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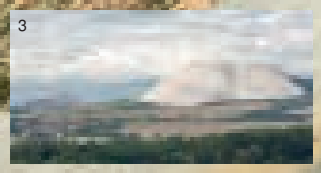
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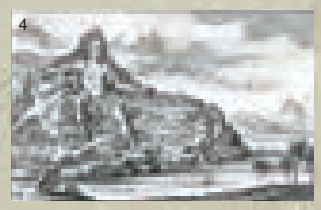
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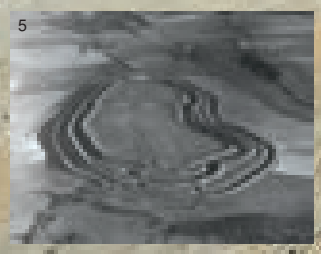
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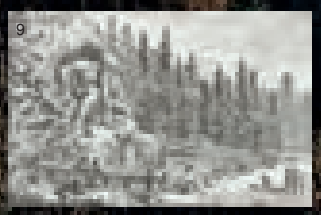
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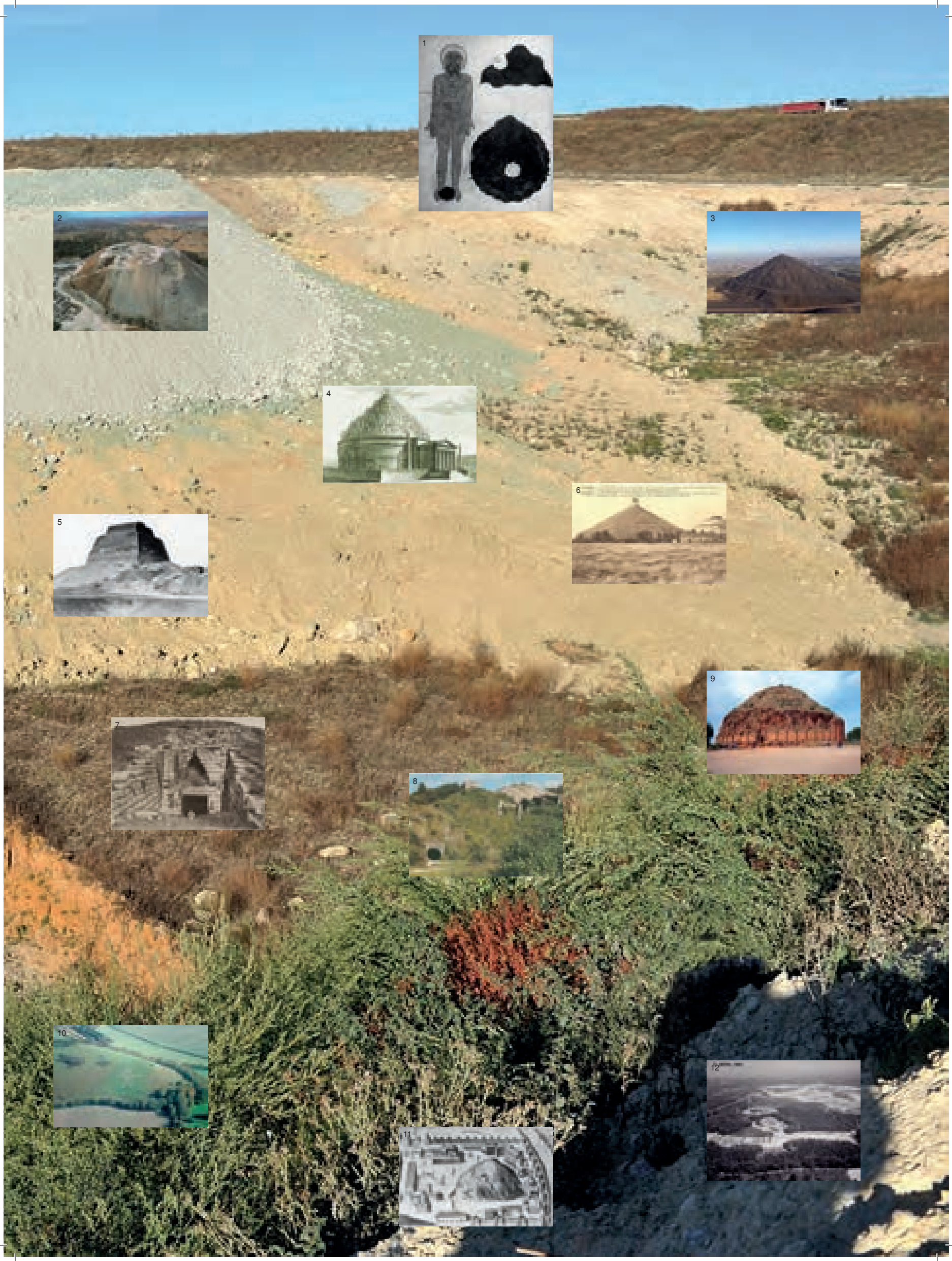
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Moissy-Cramayel, Seine-et-Marne

Previous spread, left page,

1. Remains of the Parthian city of Nisa, Turkmenistan.
2. Ziggurat, Chogha Zanbil, Iran.
3. 'Monte Kali', 250-meter-high sodium chloride spoil tip, Heringen, Germany.
4. The Athos Colossus, project proposed to Alexander the Great by architect Dinocrates of Rhodes for Mount Athos, engraving by Fischer von Erlach, 1721.
5. Iron Age hillfort of Maiden Castle, England.
6. Anthropomorphic landscape, *Ars Magna Lucis et Umbrae*, Athanasius Kircher, 1645.
7. Tumulus, Los Millares, Spain.
8. Aleppo Citadel, built on a tell (hill generated by archaeological stratification), Aleppo, Syria.
9. The Appennino Giant, Pratolino, Italy, engraving by Stefano della Bella, 1653.
10. Monte Testaccio, waste hill made of broken Roman amphoras, Rome.
11. Troglodyte dwellings and graves from the Byzantine period, Yazilikaya, Turkey.
12. Tumulus, Knowth, Ireland.

Right page,

1. The Dream of Nebuchadnezzar, *Saint-Sever Apocalypse*, France, ninth century.
2. Tel Beit She'an, tell and remains of the Greek city of Scythopolis, Israel.
3. Spoil tip, Loos-en-Gohelle, France.
4. Mausoleum of Augustus, Rome, first century BCE.
5. Pyramid, Meidum, Egypt.
6. Lion's Mound, artificial hill commemorating the victory over Napoleon, Waterloo, Belgium.
7. 'Treasury of Atreus', tholos grave, Mycenae, Greece.
8. Helfaut-Wizernes cupola', military complex built by the German army in 1944, Helfaut, France.
9. Royal Mausoleum of Mauretania, Tipaza Province, Algeria, first century BCE.
10. Cerne Abbas Giant, Dorset, England.
11. Engraving showing the formation of Monte Testaccio, Rome.
12. Teufelsberg, artificial hill made of the rubbles generated by the WWII bombings (Trümmerberg), Berlin, Germany.

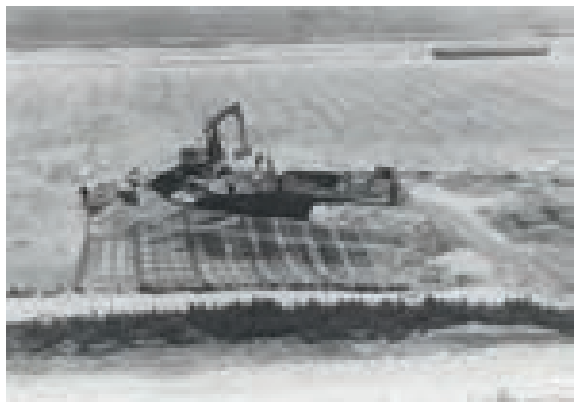
‘Apparently more artificial than a mountain, but more natural than a monument, the mound seems to lie halfway between the two. The mound certainly differs from the mountain in that it is of a more human scale, and its formation undoubtedly owes more than that of the mountain to the labour of human beings and other living creatures. Yet like the mountain, its form is ever-emergent through the play of forces and materials.’

Tim Ingold, *Making: Anthropology, Archaeology, Art and Architecture*, 2013, p. 81

Fabricated Hills

EARTH MOVEMENT AROUND PARIS

Any productive human activity, if carried out for long enough, can result in a mound, as manifested by all those ones made up of soil, of rubble, of waste, of exhausted minerals, of by-products that litter the surface of the Earth. From this initial, raw state, they tend to morph over time into something else, crossing over from the realm of the ‘artificially generated’ to that of the ‘natural looking’. This seamless terraforming capacity has been exploited for some decades by ECT, a company based in Villeneuve-sous-Dammartin, north of Paris, specializing in the management and processing of the excavated earth generated by the building sector. An earth that, by means of trucks, excavators and plant life, becomes hills and surreptitiously creates synthetic landscapes around the French capital.



Parc Georges Valbon, La Courneuve, Seine-Saint-Denis, 1970s

ECT is currently setting up a photographic archive of its activities. The company was created in the 1960s, but only very little visual documentation exists. This activity is very pragmatic, quite technical, with problems like mud, landslides and the corresponding engineering solutions. The awareness of earth processing and storage being a rather exceptional, landscape-producing activity is quite recent in the company.

The vignettes on the previous spread are part of a wider iconographic research on fabricated hills compiled by Galaad Van Daele.

All vertical photographs were taken by him during a visit to various sites managed by ECT, and the texts were written following that same visit, based on a conversation with Sophie Alix, director of communication of ECT.

All other images were selected from the company’s archives and are credited to ECT, Gil Fornet, and Hato Hino.

Parc Georges Valbon, La Courneuve, Seine-Saint-Denis

ECT's 'ancestor company' was founded in the 1960s, when big infrastructural projects like motorways or underground parking lots started booming with the rise of car use. The first storage site, which was ECT foundational job, is situated in La Courneuve, north of Paris. It was used to relocate all the earth from the *Trou des Halles*, the excavation that was made after the Paris central wholesale market was torn down, as well as all of the earth that was generated by the construction of the Paris ringroad, the *Périphérique*. It was then turned into a park which is said to be very beautiful. The sites ECT settles on are mostly semi-industrial wastelands, agricultural fallows or other unproductive or unbuildable sites.

Each year the Paris region generates 25 million tons of excavated earth. ECT stores and processes earth mostly coming from the building sector. From digging foundations for buildings, or underground parking garages. Currently, it also treats earth coming from the works for the Grand Paris Express, a new underground train serving the Paris region, which should account for 45 million tons of excavated material over a period of 15 years. More than earth, what the company has to deal with is actually a kind of mud, generated by the drills used to dig tunnels, which spins while injecting a lubricant. It's a mud that never dries. It is inert, but has to be contained in large compartments made of dry earth.

In the La Courneuve site, north of Paris, ECT processes 60,000 tons per year of hydrocarbon-polluted earth. The earth is formed into low, elongated mounds, and can then be treated with two methods. One relies on mechanically aerating the earth, to remove light and volatile hydrocarbon molecules, which are chains of 16 carbon atoms or less. Heavy hydrocarbon, whose molecules are above 16 and up to 40 carbon atoms, needs to be treated with bacteria. Those are inoculated into the earth, moisture and nutrients are added, and oxygen is then regularly injected to fuel the reaction. The degradation takes around 8 weeks, produces heat (it can reach a temperature of 28°C) and CO^2. The fact that the whole process happens within a building makes it much easier to manage, as the moisture is monitored, and the building warms up thanks to the reaction, which stimulates the bacteria in return and accelerates the whole process compared to an outdoor facility.

Moissy-Cramayel, Seine-et-Marne

La Courneuve, Seine-Saint-Denis

La Courneuve, Seine-Saint-Denis

Moissy-Cramayel, Seine-et-Marne

Moissy-Cramayel, Seine-et-Marne

List of tree species on the Moissy-Cramayel site:
Acer campestre
Acer platanoïdes
Acer pseudoplatanus
Alnus glutinosa
Alnus incana
Betula alba
Betula pendula
Castanea sativa
Carpinus betulus
Cornus mas
Cornus sanguinea
Corylus avellana
Crataegus laevetiva
Euonymus europaeus
Hippophae rhamnoïdes
Ilex aquifolium
Malus sylvestris
Maspilus germanica
Populus nigra
Prunus avium
Prunus spinosa
Quercus pedonculata
Quercus pubescens
Quercus sessiliflora
Rhamnus frangula
Rosa canina
Salix alba
Salix purpurea
Sambucus nigra
Sorbus aria
Sorbus aucuparia
Sorbus torminalis
Tilia cordata
Tilia platyphyllos
Ulmus minor
Viburnum lantana

The Moissy-Cramayel site, south of Paris, has been occupied by ECT for some years. A first hill was already completed some years ago, as a sound barrier protecting the village from the nearby motorway. When a second one was started it was decided, in dialogue with the municipality, to join both hills and turn them into a landscape park and arboretum. Following the municipality's wish to meet the deadline of the park's opening, part of the earth making up the second hill had to be moved some hundred meters toward the first hill to complete the figure. A hole several dozens of meters deep was thus created, but will ultimately be filled up. Those hills mark the edge of the village and can also be seen as a kind of dike preventing further sprawl.

Moissy-Cramayel, Seine-et-Marne

The earth making up the mounds varies in colour and composition. It can be red earth, blue clay, beige or almost white mud depending on its origin and mineral makeup. Their random composition creates fluctuating colour schemes during the building of the hill.

The earth making up these hills is not contaminated. It is inert, just rock and earth, devoid of vegetal material, metals, plastics or any contaminants, meaning it can also be safely cultivated. The top of the hill has therefore been designed as a plateau allowing agricultural activities to take place after the completion of the project. A generous layer of fertile ground will have to be installed, either taken from the site before the works begin and reinstalled thereafter, or imported from other sites.

Moissy-Cramayel, Seine-et-Marne

Hundreds of trees have been planted on the hills. The initial project was to use a number of species found in the neighbouring Sénart forest to create a kind of indigenous arboretum, but the municipality wished to also include some exotic trees. This influenced the final choice. Local authorities also have a right to modify the landscape design, and sometimes oppose low maintenance prairie sections because the grass would grow too high and prevent the shooting of fireworks in the summer.

Moissy-Cramayel, Seine-et-Marne

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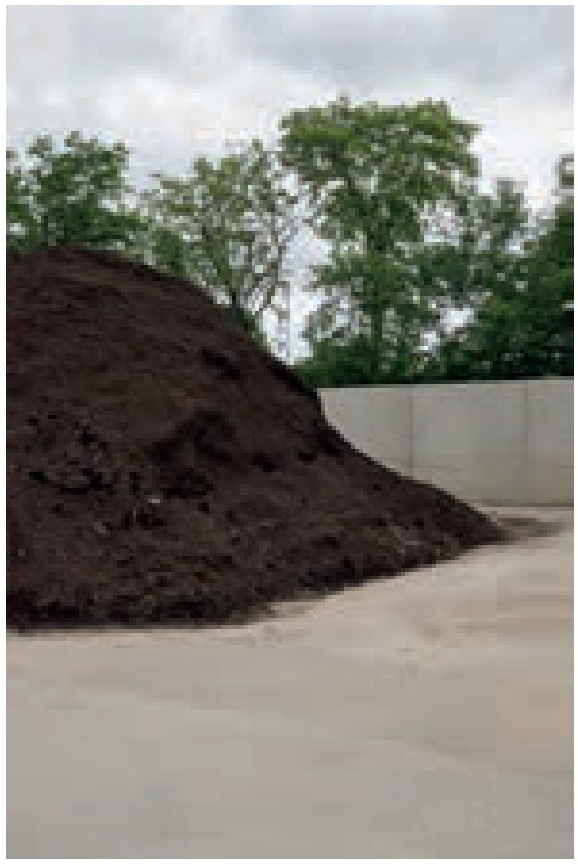
Charlotte Pruvost, *Potentiel de la biodiversité dans la construction de technosols à partir de déchets urbains* (Université Paris-Est Créteil, 2018).

The standard way of constructing those hills does not make them sturdy enough to be built upon. It is not impossible, but requires a completely different process. Additives, like lime, have to be incorporated into the earth to make it more stable and load-bearing, which demands more work and money.

Baillet-en-France, Val-d'Oise

Piling up earth on dozens of meters is a pragmatic solution: all this excavated material has to go somewhere. But some other strategies can be used, like filling up quarries, as it is now juridically requested from quarry owners to gradually secure the areas and galleries they've excavated. The easiest way to do that is to simply fill them up. In the Paris region there are a lot of gypsum quarries; gypsum being calcium sulphate allows to store sulphate-rich earth coming from that same region.

There are a few other alternatives to storing excavated earths on dedicated sites. It can sometimes be relocated on the building site itself, for instance when building roads or above ground infrastructures, but for the building sector, with all the underground levels of buildings, it can usually not all be relocated on site. There are also experiments in making building materials out of this earth: bricks for instance. Some of the earth used for those projects comes from ECT's activities, but brickmaking only absorbs 45,000 tons per year, merely a fraction of the total volume produced in the Paris region. Another possible way of using this excavated earth is to produce fertile substratum by adding organic waste to it. This creates a kind of artificial fertile earth. This process is still experimental, but it could allow limiting the imports of topsoil into the Paris metropolitan region, which for now is happening a lot, and is unsustainable because it means scraping off fertile earth some hundreds of kilometres from Paris to then bring it into the city. According to a PhD[1] which has recently focused on the recolonization of inert earth, if it is left exposed to the atmosphere with no additives, it starts teeming with micro-organisms in about 6 months.



Test batch of synthetic fertile earth, La Courneuve, Seine-Saint-Denis