FLOOD THE DROUGHT SEASON

——Treatment of the desertification caused by the imbalance of water supply and demand

Country / City	China/Harbin
University / School	Harbin Institute of Technology
Academic year	2019-2020
Title of the project	Flood the drought season--Treatment of the desertification caused by the imbalance of water supply and demand
Authors	Cai Meng,Zhong Yunhao

TECHNICAL DOSSIER

Title of the project Flood the drought season--Treatment of the desertification caused by the imbalance of water supply and demand
Authors Cai Meng,Zhong Yunhao
Title of the course Research Design Studio
Academic year 2019-2020
Teaching Staff Zhuxun,Zhao wei
Department/Section/Program of belonging Landscape Architecture

University/School Harbin Institute of Technology

Written statement, short description of the project in English, no more than 250 words

The study area is located in the Yulongkashi River Basin in Hotan region of China. The lower reaches of Yulongkashi River crosses the Taklimakan Desert, which is the guarantee of desert ecosystem. However, a large amount of water consumption in oasis city leads to the decrease of river water quantity. In dry season, the water supply of downstream river is less than the demand, which eventually leads to desertification.We hope to form a water storage structure symbiotic with nature on the flood plain. We use the existing urban dams to store the river water in the wet season and the stored water for the oasis city in the dry season to change the current unsustainable strategy. The system consists of three parts: the water storage module on the floodplain, the water distribution network in the city and the sustainable ecological service.Through the study of river water dynamics, we build a water storage system between the flood plain and the city, transforming the isolated flood plain into a compound system of storing water, alleviating the contradiction of water use, supplementing water resources, and serving various industries in the dry season. A comprehensive water regulation system is established and the oasis city can maintain the balance of its own supply and downstream water delivery. Through these strategies, the future city will form a sustainable water use and circulation, and the ecological value of this oasis area will gradually increase, injecting new vitality into the city, oasis and desert.

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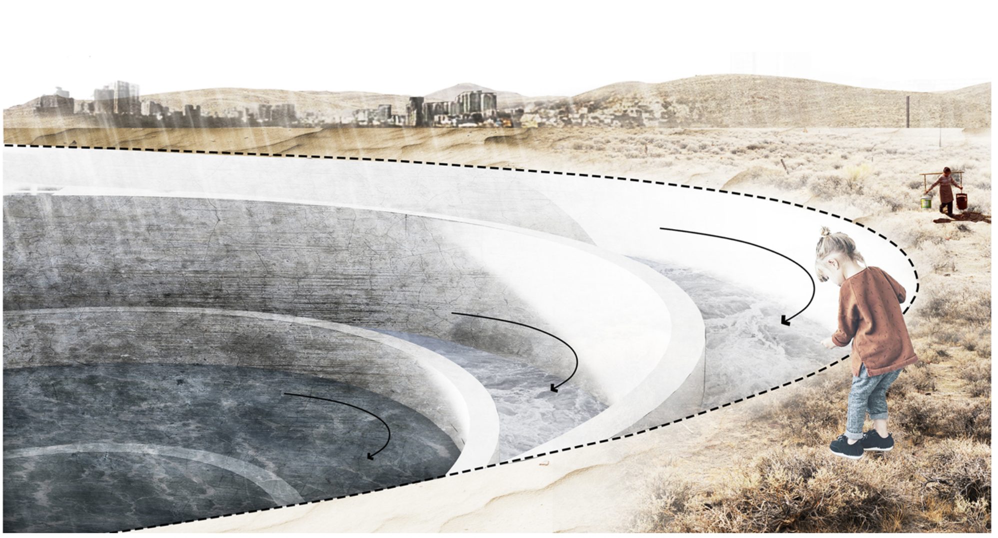
CLIMATE CHANGE AGAIN

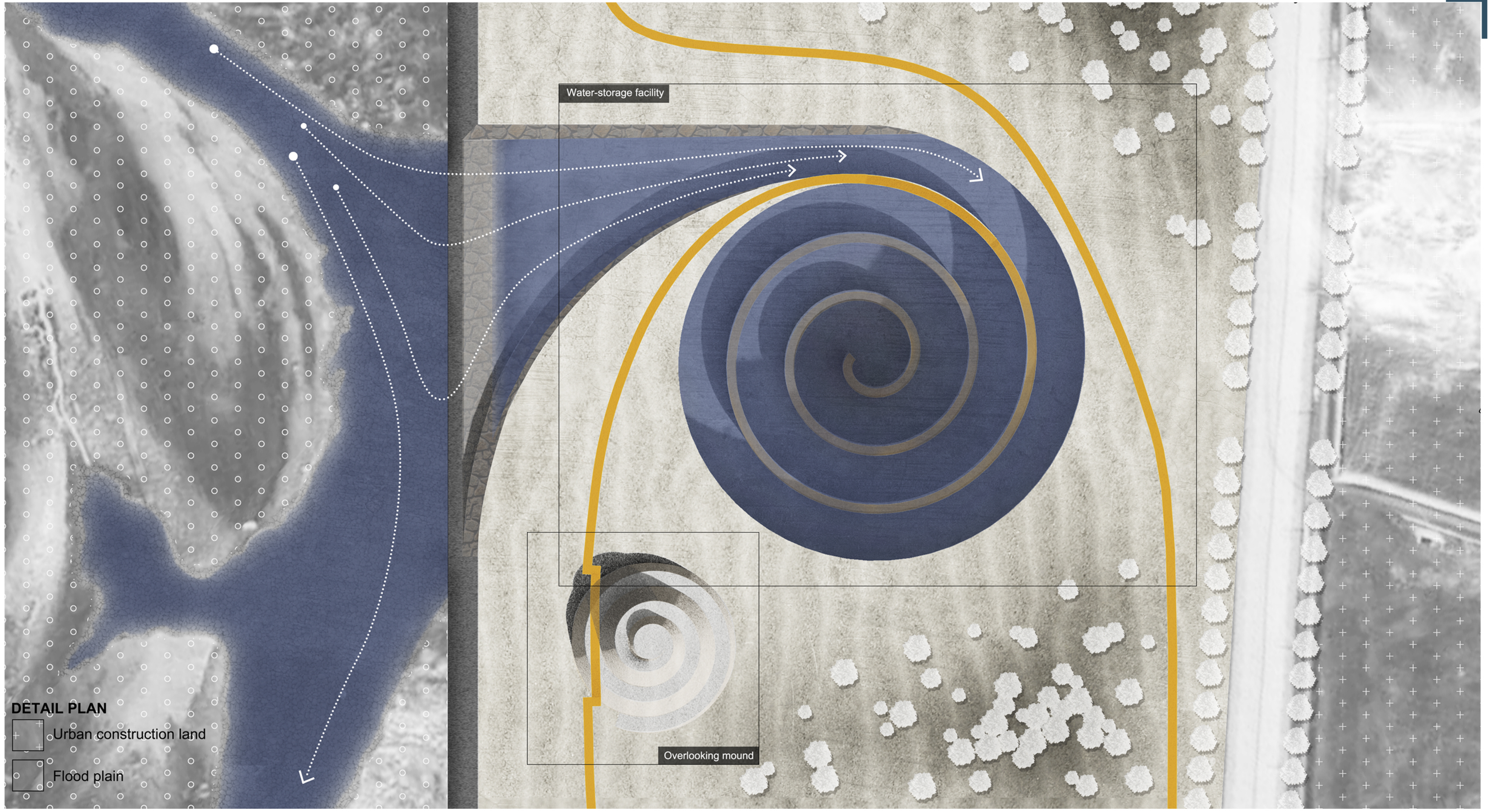
11th International Biennial Landscape Barcelona

Barcelona September 2020
SCHOOL PRIZE

WATER CHANNEL



INTERIOR SIDEWALK

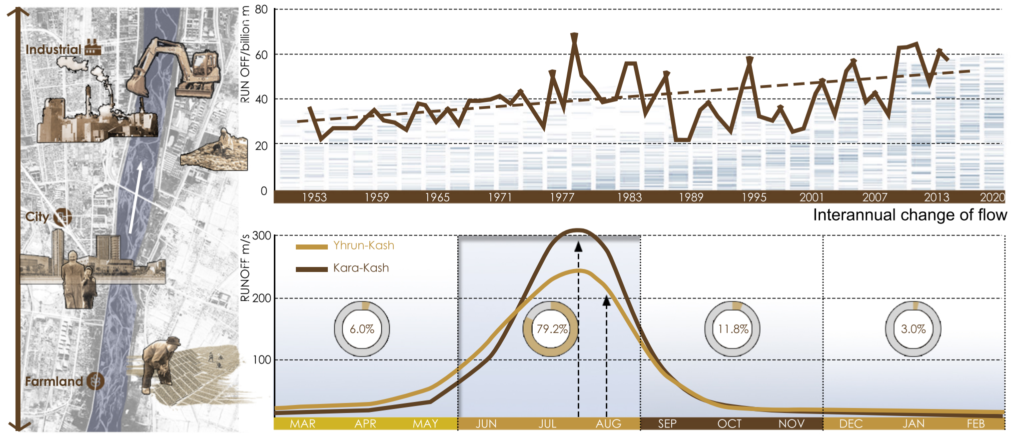


DETAIL PLAN

☐ Urban construction land

☐ Flood plain

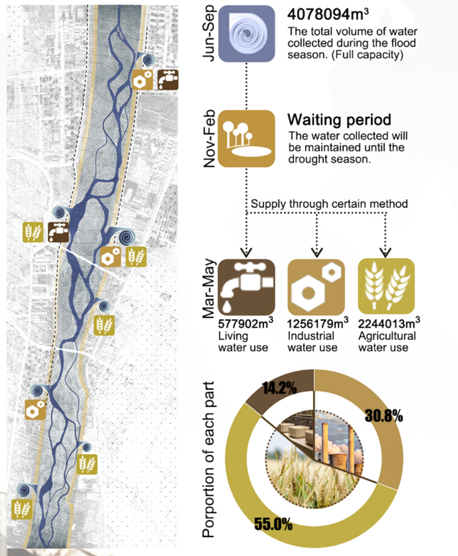
WATER FLUCTUATION



Interannual change of flow

Monthly change of flow

STRATEGY AND EFFECTIVENESS



4078094m^3
The total volume of water collected during the flood season. (Full capacity)

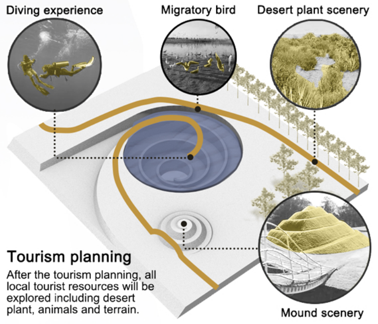
Waiting period
The water collected will be maintained until the drought season.

577902m^3 Living water use

1256179m^3 Industrial water use

2244013m^3 Agricultural water use

Waiting period

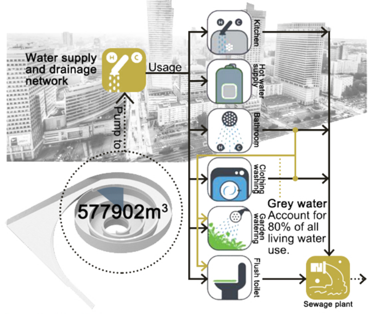


Tourism planning
After the tourism planning, all local tourist resources will be explored including desert plant, animals and terrain.

+1
Possible 4A / 5A scenic spot
Curently, there is only one 4A and two 3A scenic spot in Hetian.

+500000
tourist person-time
Currently, the total tourist person-time has reached 1400000.

Living water use

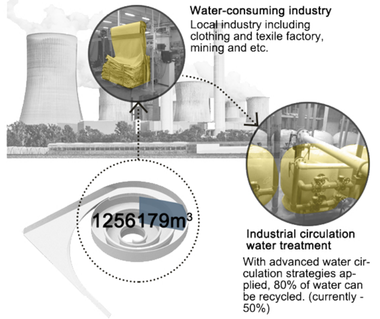


Grey water
Account for 80% of all living water use.

100%
Living water use
This part of water can provide for all living water use during drought season.

5720000 m^3
Reduction of water pumped
In this way, there will not be any water pumped for living during drought season.

Industrial water use



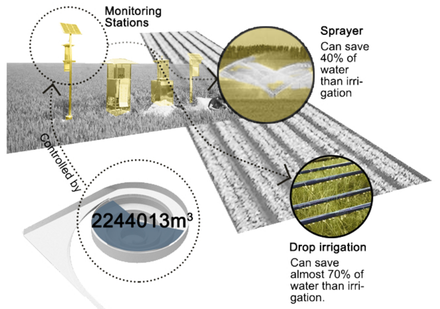
Water-consuming industry
Local industry including clothing and texile factory, mining and etc.

Industrial circulation water treatment
With advanced water circulation strategies applied, 80% of water can be recycled. (currently - 50%)

26.1%
Industrial water use
This part of water can provide for 26.1% amout of industrial water use.

2219800 m^3
Reduction of water pumped
With circulation treatment, water pumped from river can reduce 2219800m^3.

Agricultural water use



Sprayer
Can save 40% of water than irrigation

Drop irrigation
Can save almost 70% of water than irrigation.

167 hm^2
Irrigation area
This part of water can irrigate 167hm^2 field during drought season.

7500000 m^3 (7.2%)
Reduction of water pumped
In this way, water pumped from the river for irrigation can reduce 7500000m^3.