
District 5: A living landscape made from our waste

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This is a design experiment that seeks to explore notions of reality and non-human oriented discourses. By looking to our 'waste' and pollutants as material builders, this project yearns for a new type of sustainability that fosters growth from waste products. This growth is what becomes a design mechanism for remediation of the land and offering a new type of terrain on which the evicted ecosystem may re-inhabit. A type of urban 'reef' that bridges nature and the synthetically alive.

The protocell will act as my co-designer in this experiment. They are "not merely materials or instruments that obey human-led architectural programs" (Dr. Rachel Armstrong, 2011), but offer a new ecological and sustainable paradigm for the production of architecture.

The protocell is a new type of material and method that will aid the design process in terms of architectural programs that go beyond the conceptual and practical constraints of modern design practices.

REality: a 'sick' environment [site: Detroit's Zug Island]

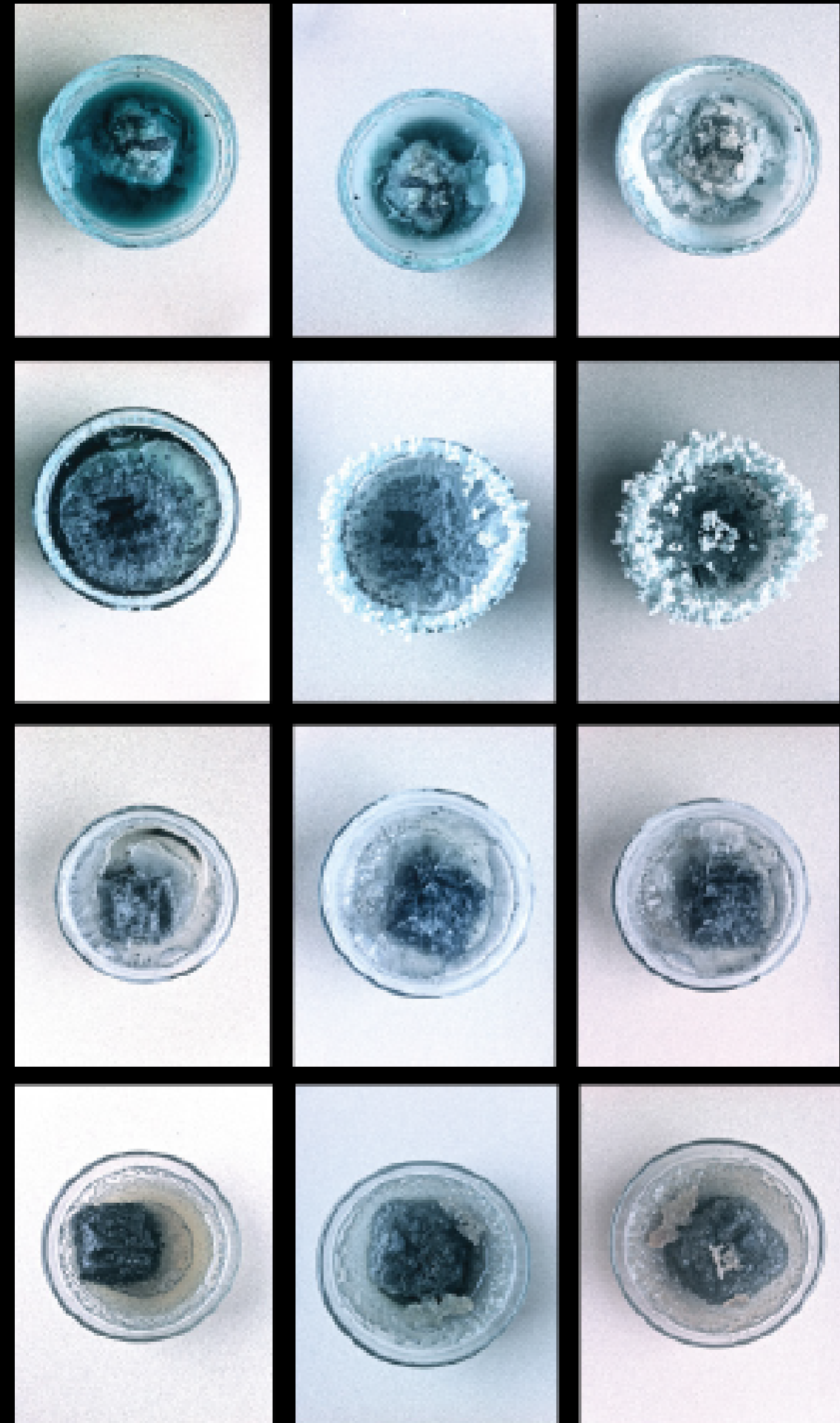
REmediation: remediate the stressed ecology and produce a new topography to allow the soil below to recover [phyto- & bio-remediation]

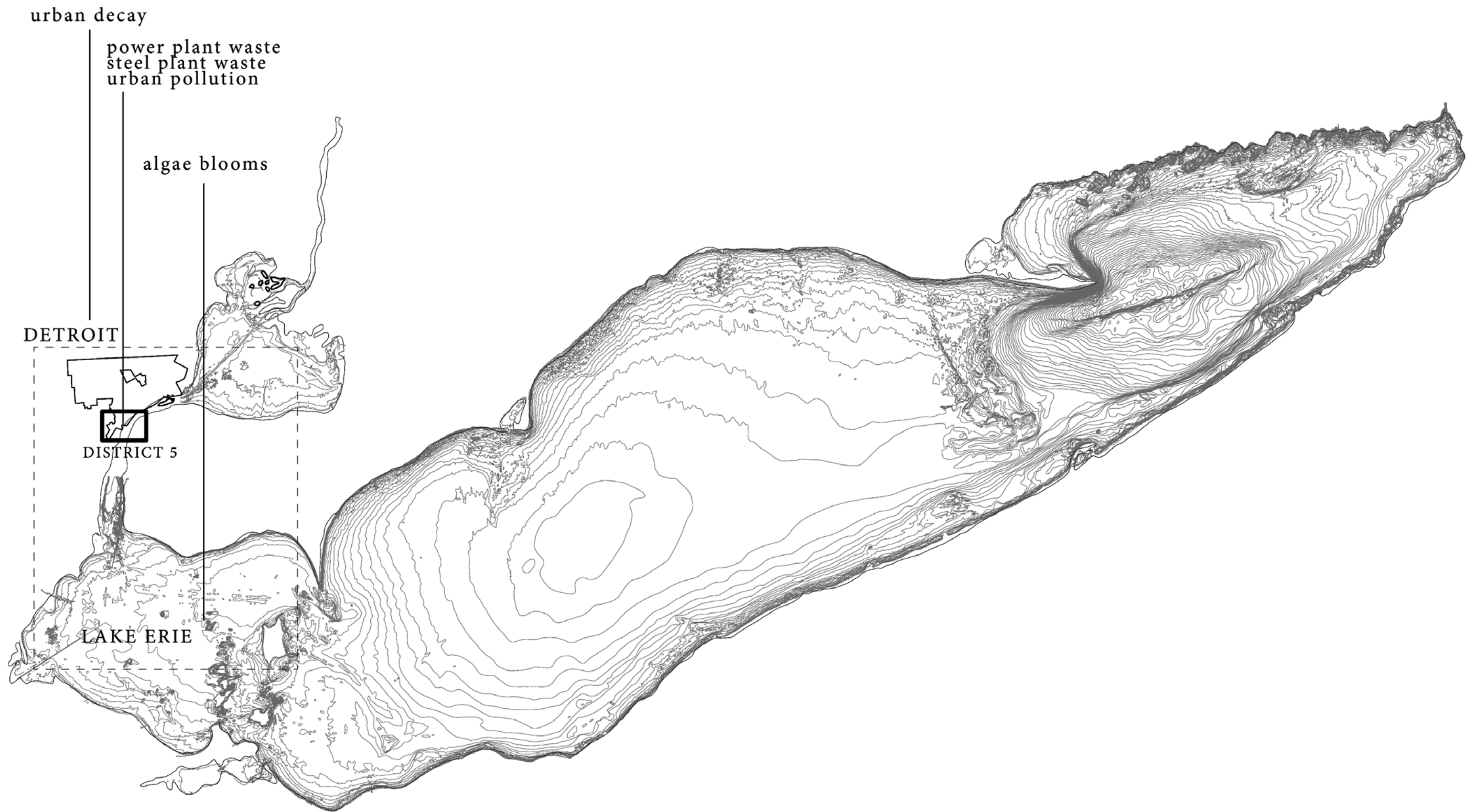
REgrowth: utilization of waste CO2 and heat in a chemical reaction with protocells to produce hardened matter [a new landscape to be inhabited]

Can protocells create a new landscape of matter from our waste that becomes a place for future generations to inhabit? THE NOMAD, nomadic architecture... A 'city' reconstituted from its own waste?

What is the result of a population of protocells programmed for a metabolic response to pollutant | waste-based CO2?

How can I channel the production and formation of matter? How can this become architectural matter?





existing conditions

site territorializing

Territories are established based on levels of relative toxicity on site (given the existing conditions).

- [1] coal yard
- [2] ship canal
- [3] steel plant one
- [4] wasteland one
- [5] steel plant two
- [6] stock yard
- [7.1] wasteland two
- [7.2] wasteland three
- [8] 'green' field|reserve

lower higher

1 PHASE [ONE] canal system | hydrology

Based on the existing topography of the site, water from the surroundings rivers (Detroit and River Rouge) are brought into the land through a canal system.

The canal system feeds a series of water catchments that will support bioremediation pools and subsequent protocell growth.

irrigation

An irrigation system is implemented to allow for clean [bioremediated] water to be used for watering phytoremediation zones. Upon completion of phytoremediation, the irrigation system serves to flood the areas to supplement protocell growth.

2 PHASE [TWO] bioremediation

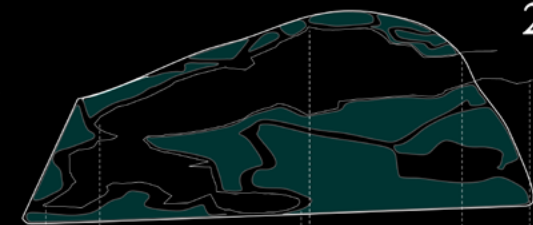
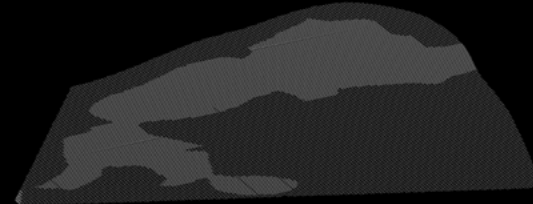
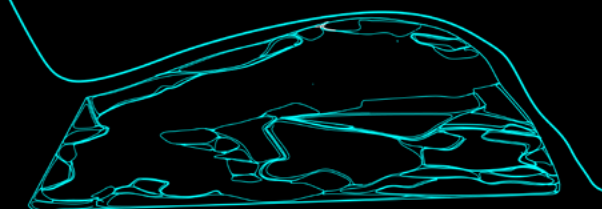
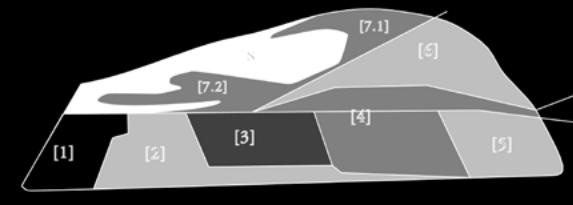
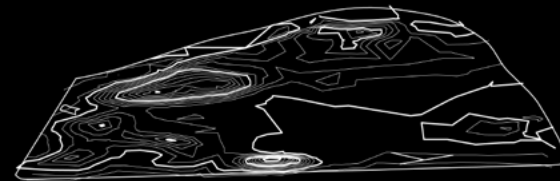
Remediation of water: Algae from Lake Erie is harvested and used as a bioremediator in flooded water catchments on site. It serves to rid the water on site (including runoff) of toxic chemicals like Pb, Cu, Zn, etc.

phytoremediation

Remediation of land: The zone designated for phytoremediation is organized with a set of plants that are able to uptake harsh chemicals into their roots. Once the plants are deemed saturated, they are dried and used as biofuel.

- blue sheep fescue
- mustard
- ragweed
- bamboo

2014



3 PHASE [THREE] infrastructure: carbon pipeline

Waste carbon, from coal power plants and steel plants around the area, is piped in to be injected in to the protocell 'soup' (chemical environment within the water catchments that is necessary for precipitate growth).

programmatic elevation requirements:

the new terrain will offer thickened and thinned areas to be carved out for built programming, the required heights for certain programming can be controlled through the swarms.

- research labs 3m
- living pods 3m
- biofuel plant 6m
- education complex 4-10m
- science centre 4m
- gallery 4m
- fueling station 3m

swarm [one]

the first swarms are deployed in bioremediated sites as heat pipelines.

4 PHASE [FOUR] swarm [two]

Flooding of phytoremediated sites occurs in order to create the 'soup' [chemical environment] needed for protocell growth.

Secondary swarms are deployed in bio-and-phyto-remediated areas.

Growth begins to emerge on the initial swarms - protocells are heat-seeking - populations will gather along the heat lines and produce thickened growth around the pipes - the more dense the swarm (or heat lines), the more growth will occur

inhabitation

program can now start to emerge on site by carving in to the growth.

5 PHASE [FIVE] growth

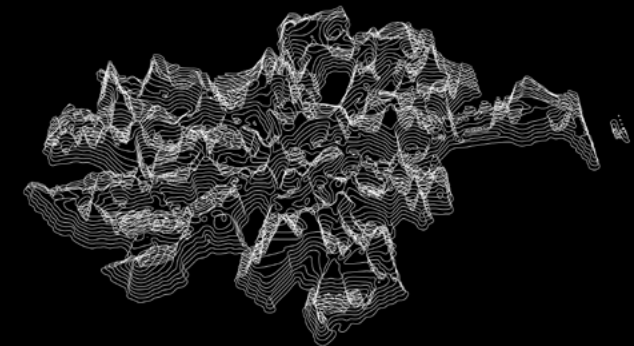
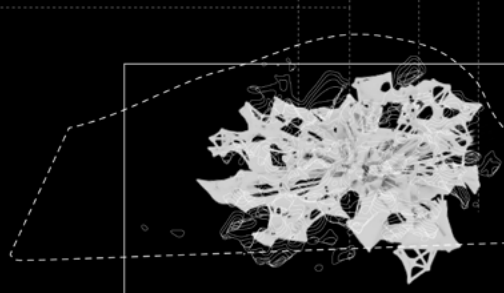
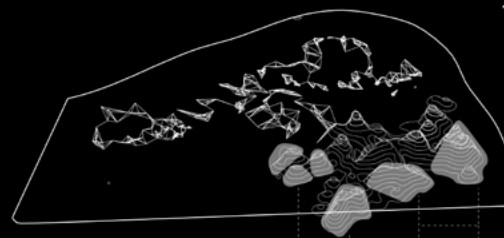
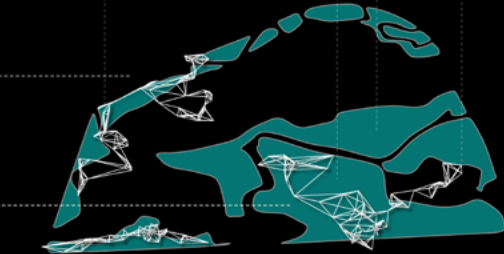
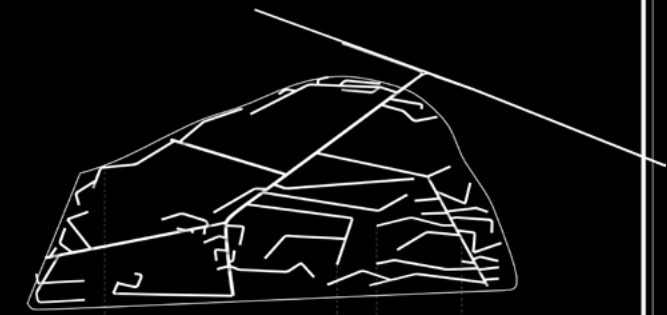
A continual process of flooding, swarming and growth occurs. The process can potentially continue and push into the city of Detroit, using abandoned buildings as scaffolding, the potential for growth is seemingly endless until, of course, there is no more waste carbon and heat to be salvaged.

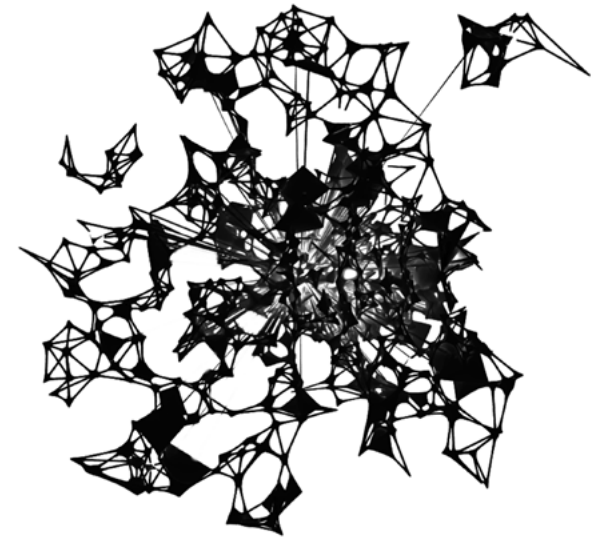
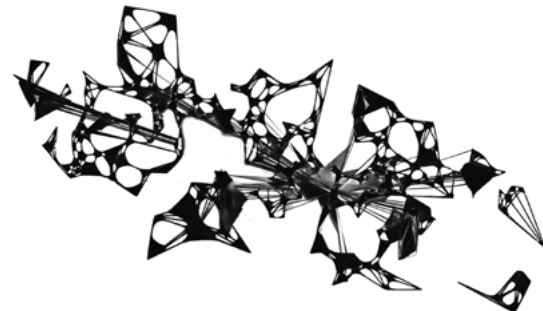
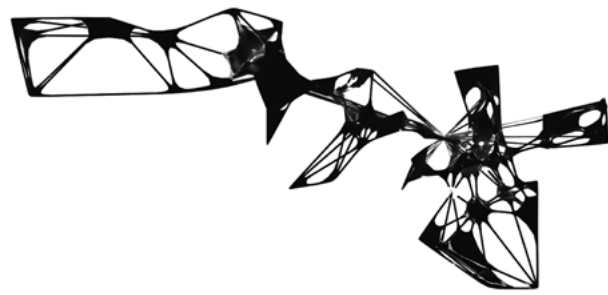
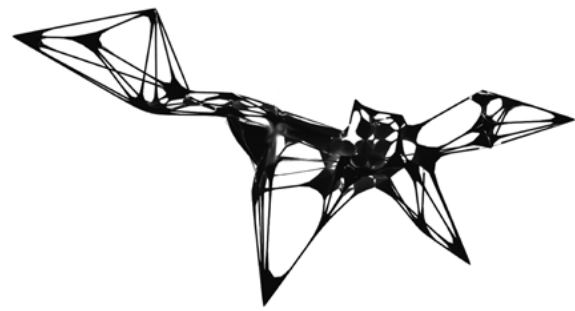
inhabitation

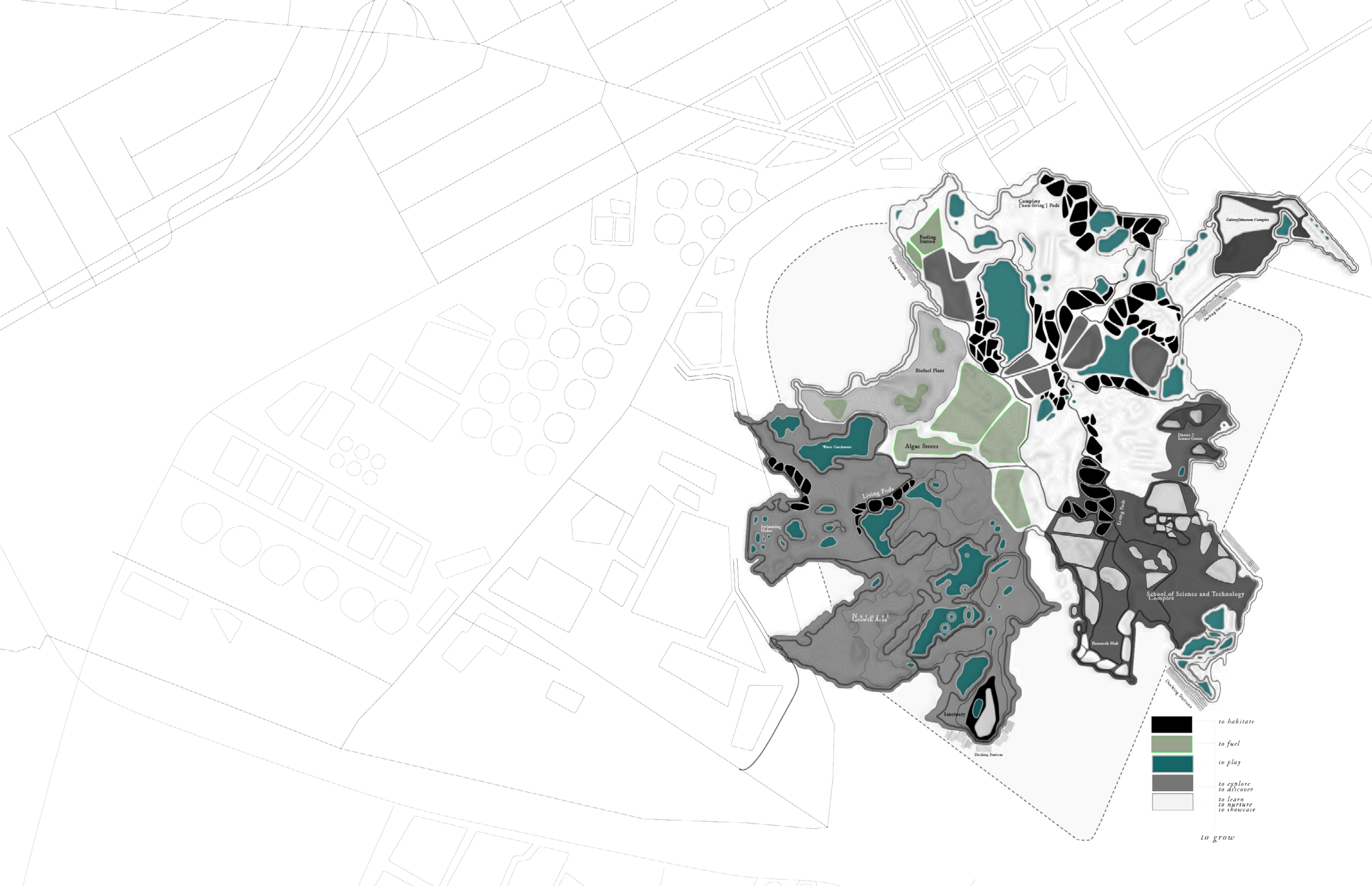
program continues to be implemented when growth sites become ready for carving.

2016

2050







- to habitate
- to fuel
- to play
- to explore
to discover
- to learn
to nurture
to showcase
- to grow