became obvious that the pre-conditions of an environmentally contaminated site do not predominantly lead to restrictions for designing, but rather can become a sort of guidance to develop opportunities and gain control about possible development risks. For the future planning professionals, the workshop did not only bring new perspectives to understand brownfield revitalization in the context of sustainable land use, but showed that *a lot is not only a lot*, and that our urban realm is part of a complex system where dealing with resources already begins underneath the soil.

The demand for cities and planners to deal with polluted areas is growing. And so is the task to raise prospective planner's awareness for this issue in education, developing their virtues in looking at occurrences underneath the surface in design processes – be it in environmental, social or economic terms. We hope that our international effort in building a bridge between Chinese and American students in Weimar can contribute elsewhere to urban solutions, be it Troutdale, Berlin, Shanghai or wherever our students will work in the future.



PHILIPPE SCHMIDT

is a research associate and lecturer for the chair of Construction Management and Building Economy (Professur Baumanagement und Bauwirtschaft) at Bauhaus-University Weimar, Institute for European Urban Studies.



15.6. WORKSHOP DAY 1

9:00 Uhr

- Welcoming and introduction of workshop team
- general information (REFINA optirisk°)
- Goal of Troutdale-Workshop

9:30 Uhr

Lecture

- Information about model project Troutdale (OR):
 - Portland Region (OR)
 - City of Troutdale (OR)
 - Planning Site incl. environmental situation
- Information about „optirisk°-methodology
 - Environment / urban design / energy

11:15 Uhr

Team

- Tasks and requirements

12:00 Uhr

LUNCHBREAK

13:00 Uhr

Group

work

- Brainstorming for Leitbild (guiding principles): function and design

14:00 Uhr

Plenum

- Intermediary presentation Leitbild (Brainstorming)

15:30 Uhr

Group

- Design: Function / Design / Image

17:00 Uhr

END OF DAY 1

16.6. WORKSHOP DAY 2

9:00 Uhr

Group

- Design phase + Consultations

12:00 Uhr

LUNCHBREAK

13:00 Uhr

Group

- Design phase + Consultations

15:30 Uhr

Plenum

- Intermediary presentation of Designs

17:00 Uhr

END OF DAY 2

17.6. WORKSHOP DAY 3

9:00 Uhr

Group

- Finalizing Designs + Consultations

12:00 Uhr

LUNCHBREAK

13:00 Uhr

Group

- Hand-in of posters (digital: PDF)

15:30 Uhr

Plenum

- Final presentation Design

17:00 Uhr

END OF DAY 3

After
17:01 Uhr

Our Trout-Dears:

Der Rost brennt – alles wird Glut!

The goal of the student workshop at the Institute for European Urban Studies in Weimar was to create ideas and impromptu designs. For this purpose the **optirisk®** team made an introduction to the project as well as conditions and demands from urban planning's and environment's view at the model site on the first workshop day. On this basis and with assistance of the **optirisk®** team and their university's advisor the different working groups of students created 8 constructive and ambitious concepts for a possible site development, which take into consideration the specific contamination situation already ahead of planning.

Next working steps for the cooperation project was to present the development drafts in the frame of a workshop in Troutdale/OR in July 2011. There the concepts were discussed together with city representatives with the objective of choosing 4 of these drafts, which were viewed in detail while further project processing regarding urban planning demands, existing optimization potentials of the contamination situation as well as possible integrations of renewable energies into the site development.

We want to thank all students for their busy work, the excellent work results and the interesting exchange of experience!

*Dr. Kersten Roselt, Anika Homuth
from JENA-GEOS®, Ingo Quaas,
Anja Thor from quaas-stadtplaner*



WORKSHOP PARTICIPANTS

SANDY RIVER OUTPOST

Troutdale is an outpost. For hikers and adventurers exploring nature, it is both the nal element of the human environment they see before venturing into the wilderness and the first sign of civilization when they return. It is the last place to take stock of supplies before heading East into nature, and it is the first place to resupply from an adventure on the river or in the forest. It is a place to stage camping and canoe trips, to rest during a trek on the 40 mile Powell Butte-Barlow Trail, or to relax at the boundary between man and nature.

The Sandy River Outpost has the potential to bridge the residential areas south of the rail line to the Sandy River and the wilderness to the east. It can serve as an outpost and supply station at the frontier of Portland while providing residents with simple access to essential services.

The intention of this proposal is threefold:

1. Establish North Troutdale as an outpost for adventurers seeking to explore the wilderness.
2. Create greater access and linkages between the residential areas of Troutdale and the Sandy River.
3. Provide essential services for the residents of Troutdale.



GROUP 1: Alison Alexander, Michael MacKenzie, Stuart Squier

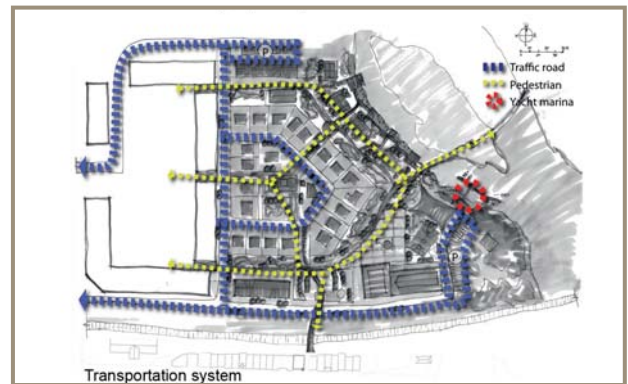


PLAYGROUND FOR COMMUNITY LIFE

A small community will be the core function of this area. And as an interface of city and nature, we want to make this brownfield into an integrated facade. So we design this site as a mixed land use of residential, retail, sport, and park. Also it is an interface of car-driven and walkable area so a pedestrian network which is walkable an bicycle-friendly and also connect the site with surrounding areas.



GROUP 2: Lu Hui, Chen Jingjing



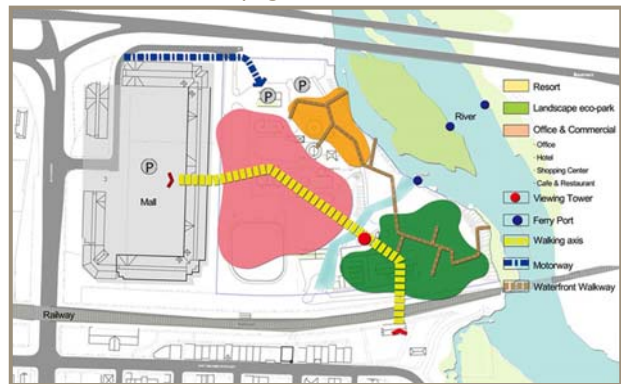
THE JOINT

The starting point of the whole design is to make the specific site to be a new joint between the urban fabric in the south-west and the natural landscape in the north-east side by the several design approach below:

1. Landmark (water tower) - view joint
2. Center point - space joint
3. Bridge (ferry between AOI and island) - transportation joint



GROUP 3: Chen Yixin, Zhang Min-qing



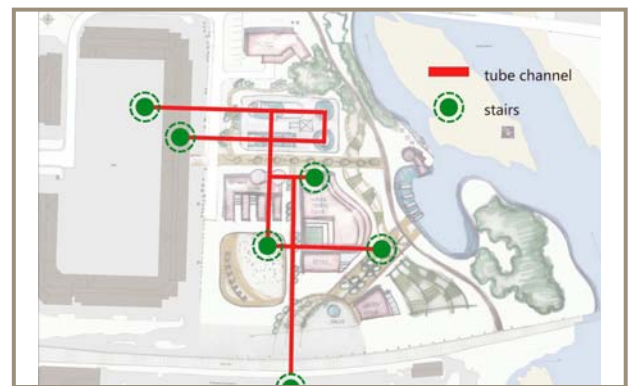
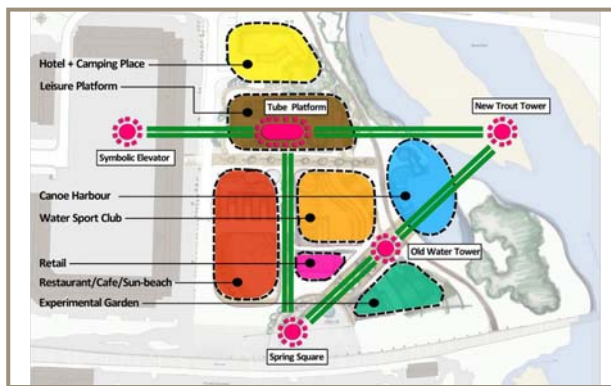
AQUA DELTA

Water brings people to here, so we use aqua element to revitalize the site and link the surrounding areas. The specific concepts as followed:

- Aqua activity
- Industrial heritage rememory
- Delta linkage
- Environmental strategy



GROUP 4: Guan Ye, Zhou Xuan



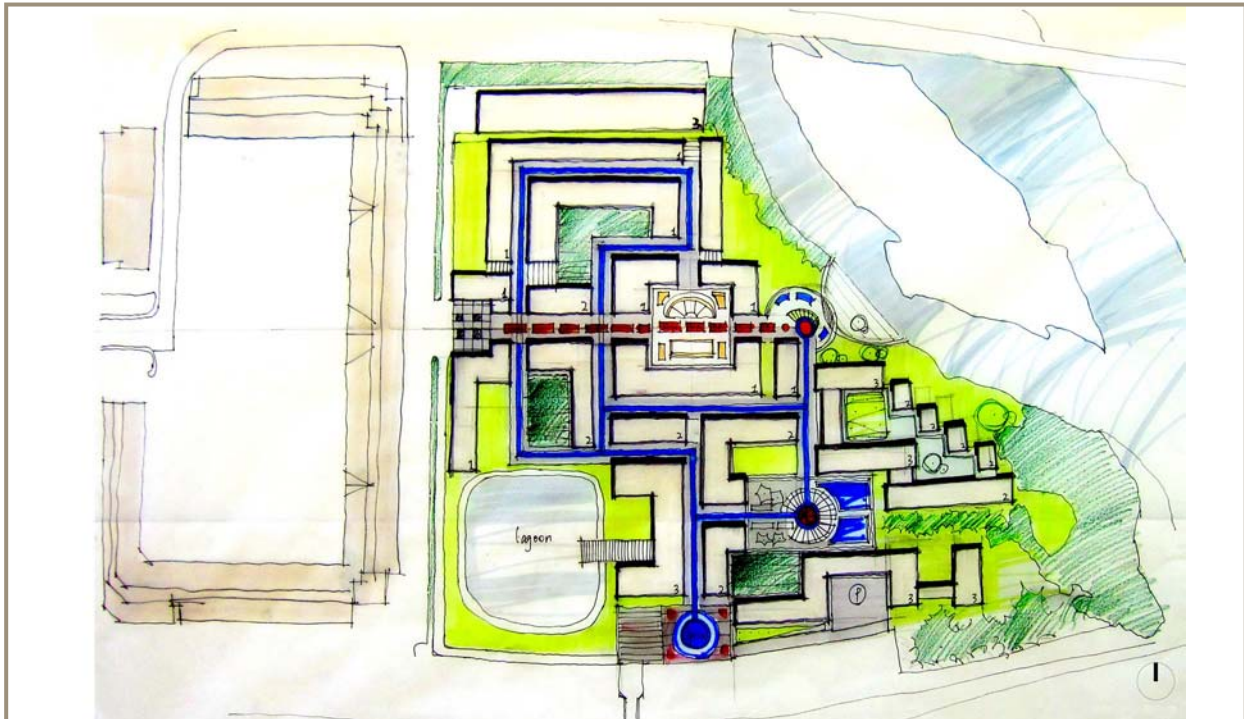
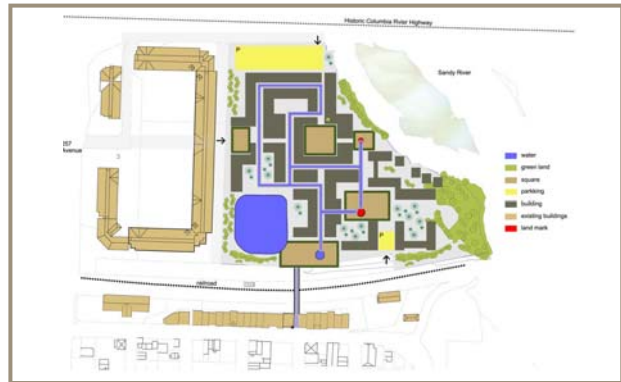
SHOPPING BANK

The bank refers to the river bank obviously. We would like to make Water the key element to the site and the most attractive factor from the design. Although there is a shopping mall to the west of our site, and a historic street for commerce, there are no connections between both. So we want make our site also for shopping to link with the two others. And each one will possess its own business direction.

Therefore, our idea „Shopping Bank“ make Water element and the main function-Shopping together trying to build a good shopping atmosphere for the whole city.



GROUP 5: Zhao Zhen, Huang Su



NEW ROOF - NEW FACE



We have three slogans in our design.

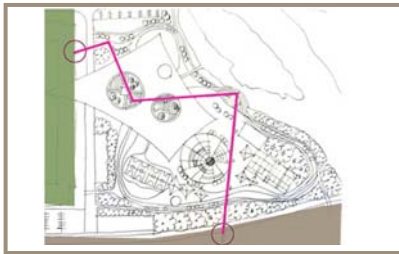
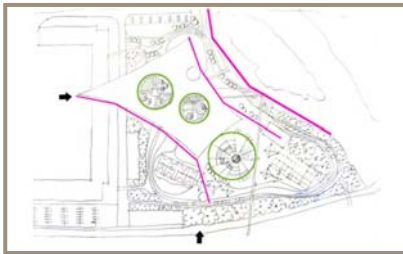
1. Have more fun.
2. A new face.
3. bridge.

It rains a lot in this area, so we want to provide not only outdoor courts but also indoor courts. We design a big roof with tensioned membrane structure and buildings with different functions under the roof, such as coffee shop, restaurant, gym, Rock climbing. We also use the big roof to collect rain water, to get a water stream in the site, combined with landscape. People can see the big roof from the highway and train, so it also a new landmark of the town. We restore the water tower, it is higher than the big roof, and can be a landmark and historical marker of the site.

A 4-meters high pedestrian way connects the sports park and the town center, connects the shopping mall and the big roof.



GROUP 6: Zhang Yiping, Zhu Yijie



DYNAMIC CITY CENTER

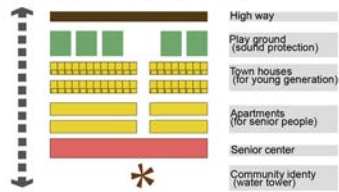


- Shopping (agricultural product)
- Hotel
- Sport
- Office
- Residential
- Service (senior center, tourist information, restaurant, cafe)
- Recreation (camping, extreme sport site)

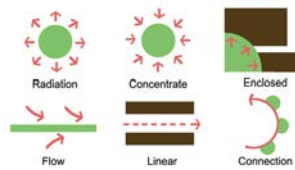


GROUP 7: Chen Zhi, Nie Mengyao

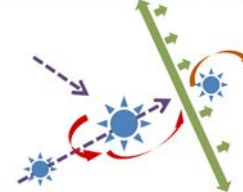
DYNAMIC I: MIX OF GENERATIONS



DYNAMIC II: DIVERSITY OF SPACES



DYNAMIC III: FUN WITH WALKING



1. Play ground
2. Office building
3. Senior houses
4. Youth family houses
5. Plank Roads
6. Decking
7. Sky Walk
8. Existing spring
9. Water tower square
10. Center of Service for the Elderly
11. Agriculture service
12. Agriculture market
13. Hostel
14. Water square
15. Extreme sports site
16. Cinema
17. Restaurant
18. Tourist Information
19. Camping service

BLUE GATE

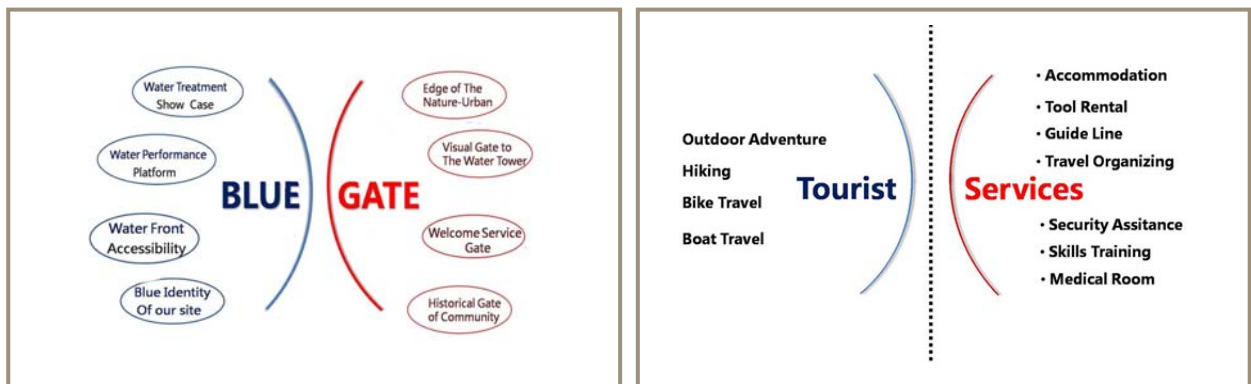
BLUE refers to the site identity which has a strong relationship with water. We try to illustrate the NEW BLUE concept by introducing activities which are closely related to water and also the revitalization of the water front area. For instance, the original Sludge lagoon will be turned into a water performance platform for public activities.

GATE concept can be interpreted by four phases:

- the site is a gate or a fringe place of urban to the nature
- breaking a brand new axis from the original shopping center directly into the site
- a tourist service center by renovating the old industrial building and
- connecting the service center with the historical street

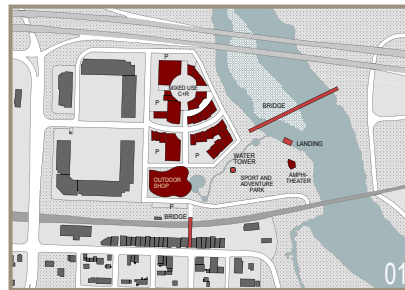


GROUP 8: Qian Chuan, Liu Jing

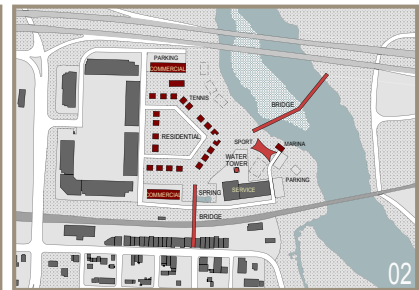


Impromptu Designs

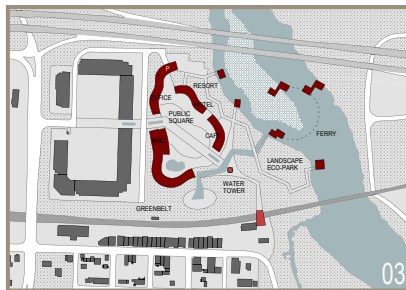
Design:
Students of Institute for European
Urban Studies, Weimar (Germany)



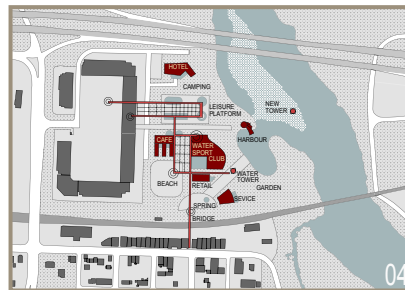
OUTPOST



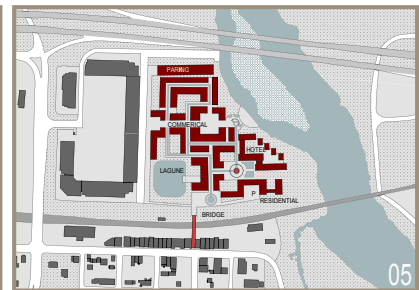
PLAYGROUND



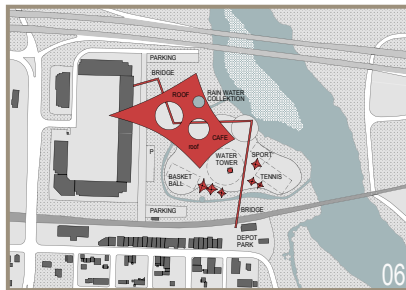
JOINT



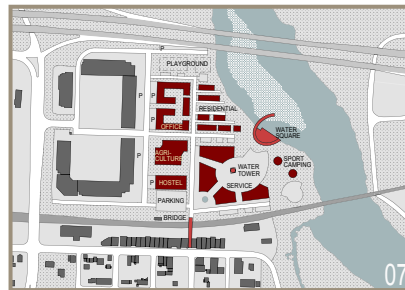
AQUA-DELTA



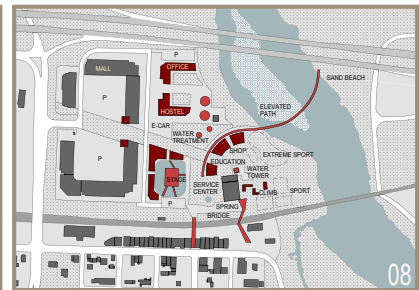
SHOPPING-BANK



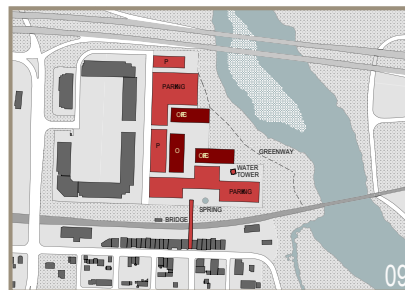
NEW-ROOF



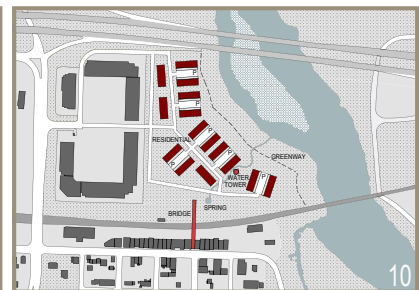
DYNAMIC-CENTER



BLUE-GATE

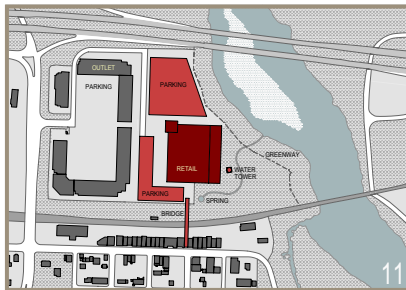


OFFICE-CAMPUS

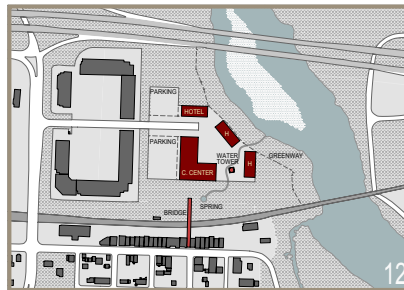


RESIDENTIAL

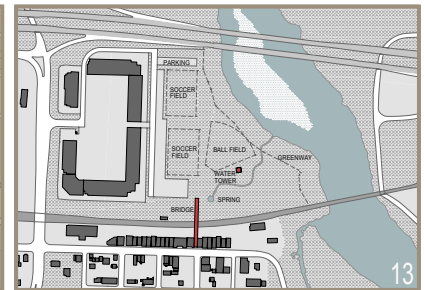
Design:
Planner, Troutdale (Oregon U.S.)



RETAIL

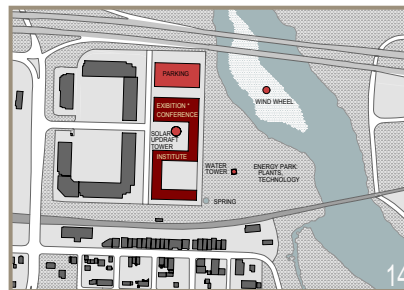


CONFERENCE-HOTEL

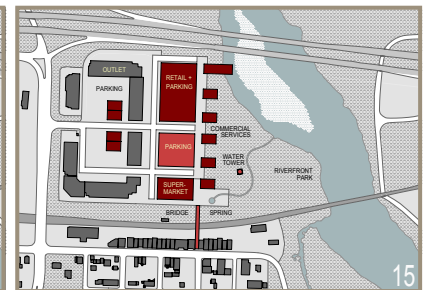


INTERIM

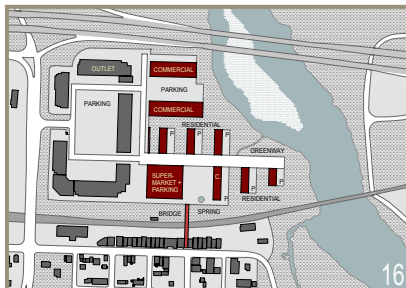
Design:
 optirisk® team,
 Jena / Weimar (Germany)



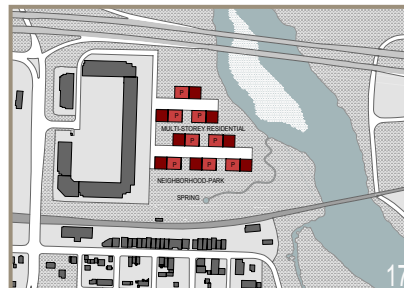
ENERGY-INSTITUTE



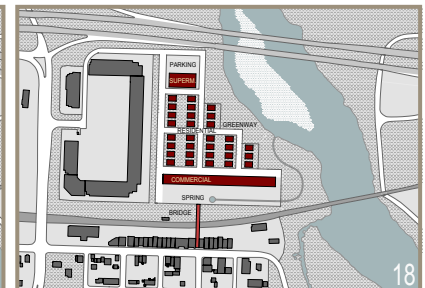
RETAIL_COMMERCIAL



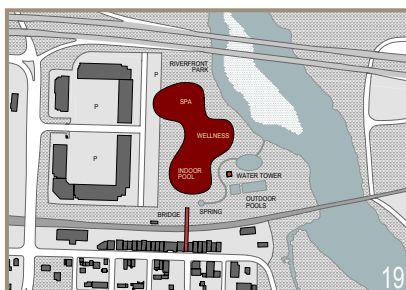
MIXED-USE



NEW-SKYLINE



TRADITIONAL-STRUCTURE



SPA-POOL

WORKSHOP IN TROUTDALE / PORTLAND

*programm workshop
(21 - 22 July 2011)*

Thursday, July 21

Target Group: City representatives, local and regional authorities, site owners, planners, investors and other interested groups

- 10:00 – 10:30 a.m. Welcome and introduction to the OPTIRISK project
Mr. Ingo Quaas and Mrs. Anika Homuth
- 10:30 – 10:50 a.m. Development of a method of an environmental risk prognosis for brownfields in the space of U.S.-American conditions
Mrs. Anika Homuth
- 10:50 – 11:10 a.m. Discussion about the developed method and (if necessary) further modifications
All participants
- 11:10 – 11:40 a.m. Results of site assessment 'Environment' and 'Renewable Energies' and presentation of risk prognosis model for Troutdale WWPT and LLC Property
Mrs. Anika Homuth
- 11:40 – 12:00 a.m. Questions and discussion of work results
All participants
- 12 a.m. – 1 p.m. Lunch break
- 1:00 – 2:30 p.m. Results of site assessment 'Urban Planning' and presentation of urban development drafts for Troutdale WWPT and LLC Property
Mr. Ingo Quaas
- 2:30 – 3:00 p.m. Questions and discussion of work results
All participants

Friday, July 22

Target Group: City representatives, local and regional authorities, site owners, planners, investors and other interested groups

- 10:00 – 10:30 a.m. Presentation of the UDEM (Urban Development Evaluation Matrix) and criteria to evaluate site development concepts in the space of German conditions
Mr. Ingo Quaas
- 10:30 – 11:30 a.m. Discussions about and modifications of relevant and suitable criteria to evaluate site development concepts in the space of U.S.-American conditions and adaption of the UDEM
All participants
- 11:30 – 12:00 a.m. Selection of 4 preferred urban development drafts for Troutdale WWPT and LLC Property in view of environmental situation and urban planning criteria, Discussion of further working steps
All participants

Mr. Quaas and Mrs. Homuth travelled to Troutdale for another workshop in July 2011. Besides the presentation of so far achieved work results, the focus was on discussion and preselection of preferred impromptu designs for the model site through the City representatives, which should be viewed in detail and which should serve as basis for creation of site redevelopment concepts during further project implementation.

Result of preselection: 01 OUTPOST
 03 THE JOINT
 04 AQUA DELTA
 06 NEW ROOF NEW FACE
 08 BLUE GATE

Favourite: 04 Lagune/Harbor + 01 Stream + 03 Buildings
 + 06 Roof + Renewable Energy



*DISCUSSION OF IMPROMPTU
 DESIGNS*

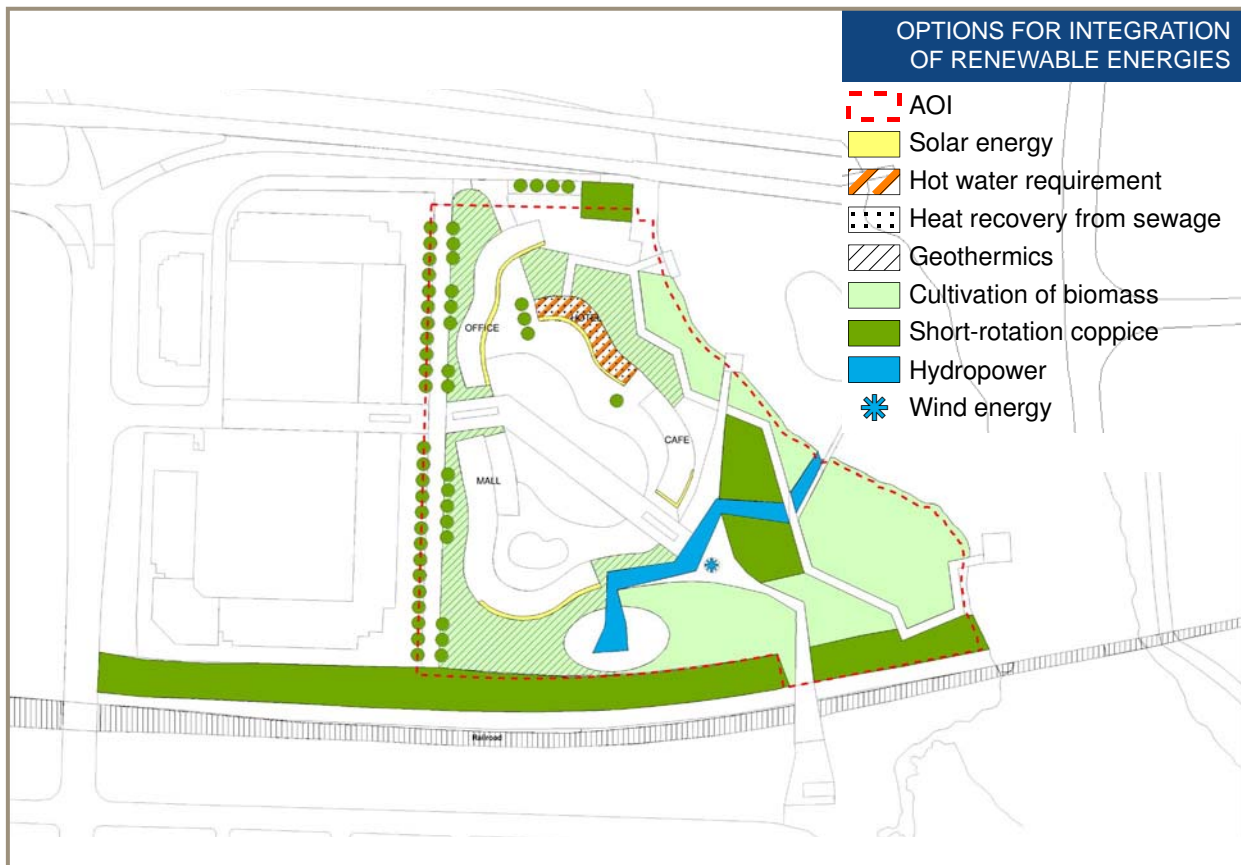


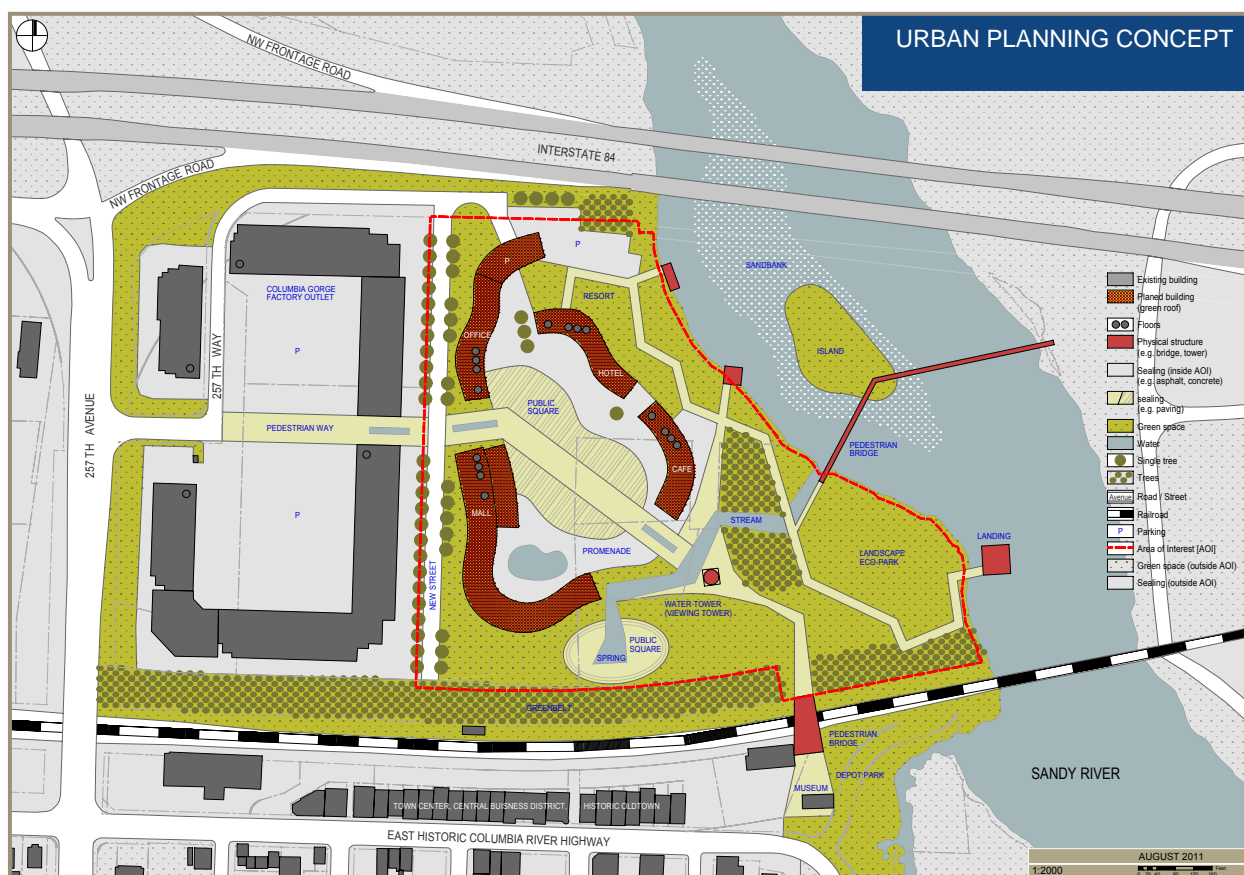
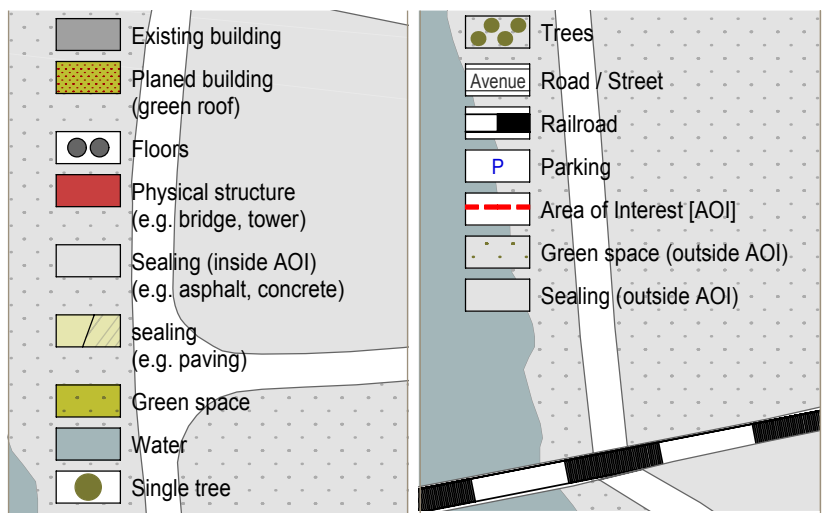
*D. MACCOURT (ATER WYNNE),
 R. FAITH (CITY OF TROUTDALE),
 I. QUAAS, A. HOMUTH, E. MCCAL-
 LUM (CITY OF TROUTDALE)*

Site Redevelopment Concepts

ALTERNATIVE A: THE JOINT

AUTHORS OF THE ANIMATIONS:
CHEN YIXIN, ZHANG MINQING





URBAN DEVELOPMENT EVALUATION MATRIX

for municipalities, urban apartment corporation,
design counselor, juries, etc.

Brownfield:	Troutdale WWTP and LLC Property	Step 1: Definition of criteria	
Draft:	A - The Joint	Positive effect (3 points)	Neutral effect (1 point)

Category townscape and landscape		
urban skyline / long-distance effect	enhancement / new long-distance effect	slight enhancement
visual relationships / visual axis	establish (Watertower, Sandy River, Bridges)	partial enhancement
topographic classification / quality of open space	high	partial enhancement
building lines / spatial frame	-----	partial enhancement
cubature / proportions	harmonious	partial enhancement

Category building and spatial structure		
land use category	correspond to zoning map (GC, MO/H)	partially correct
density	correspond to development code	partially correct
sealing (as: building, asphalt, concrete, ...)	compliant with usages, but low	partial enhancement
coverage type (open, close, deviant)	-----	partial enhancement
elements of regional / local typology (architecture)	-----	partial enhancement

Category potential of conflict		
emissions	no	partial enhancement
monument conservation / monument protection (by law)	-----	partial enhancement
environmental protection (by law)	complied	partial enhancement
neighborhood (as: use, ...)	-----	partial enhancement
urban climate / micro climate	positive influence	average

Category potential of revaluation		
impulse effect / catalyst	arises	arises
sustainability input (social, economic, ecologic, cultural)	arises	arises
rebrand / reform (image)	enhancement	enhancement
innovation input	high	enhancement
building culture input	high-quality design	slight enhancement

Result:	Draft score
----------------	--------------------

The maximum possible score:

Explanation:

The urban development evaluation matrix is a tool for comparing and evaluating urban concepts.

Step 1: Define the applicable criteria/targets for the development of the site for the specified categories. This applies to the targets: positive effect - in high-quality, superior, improving, according to the objectives (3 points), neutral effect - average, not improving, not deteriorating (1 point) or negative effect - contrary to the objective, deteriorating, incorrect (0 points).



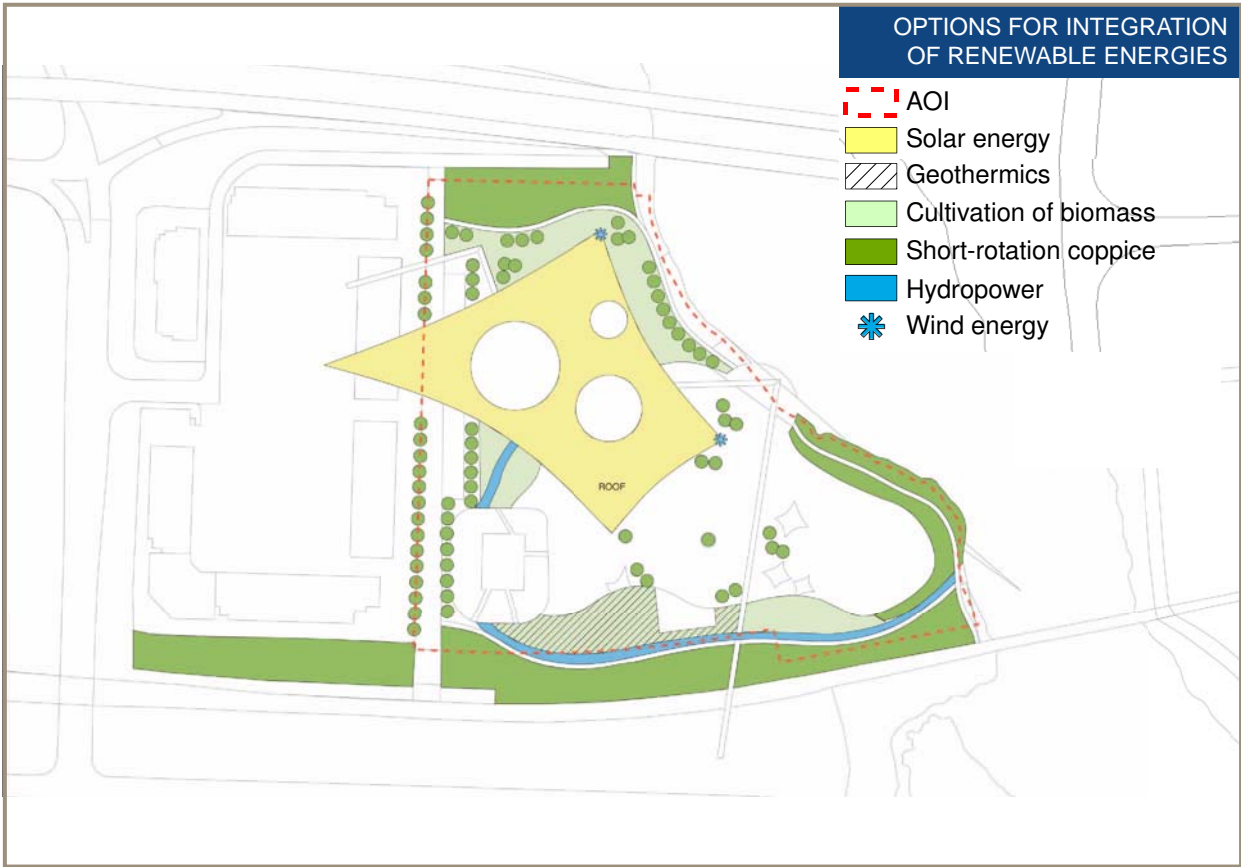
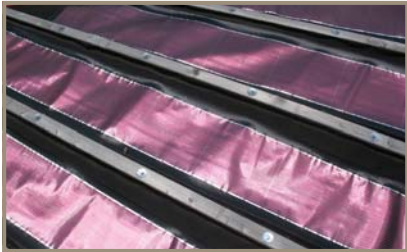
Step 1: Definition of the specified categories		Step 2	Step 3
Neutral effect (1 point)	Negative effect (0 points)	Weighting	Score
		35%	
slight enhancement of the watertower	no / negative long-distance effect		3
partially establish	no		3
average	low / without		3
			0
average	colossal / inharmonious		1
		15%	
partially correspond to zoning map	contradict zoning map		1
partially correspond to develop. code	contradict development code		1
medium	to large / colossal		3
			0
			0
		15%	
slight	important		3
			0
partially complied	not executed		3
			0
average influence	negative influence		3
		35%	
arises slightly	no		3
arises partially	no		3
enhancement partially	no enhancement / negative		3
slight	no		3
slight-quality design	negative design		3
Total		100%	
			1085
			1.215

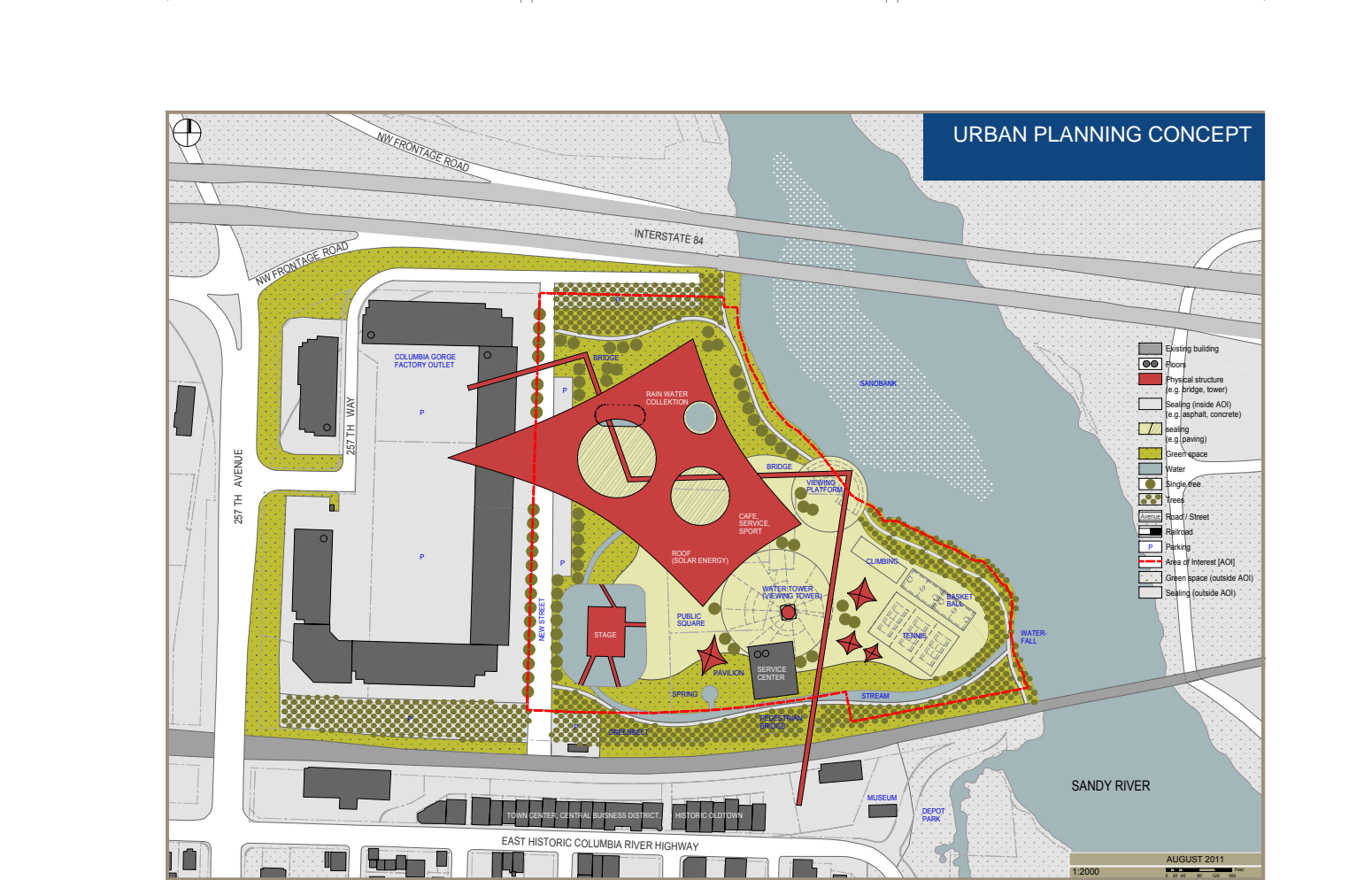
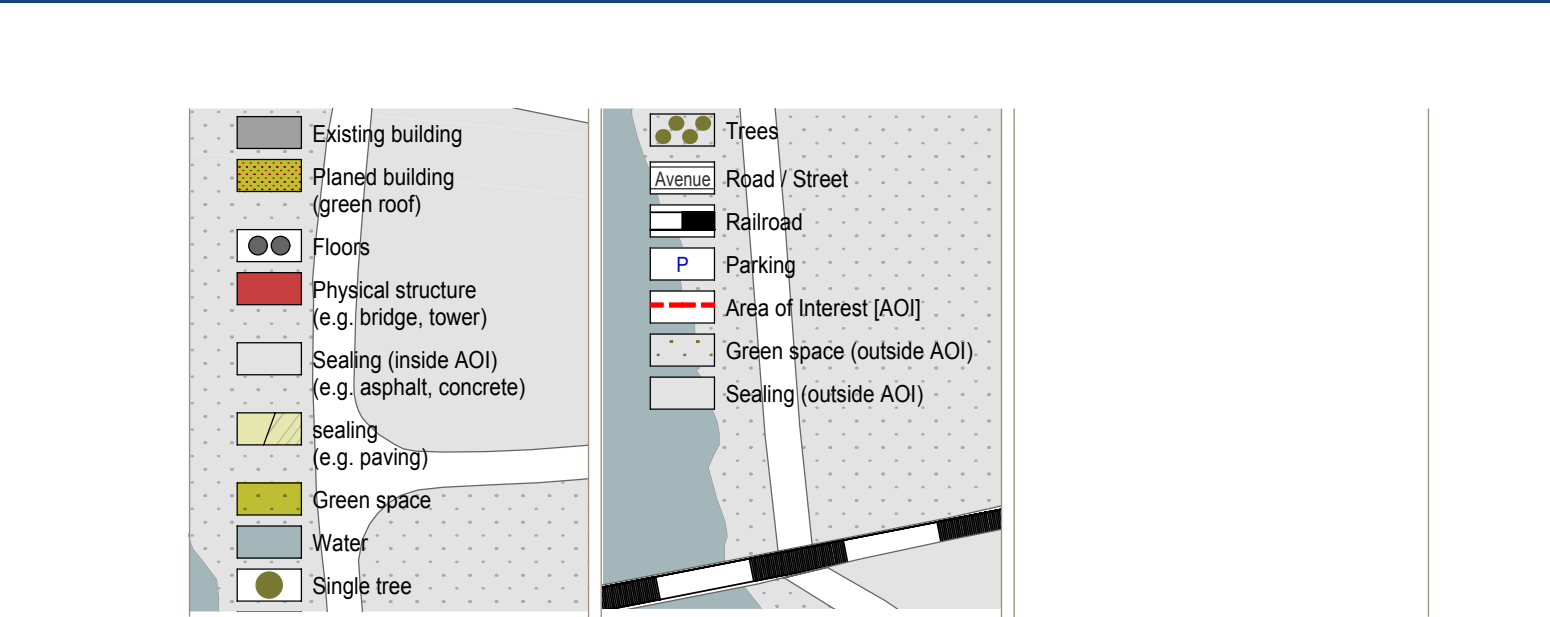
Step 2: Weight the categories regarding their significance for the site development as you set for each category, an integer, percentage part. All categories correspond together in total 100%.

Step 3: Select the appropriate statements for the draft. You can create several drafts or move between defined ones (e. g. for a comparison).

ALTERNATIVE B: THE ROOF

AUTHORS OF THE SKETCH:
ZHANG YIPING, ZHU YIJE





URBAN DEVELOPMENT EVALUATION MATRIX

for municipalities, urban apartment corporation,
design counselor, juries, etc.

Brownfield:	Troutdale WWTP and LLC Property	Step 1: Definition of criteria	
Draft:	B - The Roof	Positive effect (3 points)	Neutral effect (1 point)

Category townscape and landscape			
urban skyline / long-distance effect	enhancement / new long-distance effect	slight enhancement	
visual relationships / visual axis	establish (Watertower, Sandy River, Bridges)	partial enhancement	
topographic classification / quality of open space	high	average	
building lines / spatial frame	-----	average	
cubature / proportions	harmonious	average	
Category building and spatial structure			
land use category	correspond to zoning map (GC, MO/H)	partial correspondence	
density	correspond to development code	partial correspondence	
sealing (as: building, asphalt, concrete, ...)	compliant with usages, but low	average	
coverage type (open, close, deviant)	-----	average	
elements of regional / local typology (architecture)	-----	average	
Category potential of conflict			
emissions	no	average	
monument conservation / monument protection (by law)	-----	average	
environmental protection (by law)	complied	partial enhancement	
neighborhood (as: use, ...)	-----	average	
urban climate / micro climate	positive influence	average	
Category potential of revaluation			
impulse effect / catalyst	arises	arises	
sustainability input (social, economic, ecologic, cultural)	arises	arises	
rebrand / reform (image)	enhancement	enhancement	
innovation input	high	average	
building culture input	high-quality design	slight enhancement	

Result:	Draft score
----------------	--------------------

The maximum possible score:

Explanation:

The urban development evaluation matrix is a tool for comparing and evaluating urban concepts.

Step 1: Define the applicable criteria/targets for the development of the site for the specified categories. This applies to the targets: positive effect - in high-quality, superior, improving, according to the objectives (3 points), neutral effect - average, not improving, not deteriorating (1 point) or negative effect - contrary to the objective, deteriorating, incorrect (0 points).



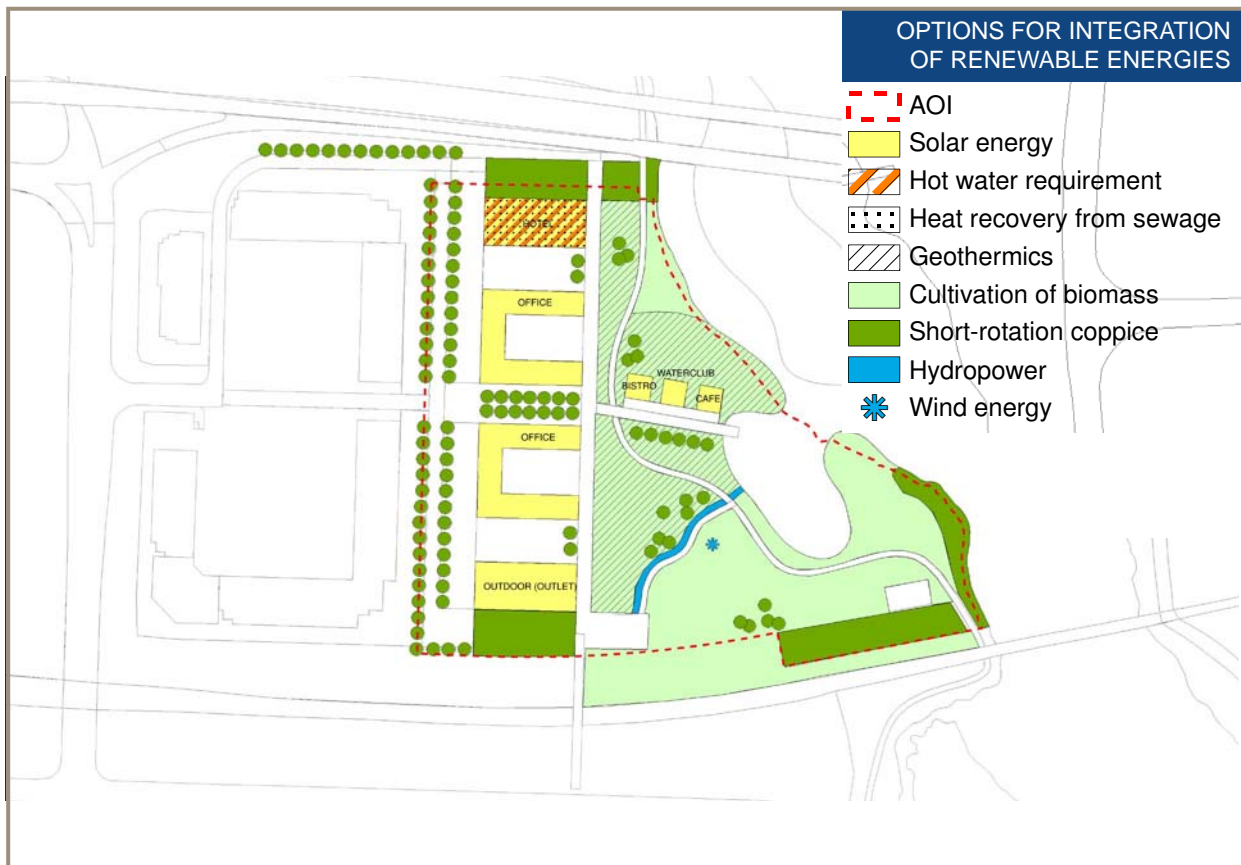
Step 1: Definition of the specified categories		Step 2	Step 3
Neutral effect (1 point)	Negative effect (0 points)	Weighting	Score
		35%	
slight enhancement of the watertower	no / negative long-distance effect		3
partially establish	no		3
average	low / without		1
-----	-----		0
average	colossal / inharmonious		1
		15%	
partially correspond to zoning map	contradict zoning map		1
partially correspond to develop. code	contradict development code		1
medium	to large / colossal		3
-----	-----		0
-----	-----		0
		15%	
slight	important		3
-----	-----		0
partially complied	not executed		3
-----	-----		0
average influence	negative influence		3
		35%	
arises slightly	no		3
arises partially	no		3
enhancement partially	no enhancement / negative		3
slight	no		3
slight-quality design	negative design		1
Total		100%	
			945
			1.215

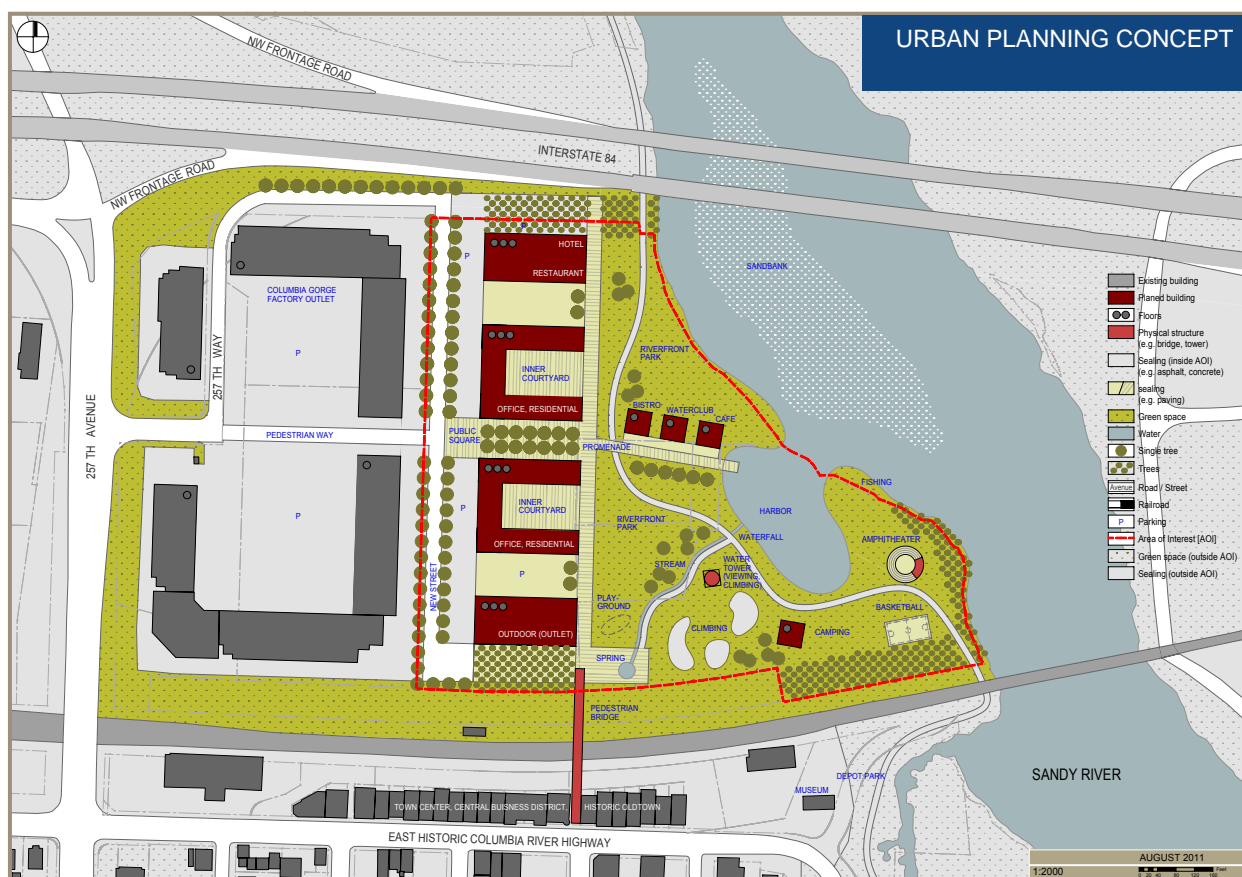
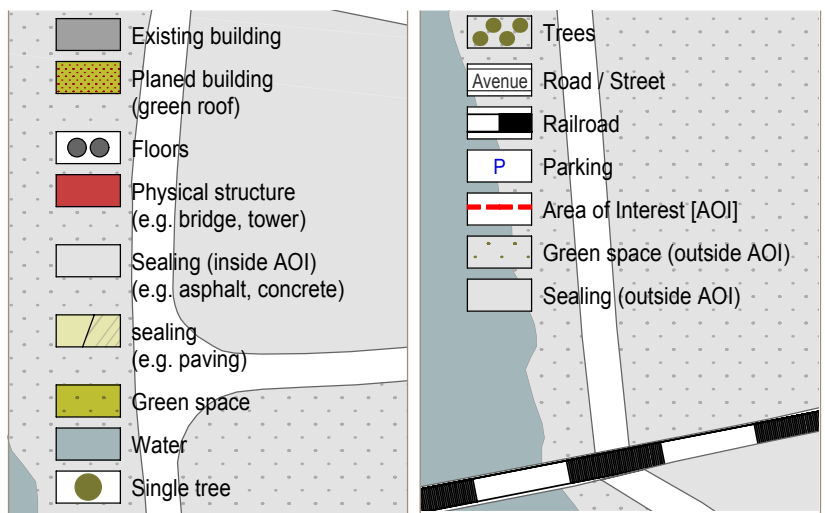
Step 2: Weight the categories regarding their significance for the site development as you set for each category, an integer, percentage part. All categories correspond together in total 100%.

Step 3: Select the appropriate statements for the draft. You can create several drafts or move between defined ones (e. g. for a comparison).

ALTERNATIVE C: THE OUTPOST

RESOURCE: INTERNET





URBAN DEVELOPMENT EVALUATION MATRIX

for municipalities, urban apartment corporation,
design counselor, juries, etc.

Brownfield:	Troutdale WWTP and LLC Property	Step 1: Definition of criteria	
Draft:	C - Outpost	Positive effect (3 points)	Neutral effect (1 point)

Category townscape and landscape			
urban skyline / long-distance effect	enhancement / new long-distance effect	slight enhancement	
visual relationships / visual axis	establish (Watertower, Sandy River, Bridges)	partial enhancement	
topographic classification / quality of open space	high	average	
building lines / spatial frame	-----	average	
cubature / proportions	harmonious	average	
Category building and spatial structure			
land use category	correspond to zoning map (GC, MO/H)	partial correspondence	
density	correspond to development code	partial correspondence	
sealing (as: building, asphalt, concrete, ...)	compliant with usages, but low	average	
coverage type (open, close, deviant)	-----	average	
elements of regional / local typology (architecture)	-----	average	
Category potential of conflict			
emissions	no	average	
monument conservation / monument protection (by law)	-----	average	
environmental protection (by law)	complied	partial enhancement	
neighborhood (as: use, ...)	-----	average	
urban climate / micro climate	positive influence	average	
Category potential of revaluation			
impulse effect / catalyst	arises	arises	
sustainability input (social, economic, ecologic, cultural)	arises	arises	
rebrand / reform (image)	enhancement	enhancement	
innovation input	high	average	
building culture input	high-quality design	slight enhancement	

Result:	Draft score
----------------	--------------------

The maximum possible score:

Explanation:

The urban development evaluation matrix is a tool for comparing and evaluating urban concepts.

Step 1: Define the applicable criteria/targets for the development of the site for the specified categories. This applies to the targets: positive effect - in high-quality, superior, improving, according to the objectives (3 points), neutral effect - average, not improving, not deteriorating (1 point) or negative effect - contrary to the objective, deteriorating, incorrect (0 points).



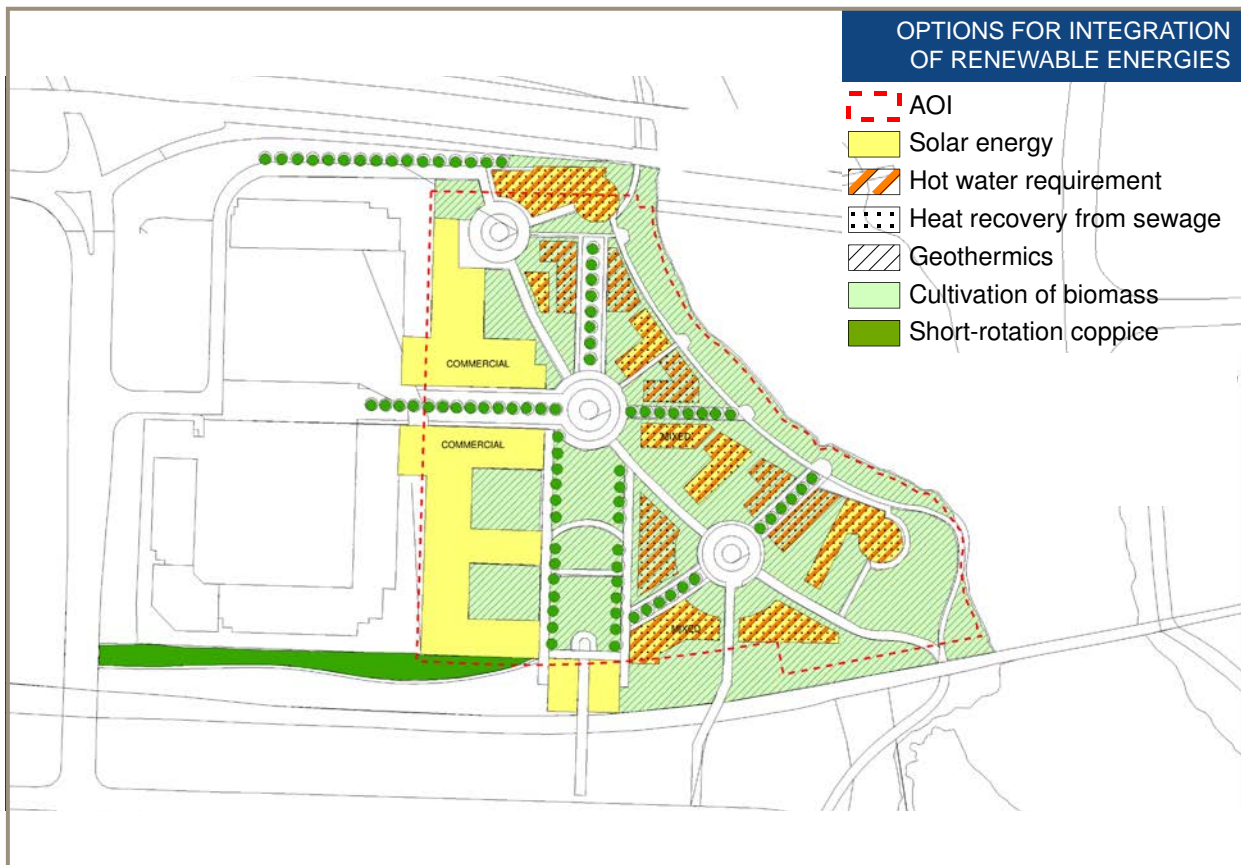
Step 1: Definition of the specified categories		Step 2	Step 3
Neutral effect (1 point)	Negative effect (0 points)	Weighting	Score
		35%	
slight enhancement of the watertower	no / negative long-distance effect		3
partially establish	no		3
average	low / without		1
-----	-----		0
average	colossal / inharmonious		1
		15%	
partially correspond to zoning map	contradict zoning map		1
partially correspond to develop. code	contradict development code		1
medium	to large / colossal		3
-----	-----		0
-----	-----		0
		15%	
slight	important		3
-----	-----		0
partially complied	not executed		3
-----	-----		0
average influence	negative influence		3
		35%	
arises slightly	no		3
arises partially	no		3
enhancement partially	no enhancement / negative		3
slight	no		3
slight-quality design	negative design		1
Total		100%	
			945
			1.215

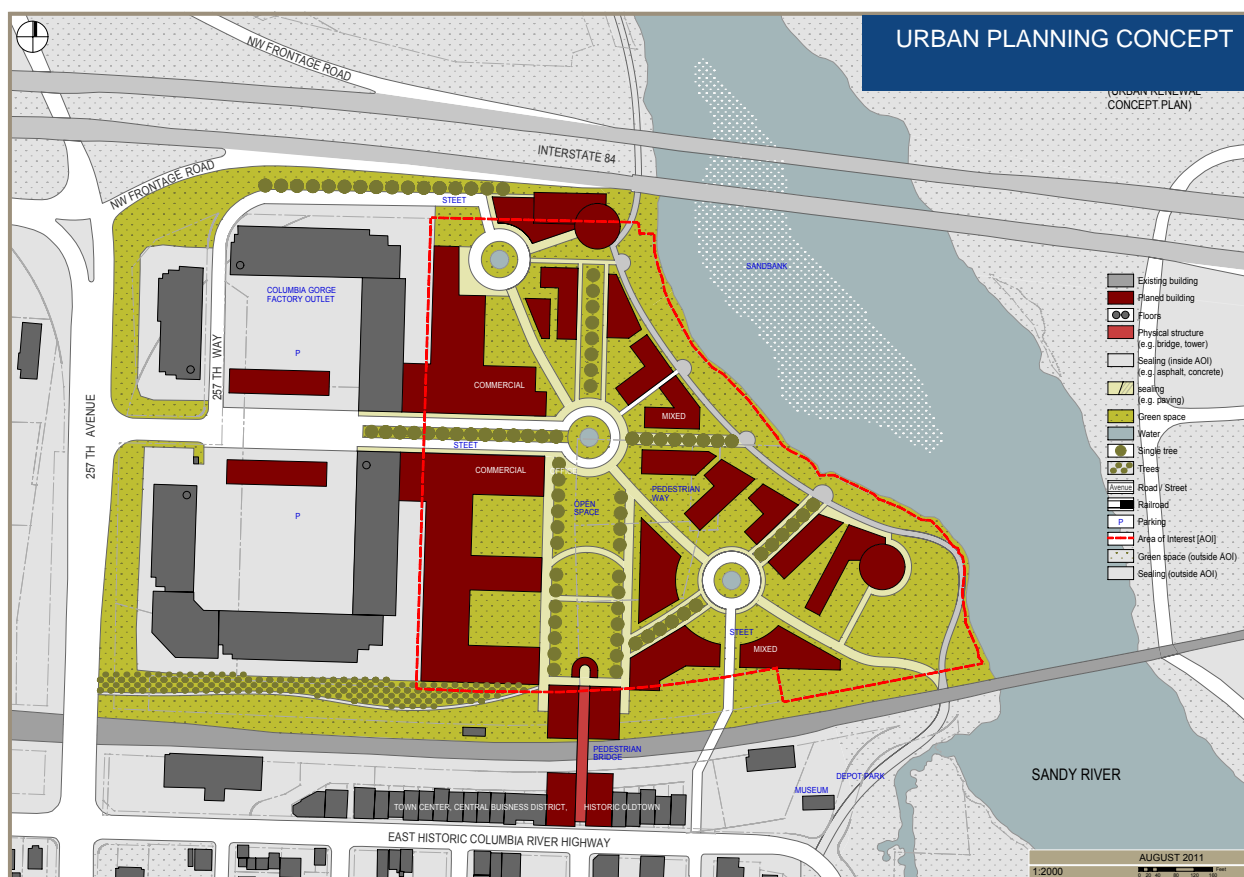
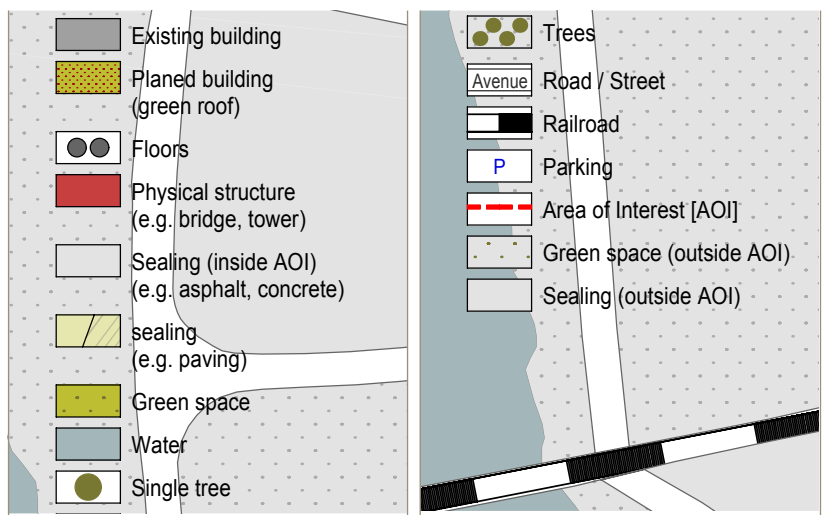
Step 2: Weight the categories regarding their significance for the site development as you set for each category, an integer, percentage part. All categories correspond together in total 100%.

Step 3: Select the appropriate statements for the draft. You can create several drafts or move between defined ones (e. g. for a comparison).

ALTERNATIVE D: THE RIVERFRONT

RESOURCE: INTERNET







URBAN DEVELOPMENT
EVALUATION MATRIX

for municipalities, urban apartment corporation,
design counselor, juries, etc.

Brownfield:	Troutdale WWTP and LLC Property	Step 1: Definition of criteria	
Draft:	D - Riverfront	Positive effect (3 points)	Neutral effect (1 point)

Category townscape and landscape		
urban skyline / long-distance effect	enhancement / new long-distance effect	slight enhancement
visual relationships / visual axis	establish (Watertower, Sandy River, Bridges)	partial enhancement
topographic classification / quality of open space	high	average
building lines / spatial frame	-----	average
cubature / proportions	harmonious	average

Category building and spatial structure		
land use category	correspond to zoning map (GC, MO/H)	partially correct
density	correspond to development code	partially correct
sealing (as: building, asphalt, concrete, ...)	compliant with usages, but low	average
coverage type (open, close, deviant)	-----	average
elements of regional / local typology (architecture)	-----	average

Category potential of conflict		
emissions	no	average
monument conservation / monument protection (by law)	-----	average
environmental protection (by law)	complied	partial enhancement
neighborhood (as: use, ...)	-----	average
urban climate / micro climate	positive influence	average

Category potential of revaluation		
impulse effect / catalyst	arises	arises
sustainability input (social, economic, ecologic, cultural)	arises	arises
rebrand / reform (image)	enhancement	enhancement
innovation input	high	average
building culture input	high-quality design	slight enhancement


Result:	Draft score
---------	-------------

The maximum possible score:

Explanation:

The urban development evaluation matrix is a tool for comparing and evaluating urban concepts.

Step 1: Define the applicable criteria/targets for the development of the site for the specified categories. This applies to the targets: positive effect - in high-quality, superior, improving, according to the objectives (3 points), neutral effect - average, not improving, not deteriorating (1 point) or negative effect - contrary to the objective, deteriorating, incorrect (0 points).



Step 1: Definition of the specified categories		Step 2	Step 3
Neutral effect (1 point)	Negative effect (0 points)	Weighting	Score
		35%	
slight enhancement of the watertower	no / negative long-distance effect		1
partially establish	no		3
average	low / without		3
-----	-----		0
average	colossal / inharmonious		1
		15%	
partially correspond to zoning map	contradict zoning map		3
partially correspond to develop. code	contradict development code		3
medium	to large / colossal		3
-----	-----		0
-----	-----		0
		15%	
slight	important		1
-----	-----		0
partially complied	not executed		1
-----	-----		0
average influence	negative influence		1
		35%	
arises slightly	no		1
arises partially	no		3
enhancement partially	no enhancement / negative		3
slight	no		3
slight-quality design	negative design		1
Total		100%	
			845
			1.215

Step 2: Weight the categories regarding their significance for the site development as you set for each category, an integer, percentage part. All categories correspond together in total 100%.

Step 3: Select the appropriate statements for the draft. You can create several drafts or move between defined ones (e. g. for a comparison).

Environmental Situation

Due to the past use as Municipal Wastewater Treatment Plant, Slaughterhouse and Wool Pullery, there are several contamination and polluted building and facility structures present at the model site, that lead on to the incurrence of liability and waste disposal risks. To ensure a safe reuse of the site with no existing hazards for human health and environmental media, liability risks have to be removed as part of decontamination or safeguard measures, so that pollutant concentrations in soil, groundwater and surface waters are reduced up to a low-level risk. Following maps illustrate the spatial distribution of pollutants and risks in different depths, according to the results of US EPA site assessments at the model site.

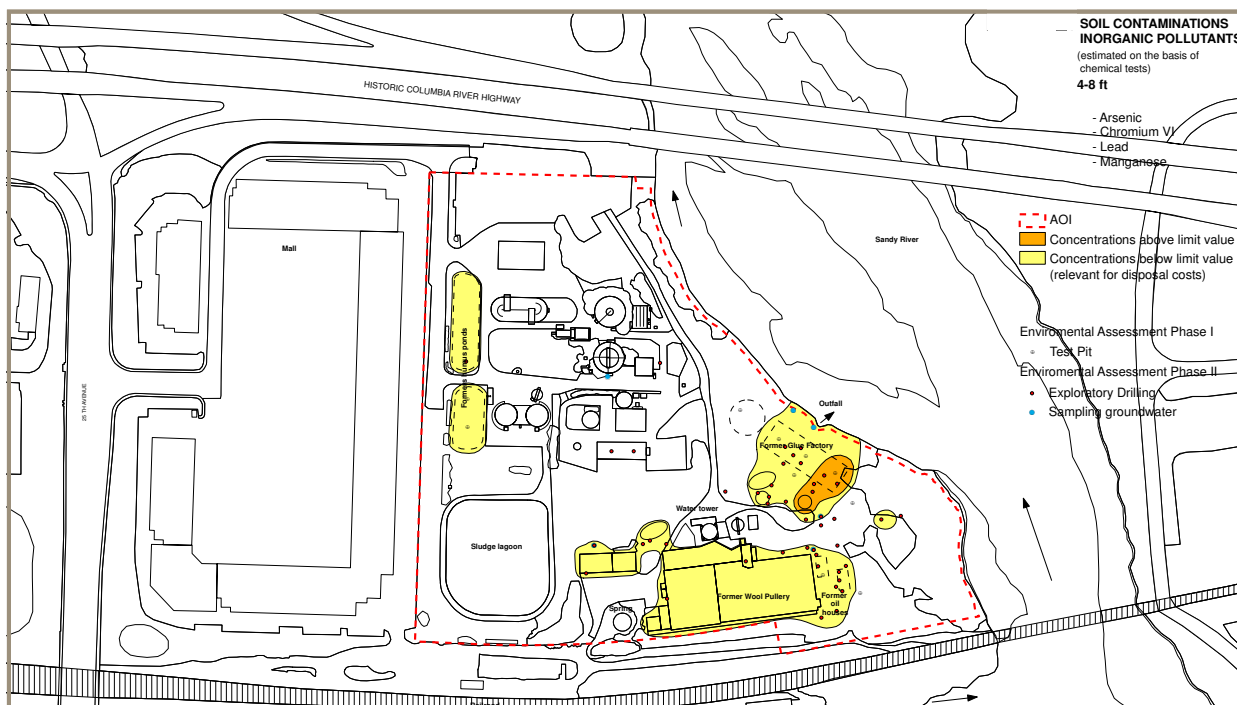
*RIGHT:
TROUTDALE SLAUGHTERHOUSE
FROM THE BLUFF ON SANDY
RIVER EAST BANK (1890)*

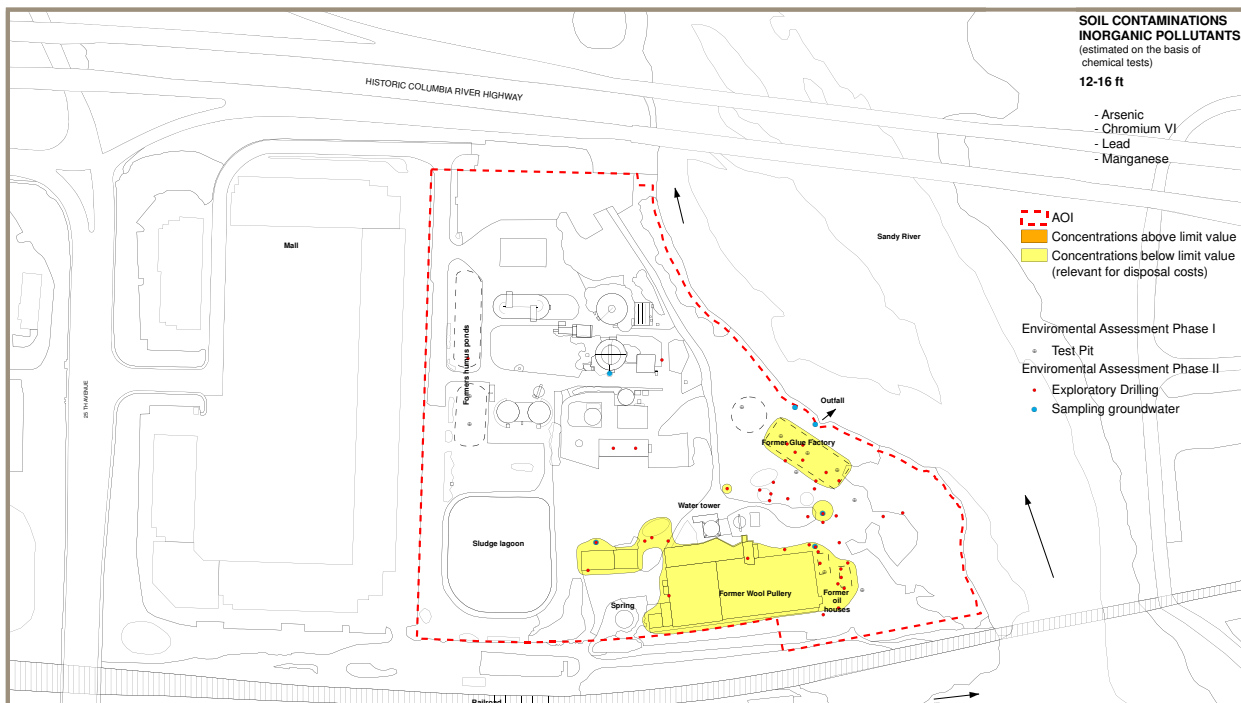
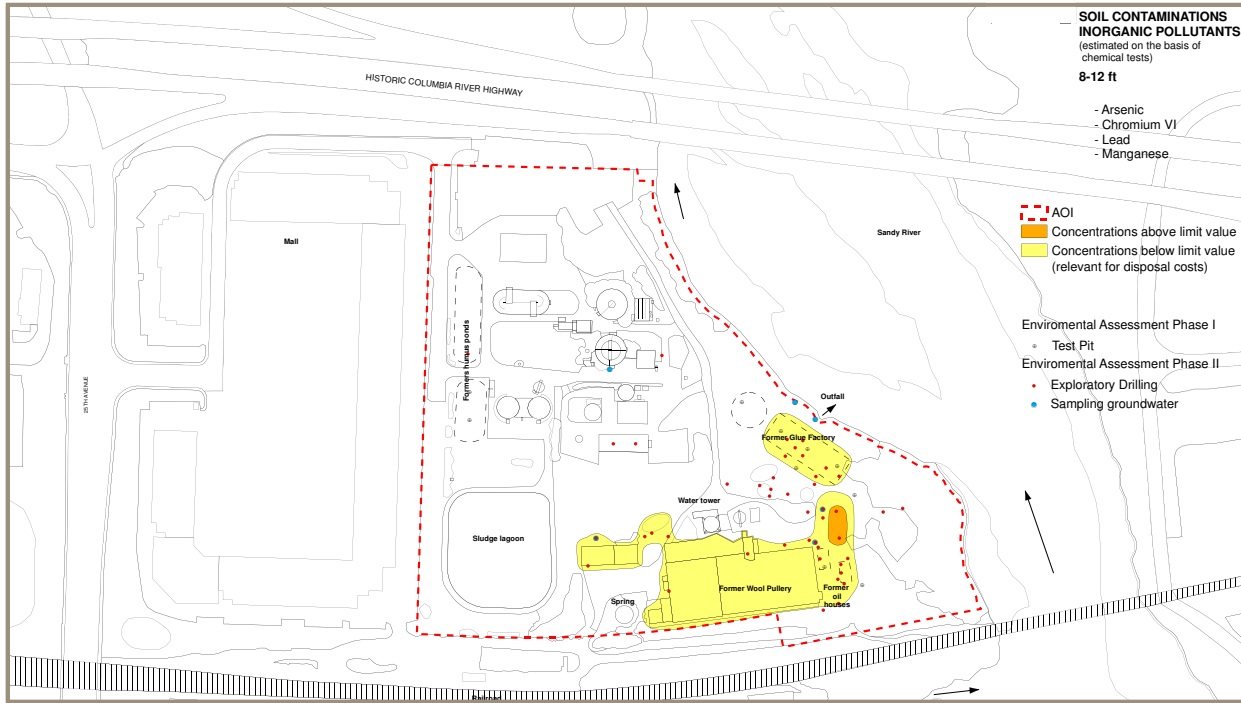
*BELOW:
MEAT PACKING PLANT IN THE
BACKGROUND (1905)*

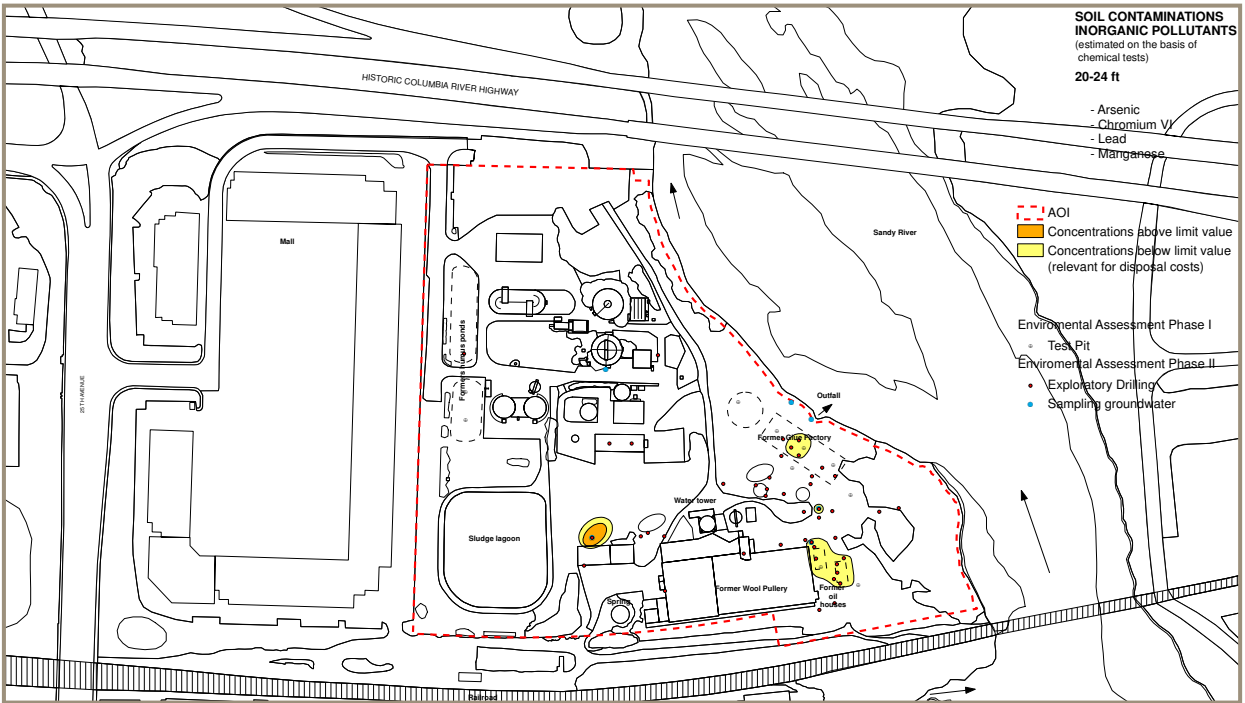
*RESOURCE:
SHARON NESBIT: "IT COULD
HAVE BEEN CARPDALE, CEN-
TENNIAL HISTORY OF TROUTDA-
LE 1907 ~ 2007", 2007*



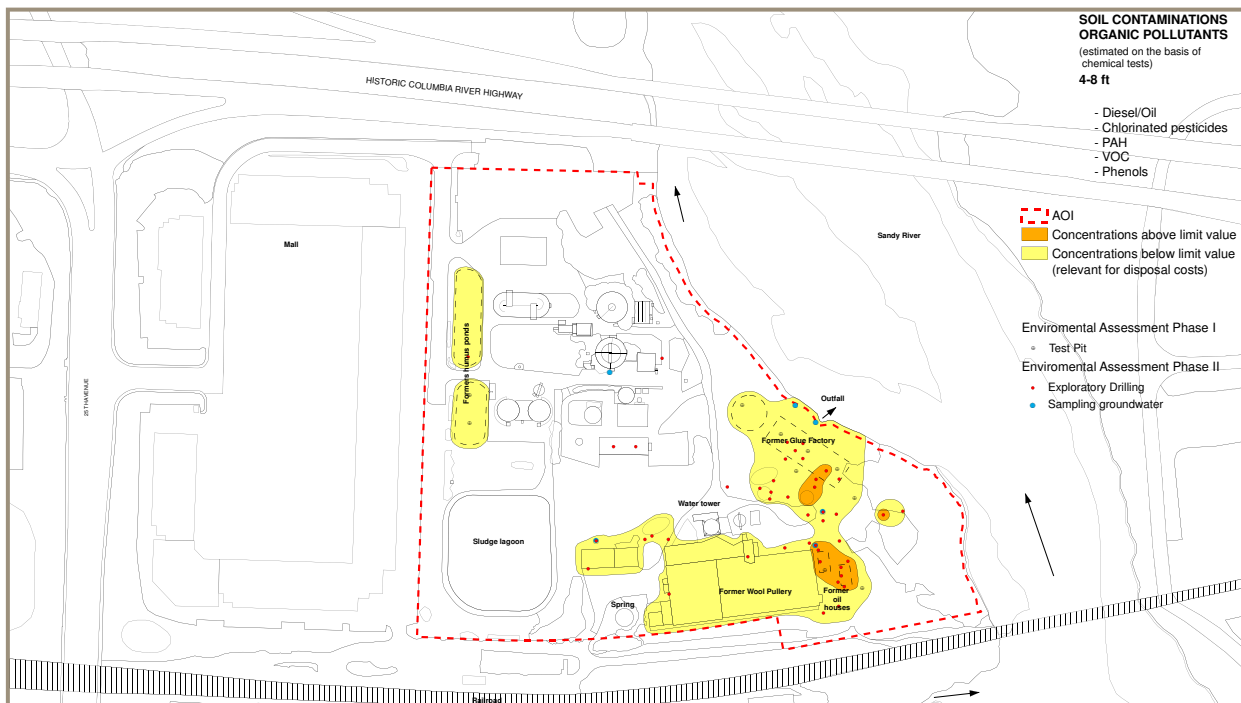
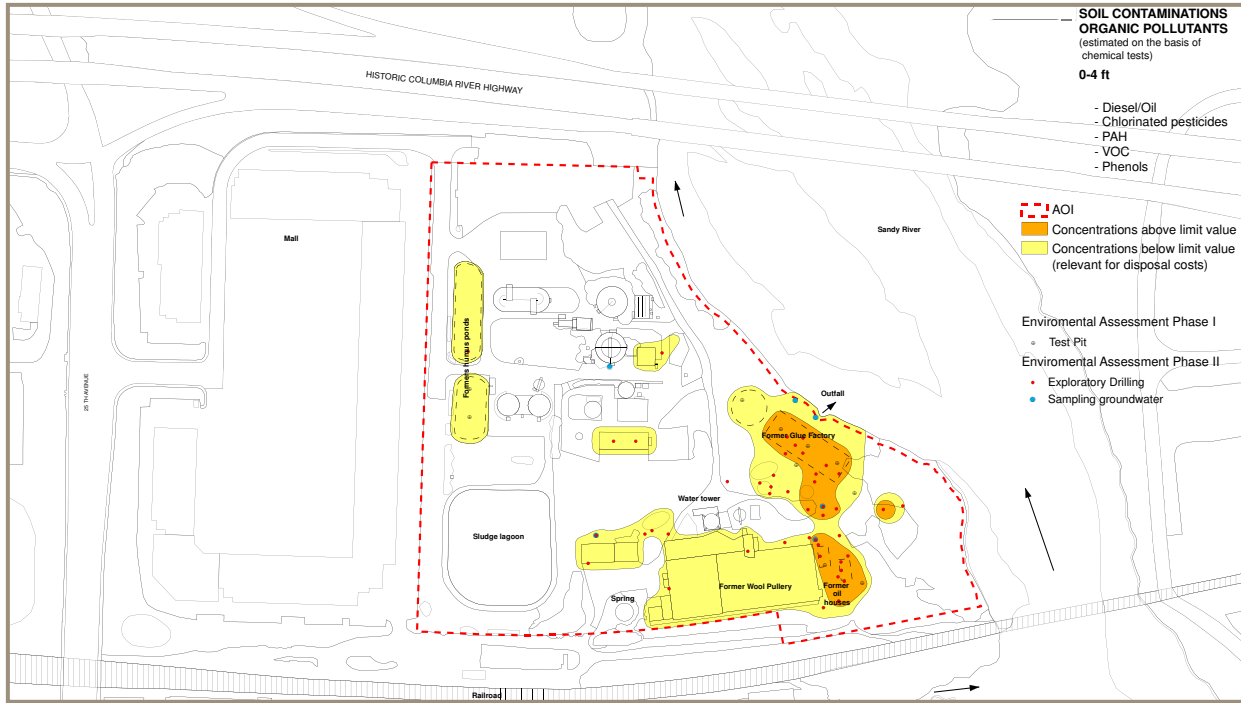
SOIL CONTAMINATION: INORGANIC POLLUTANTS

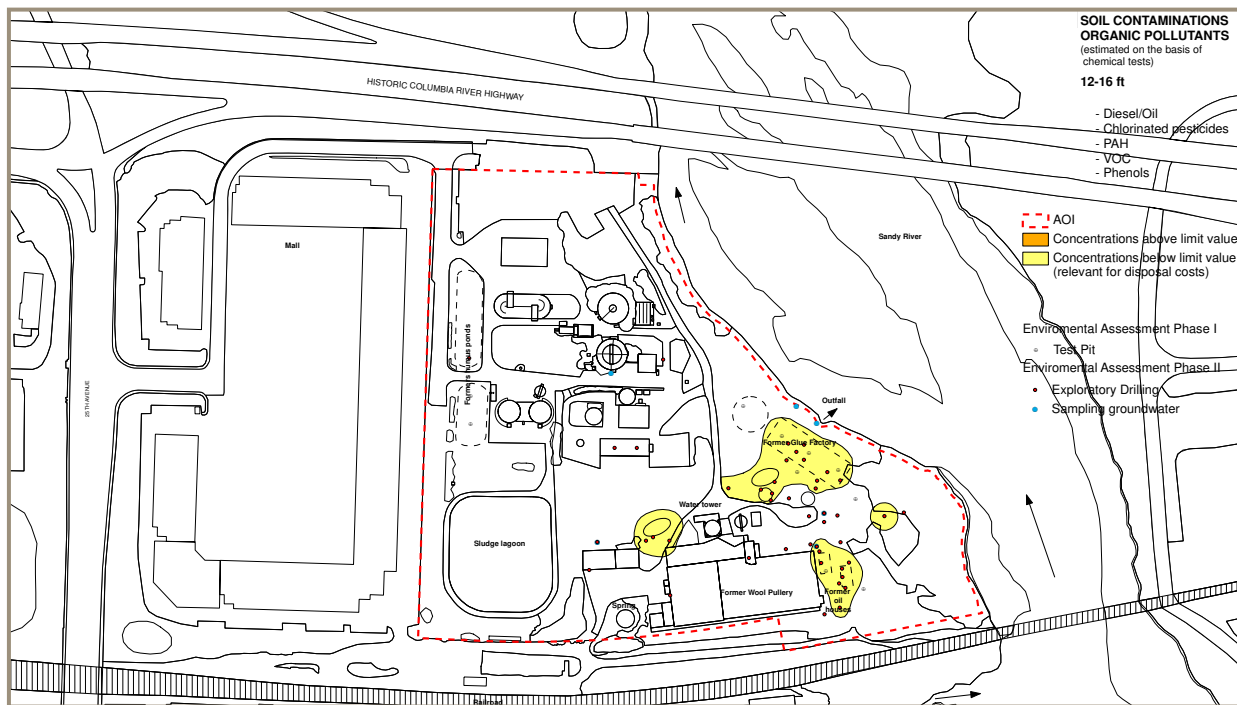


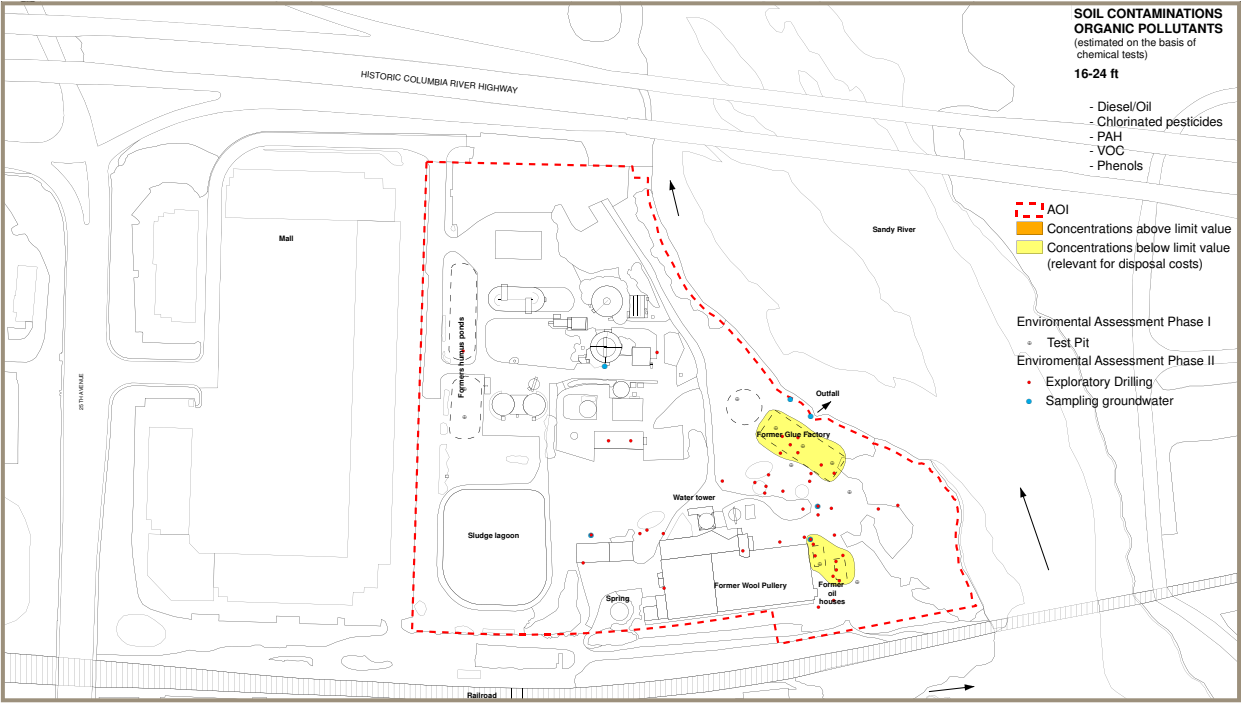




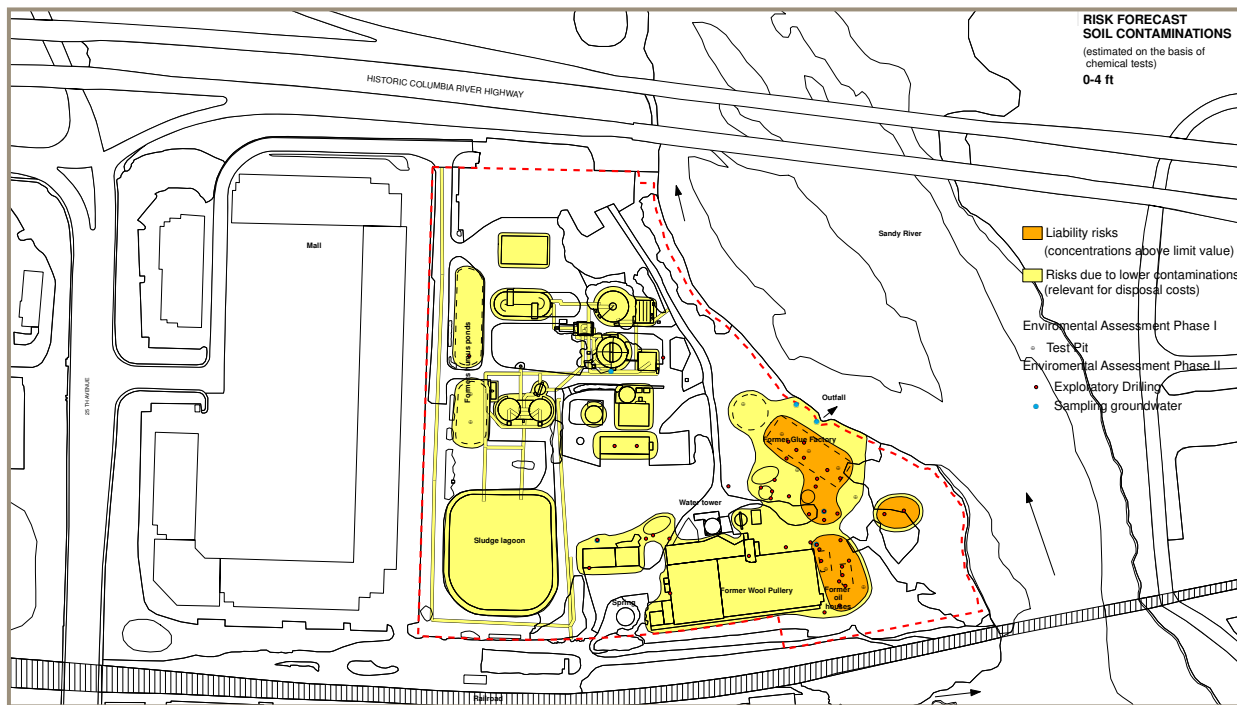
SOIL CONTAMINATION: ORGANIC POLLUTANTS

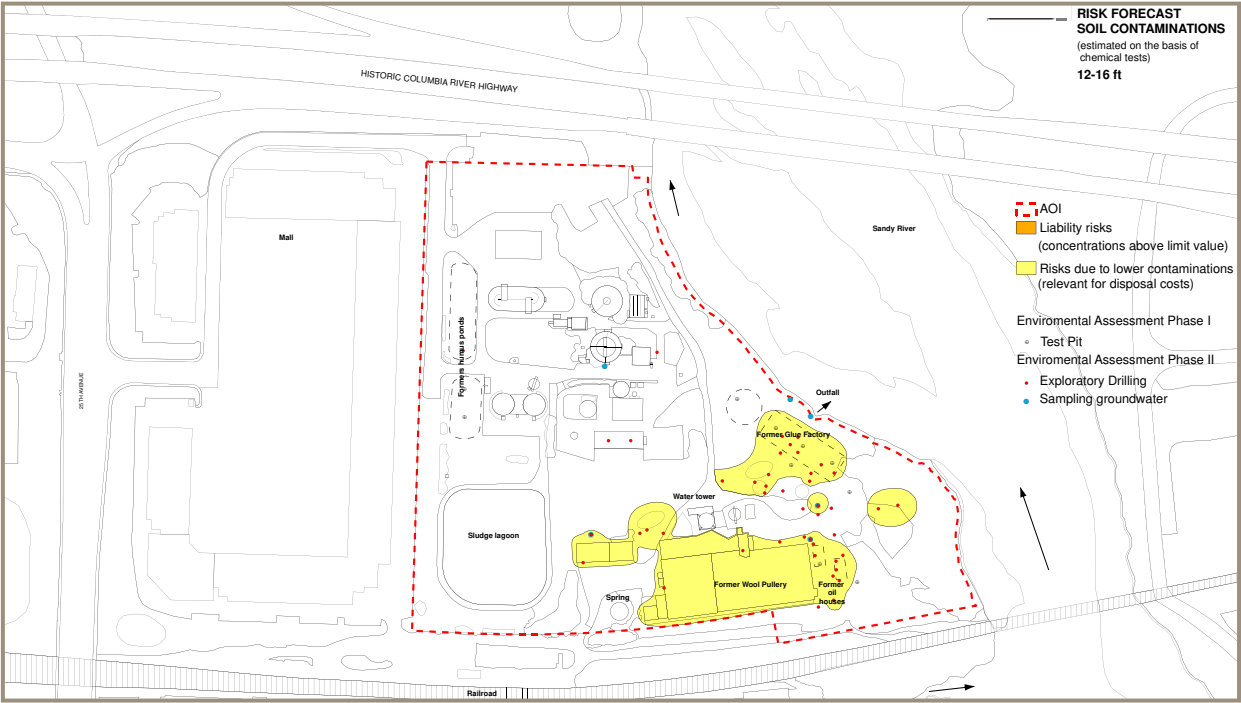
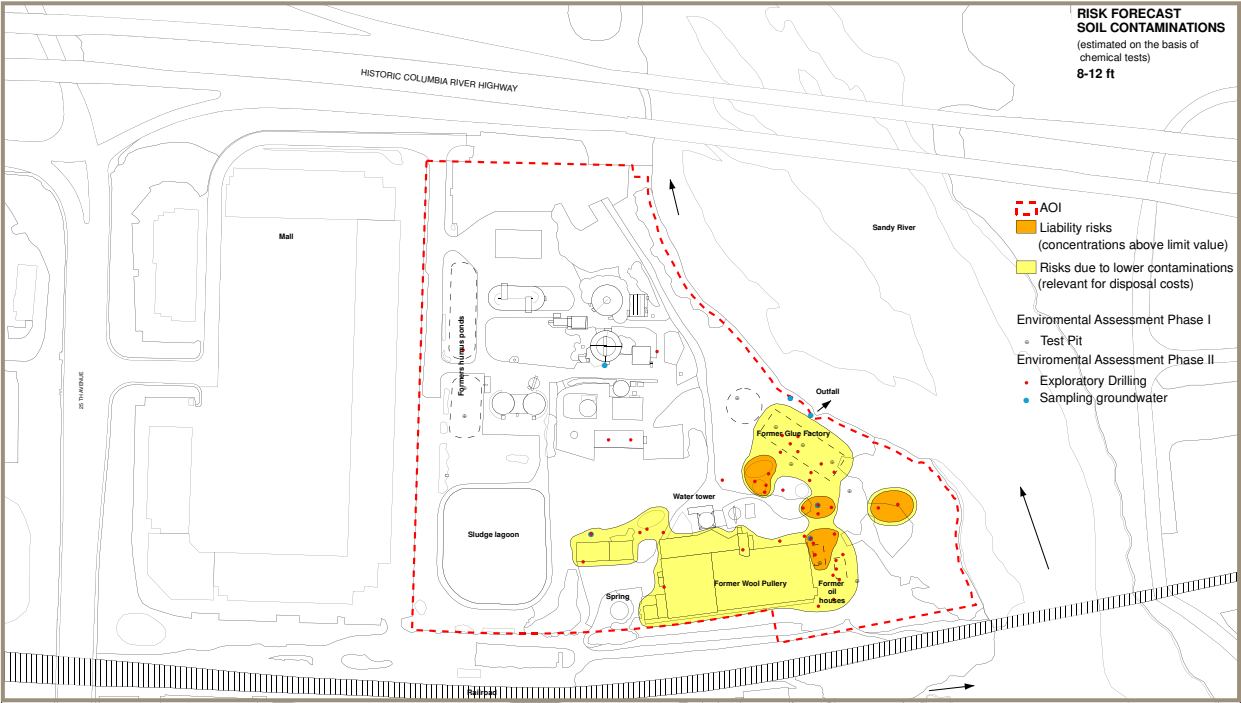


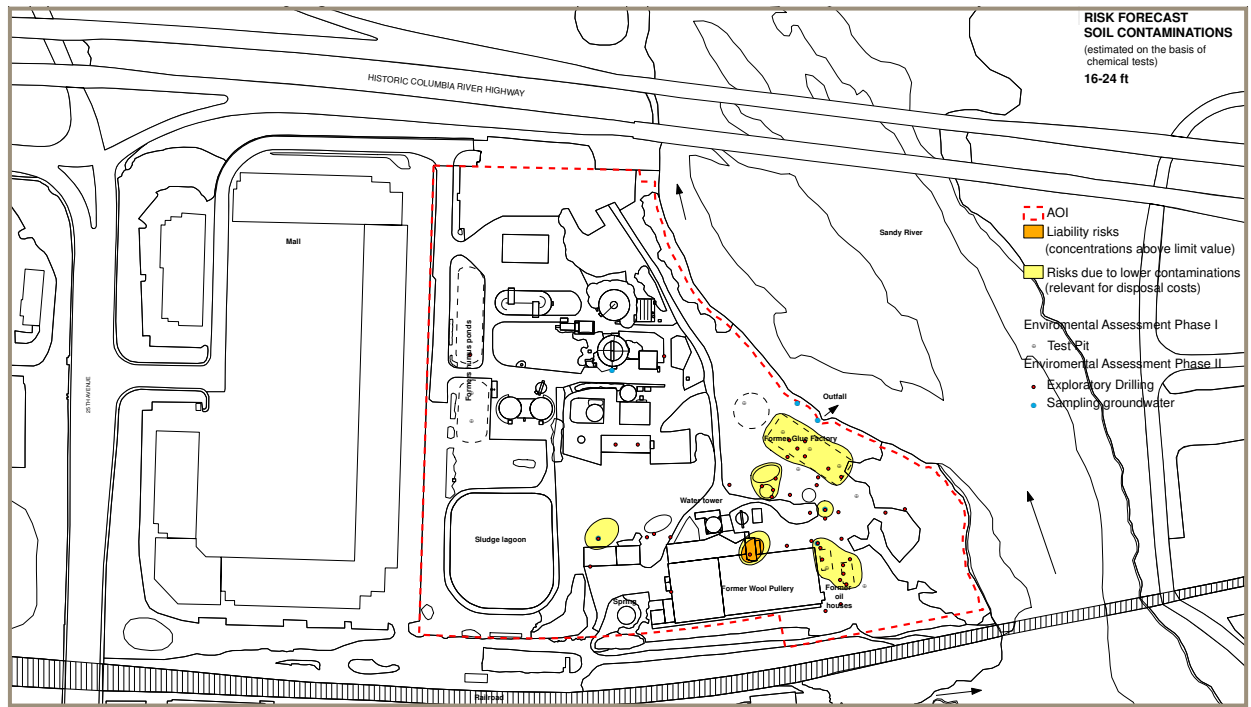




RISK FORECAST: SOIL CONTAMINATION





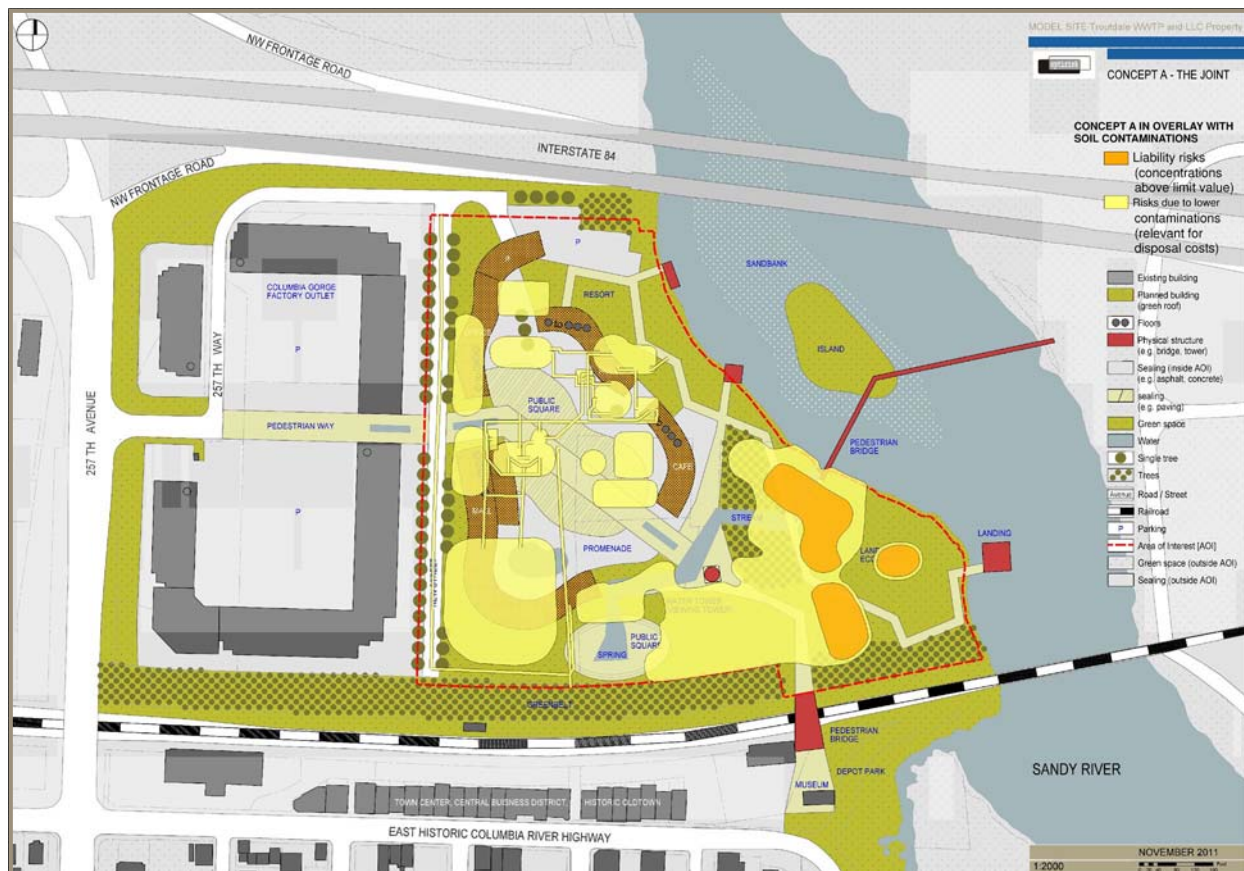


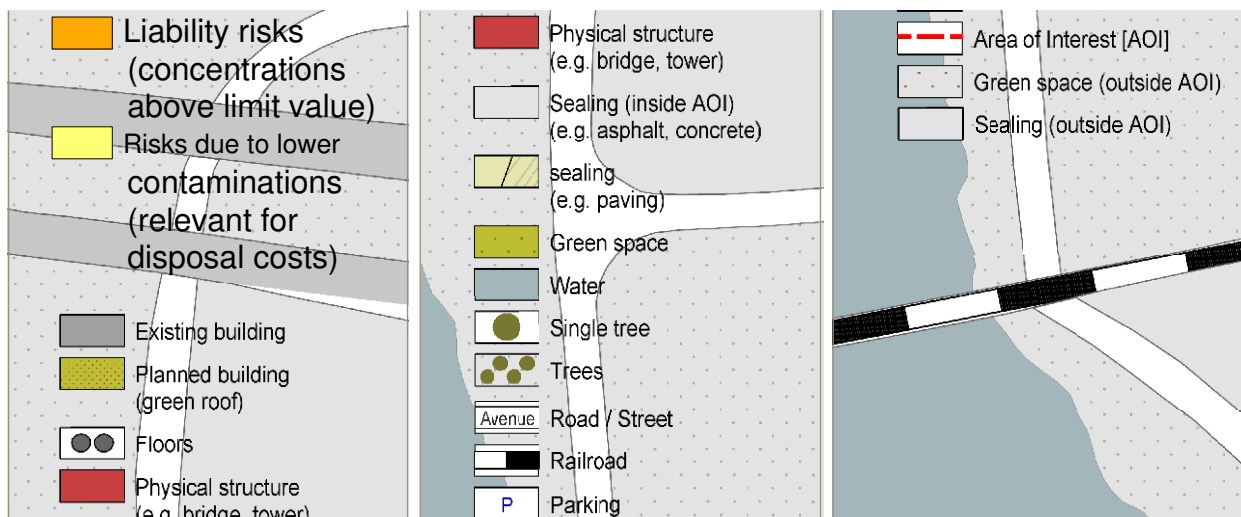
Conflict Analyses

Basis for the optimization of the preferred site redevelopment concept is a detailed conflict analyses for the model site. This contains an overlay of urban planning aspects with environmental issues for each considered redevelopment concept on the short list, including respective cost estimates for environmental clean-up and deconstruction.

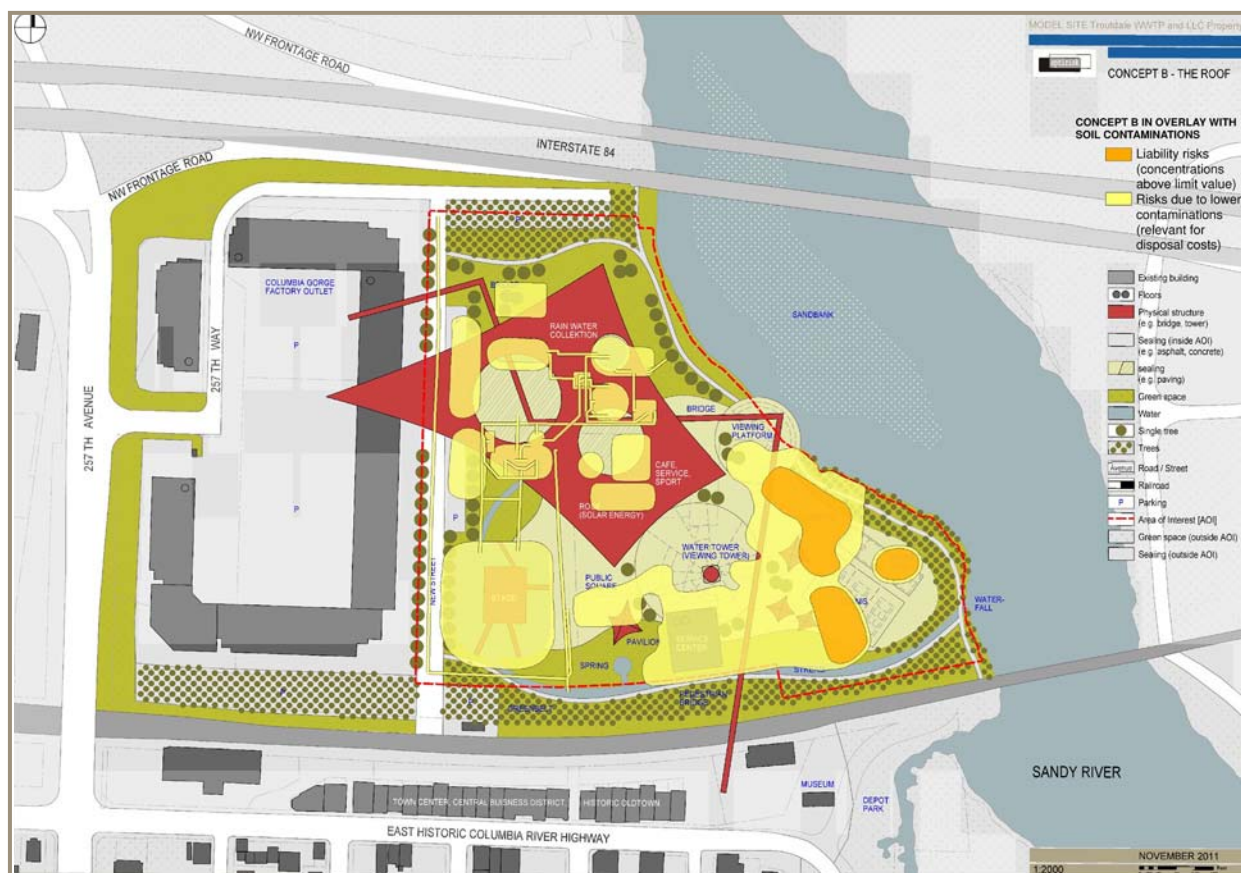
Another workshop in Troutdale was implemented together with the City representatives in November 2011, to discuss these issues in detail for each redevelopment concept at Troutdale WWTP and LLC Property, and to select a preferred alternative which should be optimized. The illustrations and maps listed below demonstrate these processes.

ALTERNATIVE A: THE JOINT OVERLAY WITH SOIL CONTAMINATION

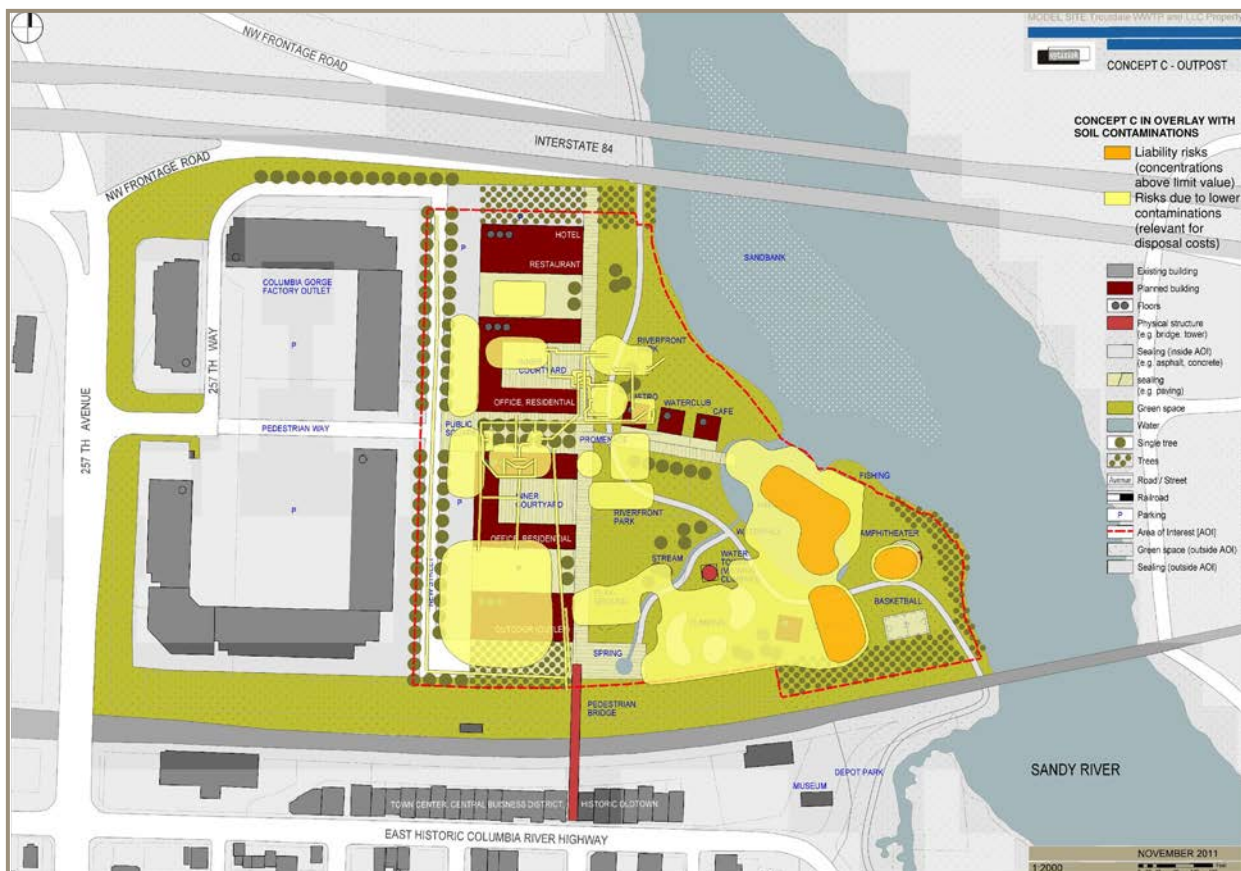


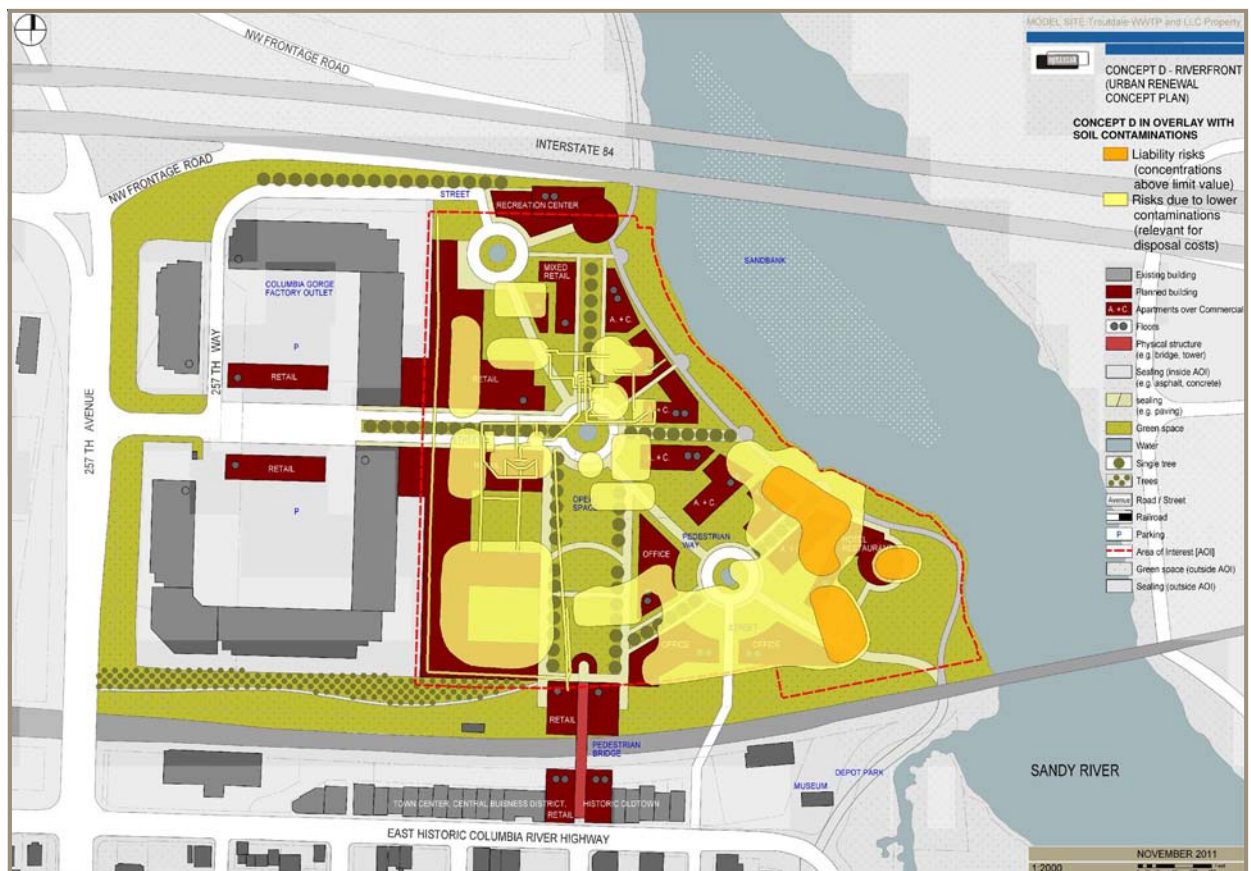


**ALTERNATIVE B: THE ROOF
OVERLAY WITH SOIL CONTAMINATION**



ALTERNATIVE C: THE OUTPOST OVERLAY WITH SOIL CONTAMINATION





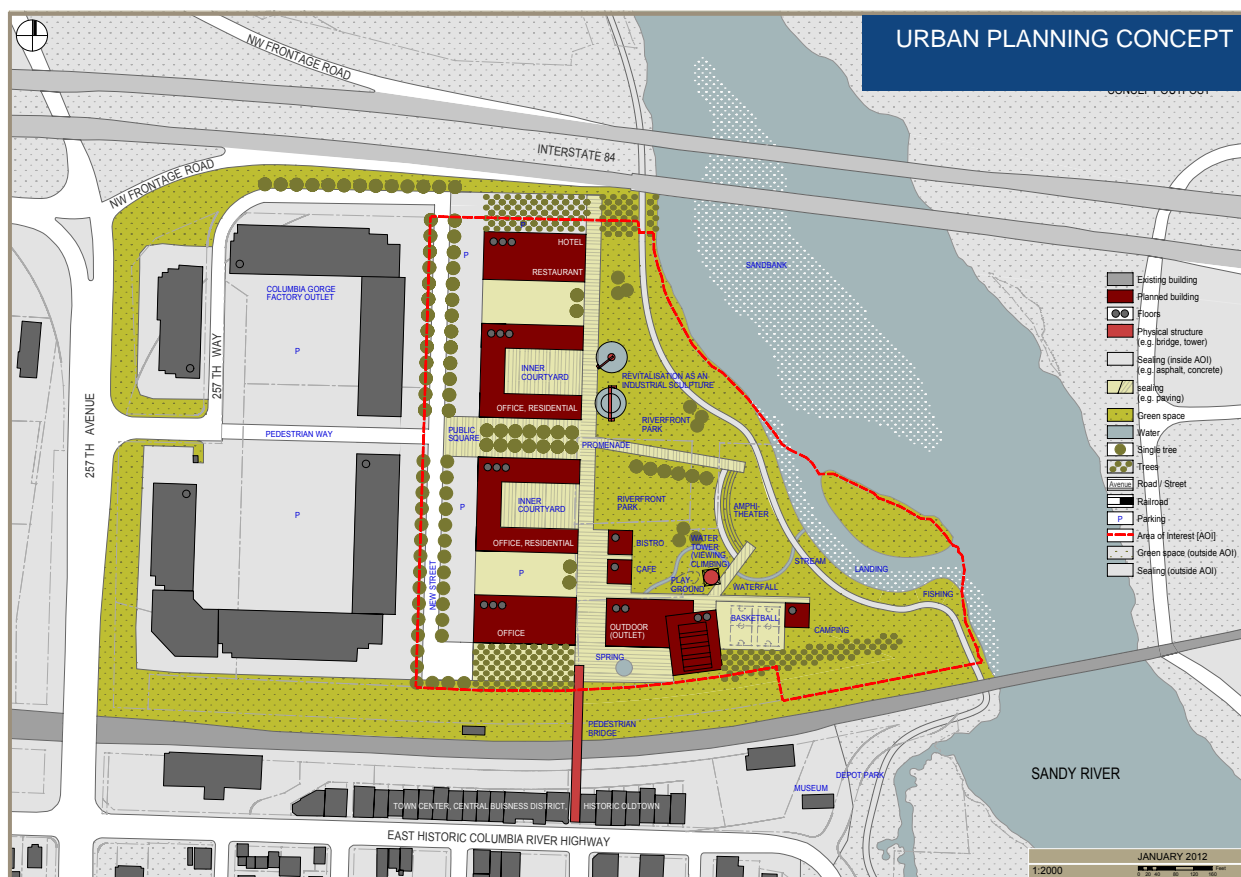
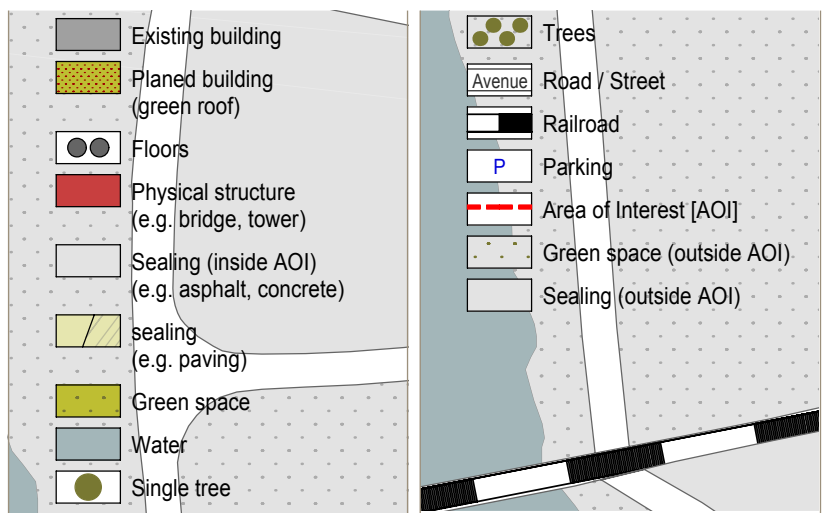
Optimized Design: The Outpost

SITE REDEVELOPMENT DESIGN

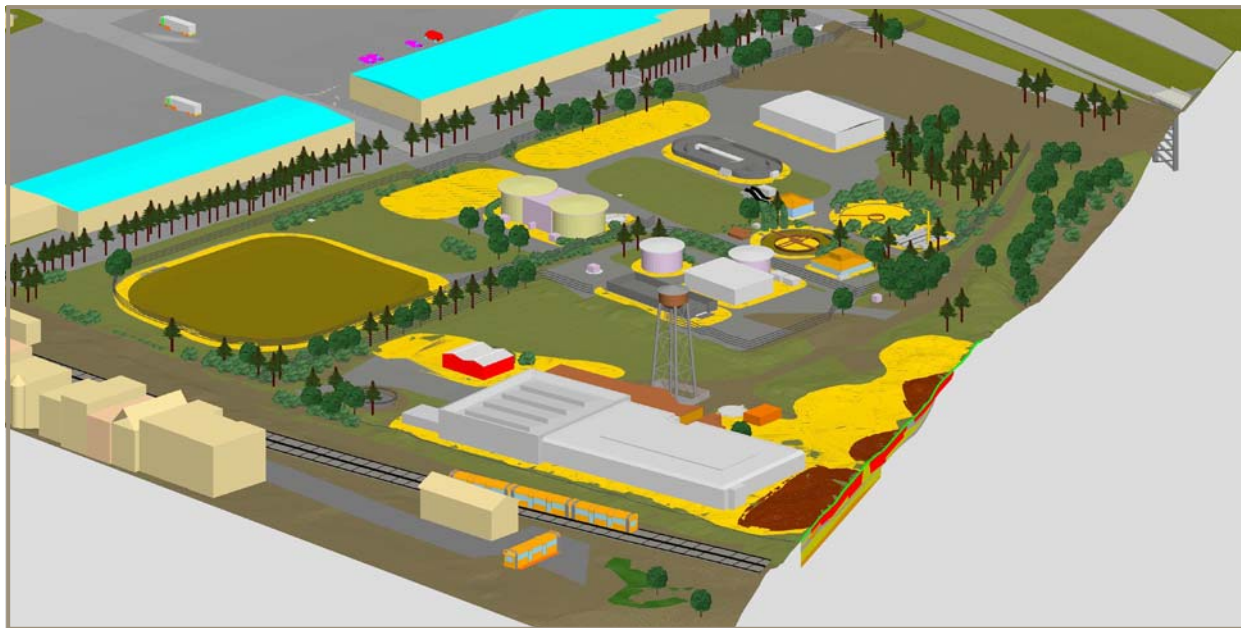
In the frame of optimization of concept “Outpost” at Troutdale WWTP and LLC Property, the site is intended for a development as mixed use area. That involves a hotel, offices, and residential uses at the western part of the property. The concept submitted a riverfront park between this buildings and the Sandy River. Furthermore an outlet store, sports facilities, and recreation spaces at the riverfront, and an open space are planned at the southern part. The “Outpost” connects Troutdale to the wilderness as well as the 40-mile-loop and links to waterway by an anabranch of the Sandy River. A public square as main access binds the site to the Columbia Outlet and 257th Avenue. The passage to the historic Center is built by a pedestrian bridge. The optimized concept integrates existing construction structures and creates more buildings as opposed to the preliminary draft.



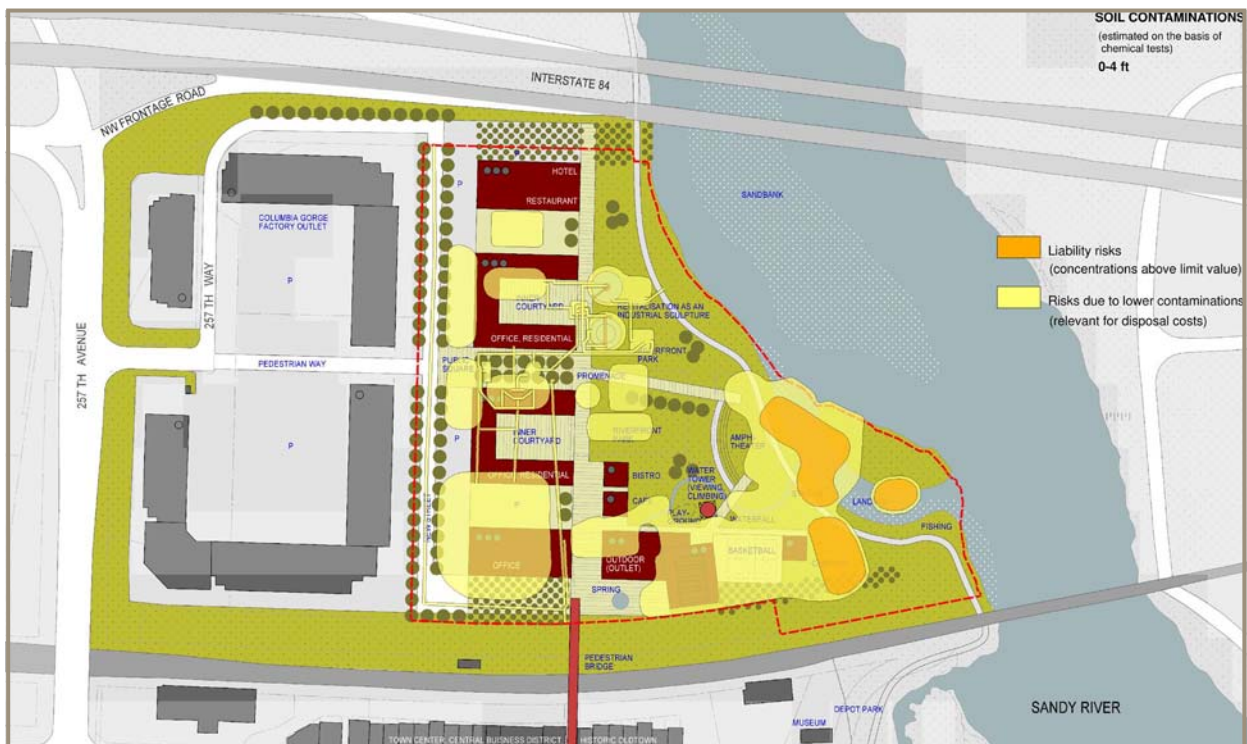
THE OUTPOST

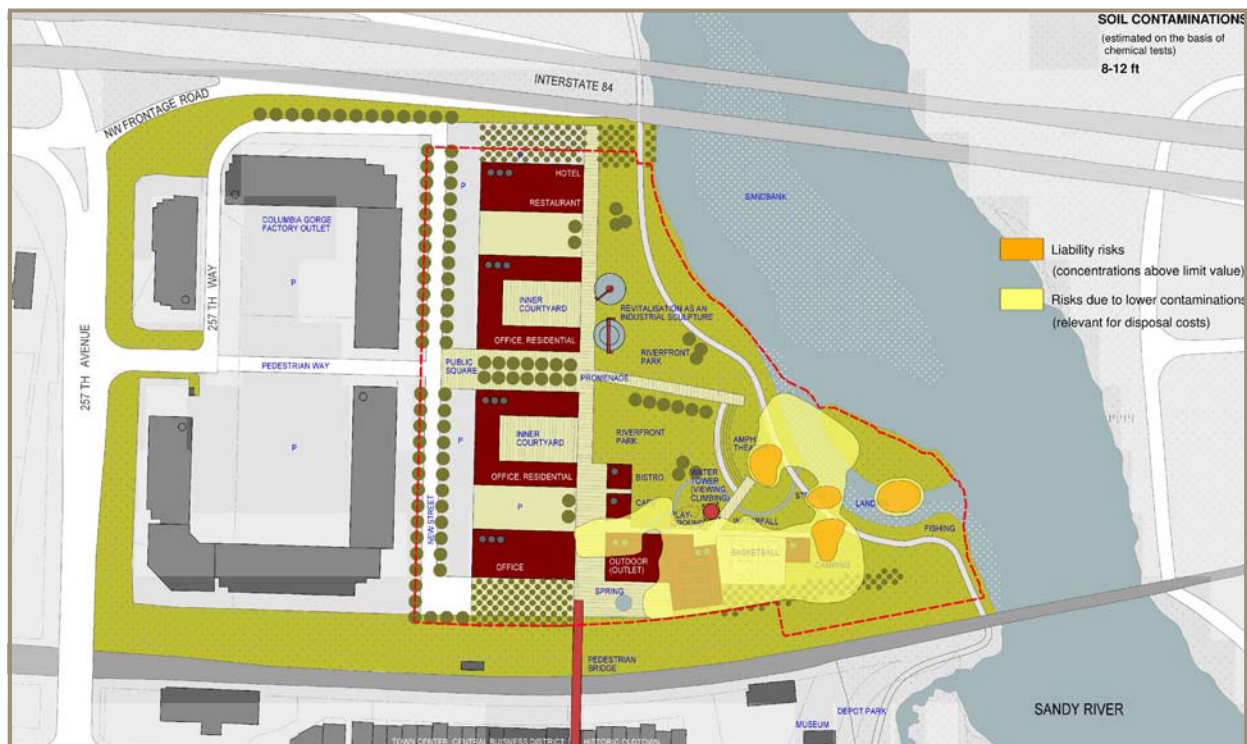
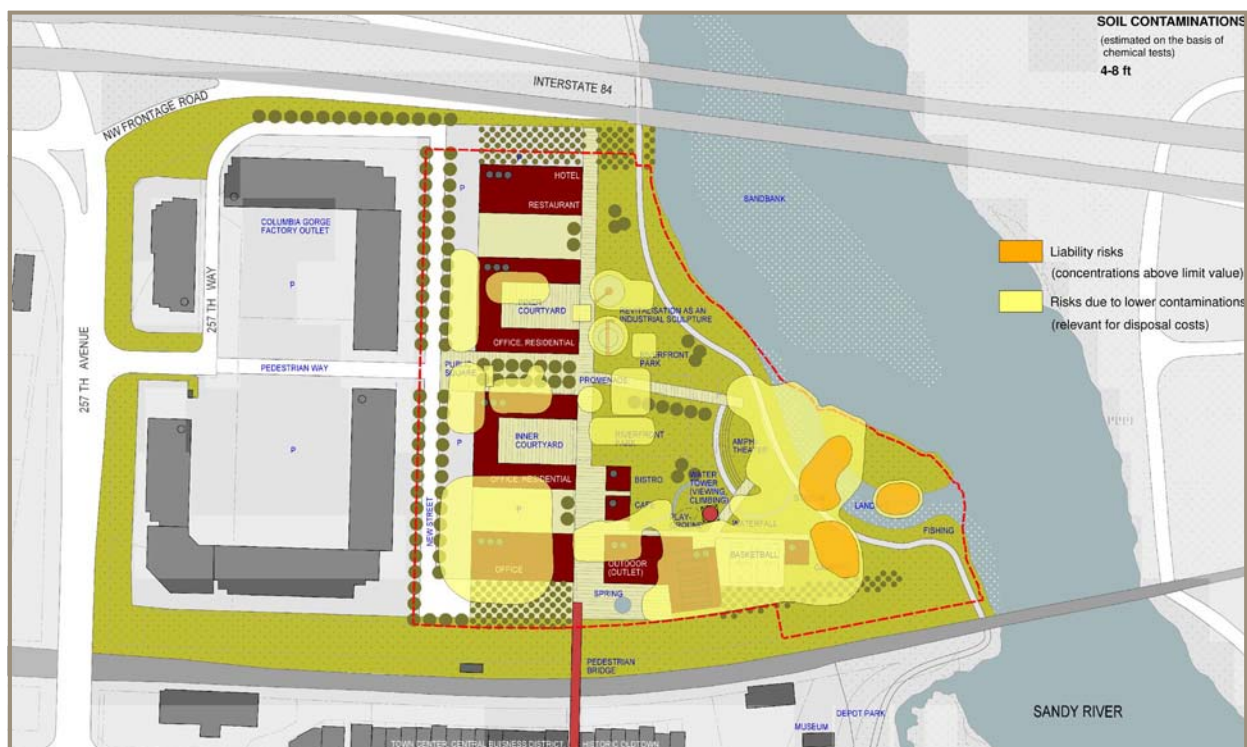


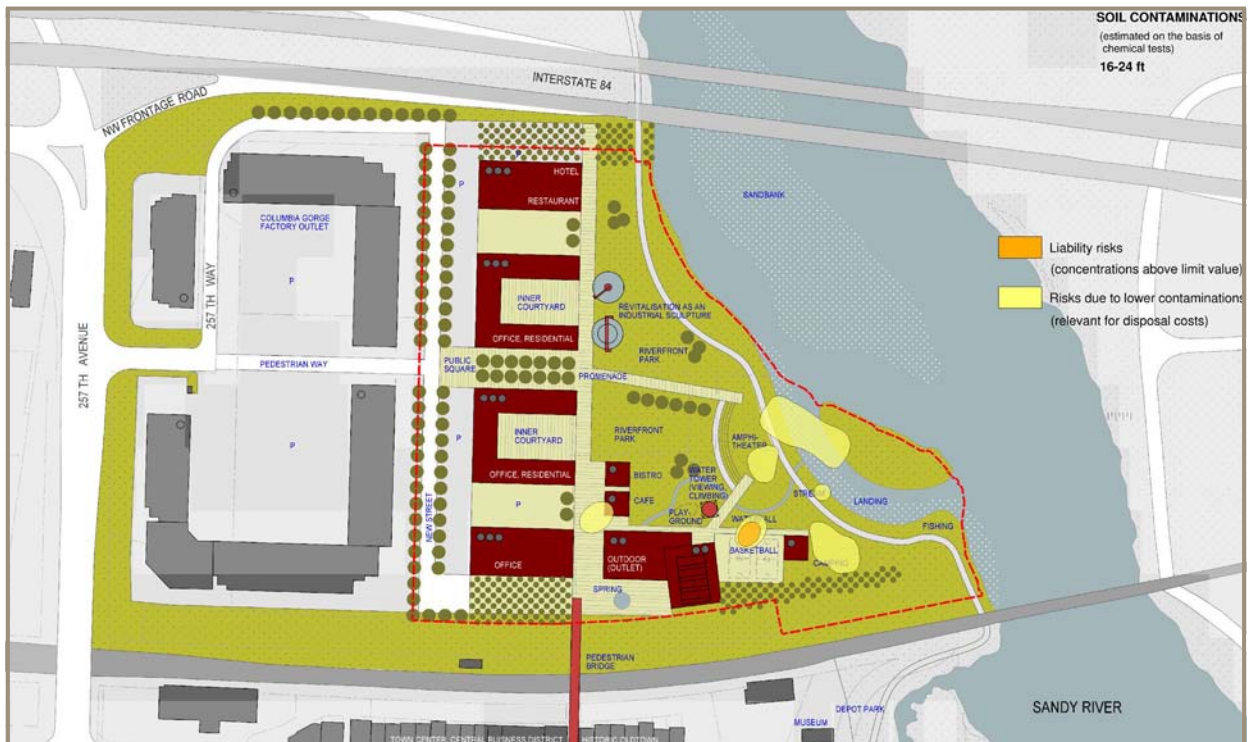
SOIL CONTAMINATION OVERLAY WITH OPTIMIZED DESIGN



INVENTORY AND ENVIRONMENTAL SITUATION





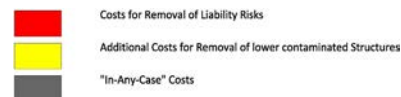
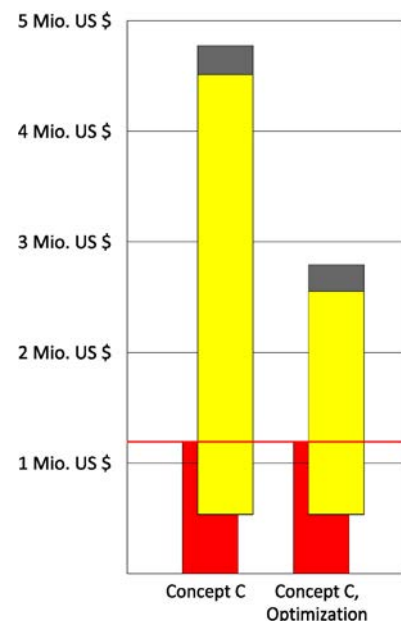


Initially, there was scheduled the construction of a harbor at the riverfront in the frame of concept "Outpost". This was intended to reduce costs for site clean-up already in an early planning stage, with the help of the following optimization strategy: The great quantity of soil has to be excavated for a reuse as a harbor simultaneously is used for removal of hazardous contaminants in this area. In this way, costs for building up a pit (break up and lift of soil) emerge only one time in the context of clean-up activities (optimization potential "In-One-Go").

However, clean-up costs are very high for this strategy because of the enormous soil material has to be removed, associated with large interventions into the river system. As alternative and in view of optimization potentials in cost reducing, there is designated another use instead of the harbor, an anabranch. That anabranch is created in a way that most hazardous soil contamination which have to be excavated in any case because of its danger are implemented in building the excavation pit for the anabranch. That means the use of active remedial measures for investment. Thus, cost savings of about 95,000 \$US can be achieved.

Another optimization potential lies in sealing the areas of hazardous soil contamination have to be removed off the site (implementation of active remedial measures as safeguard measure). In this frame, the optimized concept provides an additional sealing at the southern part of the property. In the frame of optimization the concept "Outpost" the greatest optimization potential lies in property exposure and waste disposal risk. At first, it is scheduled to reintegrate some buildings and facilities into the reuse (water tower, spring, some clarifiers, and part of old slaughterhouse). In this way, there can be achieved cost savings of about 440,000 \$US from demolition. In addition, the masses of buildings and facilities have to be demolished associated with lower contaminated soil which results from building excavation pits for new investment and demolition are designated to be reintegrated on-site. In particular, such lower contaminated material is used for backfilling those excavation pits which result from removal of liability risks and demolition outside off the areas of new investment, as well as for landscape modeling. So, there don't emerge additional disposal costs for lower contaminated material. As a result, cost savings of approx. 1.4 Mio. \$US can be carried out.

Following illustrations show the remediation measures and the potentials of cost savings through implementation of the stated optimization strategies for site redevelopment concept "Outpost". Altogether, cost savings of about 2 Mio. \$US are possible as compared with the original alternative.



COST ESTIMATION



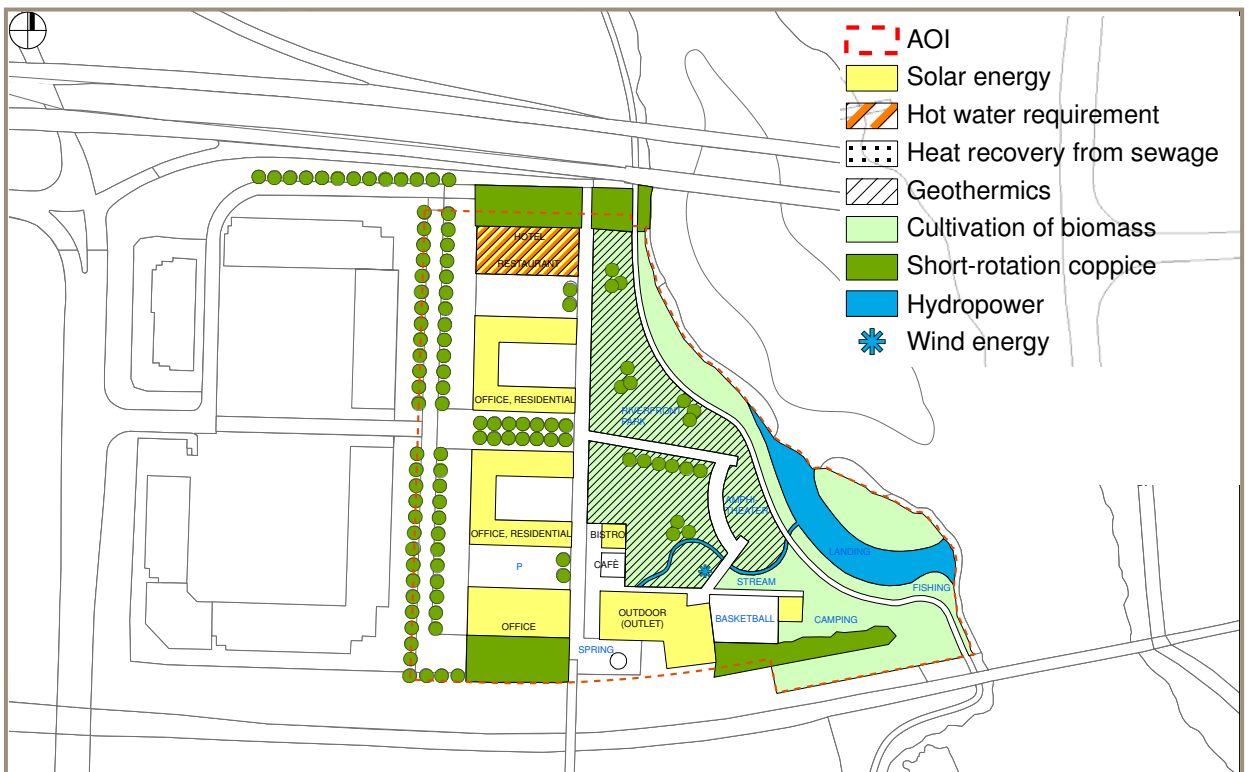
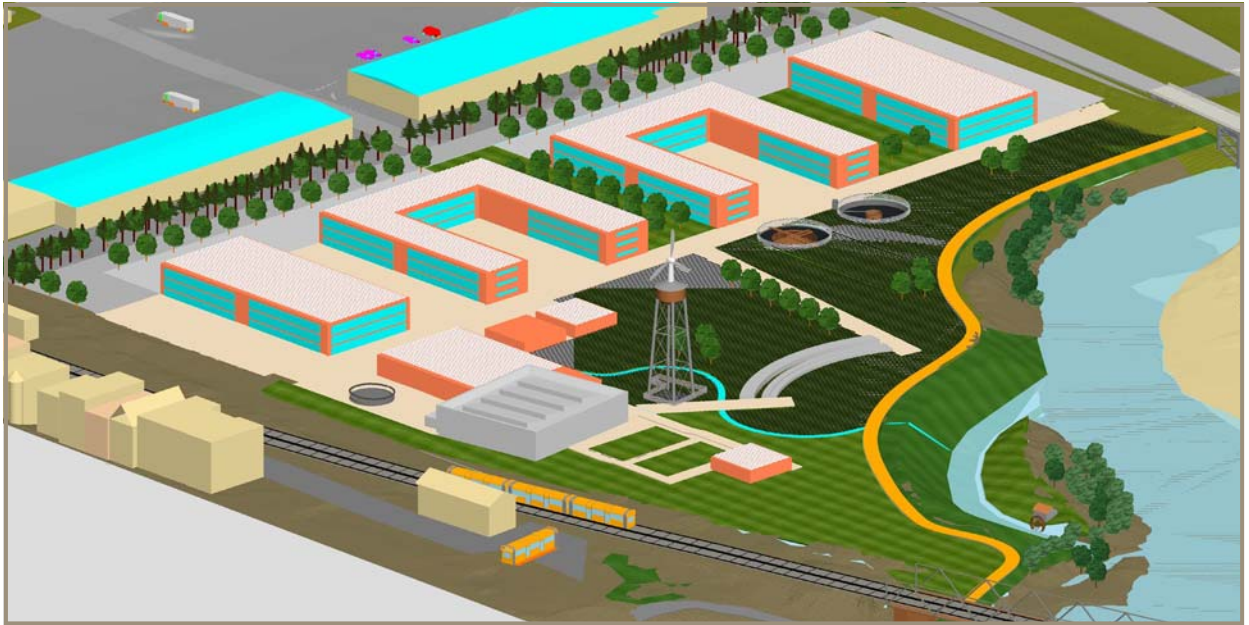
REMIATON AND EXCAVATION



BASEMENT

OPTIONS FOR INTEGRATION OF RENEWABLE ENERGIES

Energy applications normally have the lowest requirements on the surrounding soil quality. For this reason, it is preferable to build energy systems at sites with (residual) contamination. In the frame of the optimized concept "Outpost" there are heat and electricity requirements at the buildings of hotel, office, residential, and outlet store. To cover these requirements, solar collectors can be constructed at the roofs or at the exterior walls. In addition, a heat recovery from waste water can be built at the hotel. Also heat supply network with mini-combined heat and power plant for heating and cooling of buildings can be constructed. Furthermore, there are possibilities to implement short-rotation plantation and cultivation of biomass at open spaces. The river arm can be used to generate electricity with the construction of a runoff-the-river power plant. Further electricity can be generated with small wind turbines at the top of the water tower.





EPILOGUE

As a result of the application of *optirisk*® in Troutdale, a redevelopment concept for the model site was designed in way, that a residential and mixed use area can be developed with optimized costs for site clean-up. The results of the risk forecast were used to optimize the urban design in a way that the costs for the elimination of liability and waste disposal risks remained as low as possible. Thus, site redevelopment will not be as expensive as initially assumed.

The work at the model site has been carried out with the “proof-of” principle in view of creating an American guide for working out such Integrated Site Development Concepts. The finished *optirisk*® guide for the application in the US is titled: „Recommendations for Action - For Optimization of Redevelopment Concepts for environmentally burdened Sites - Guide for Municipalities and Planners“.

With the published *optirisk*® guide for Germany and the United States the user is placed in a position to structure the process of brownfield redevelopment, that is often tedious and difficult. Thus, risk potentials for different redevelopment concepts can be estimated realistically and facts for economic considerations can be provided. It is essential that the environmental and economic investigations as well as the urban planning process take place at the same period and in a cooperative way, so that none of these issues dominate the others, and that the result complies also with social and cultural requirements of sustainability.

The final presentation of the achieved project results took place in the auditorium of the Environmental Research Center of U.S. EPA in Cincinnati in April 2012. For this purpose, Mr. Kersten Roselt and Mr. Ingo Quaas, together with our American project partner Doug MacCourt, were present. The presentation has attracted great interest amid the participants. The comprehensible problem-solving approach, the visualization and the transparency of *optirisk*® are very important for overcoming such problems in the frame of brownfields redevelopment. The workshop of the Bilateral Group carried out that a large requirement for that kind of solutions exists in the USA.



FINAL PRESENTATION:
DR. K. ROSELT, I. QUAAS AND
D. MACCOURT

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