

An architectural rendering of a modern residential development at dusk. The scene features multi-story buildings with large glass windows and balconies, some with people visible. A central courtyard area has a paved walkway with a man and a child walking, and a dark, reflective pool of water. The sky is filled with a colorful sunset and silhouettes of birds. The overall atmosphere is serene and contemporary.

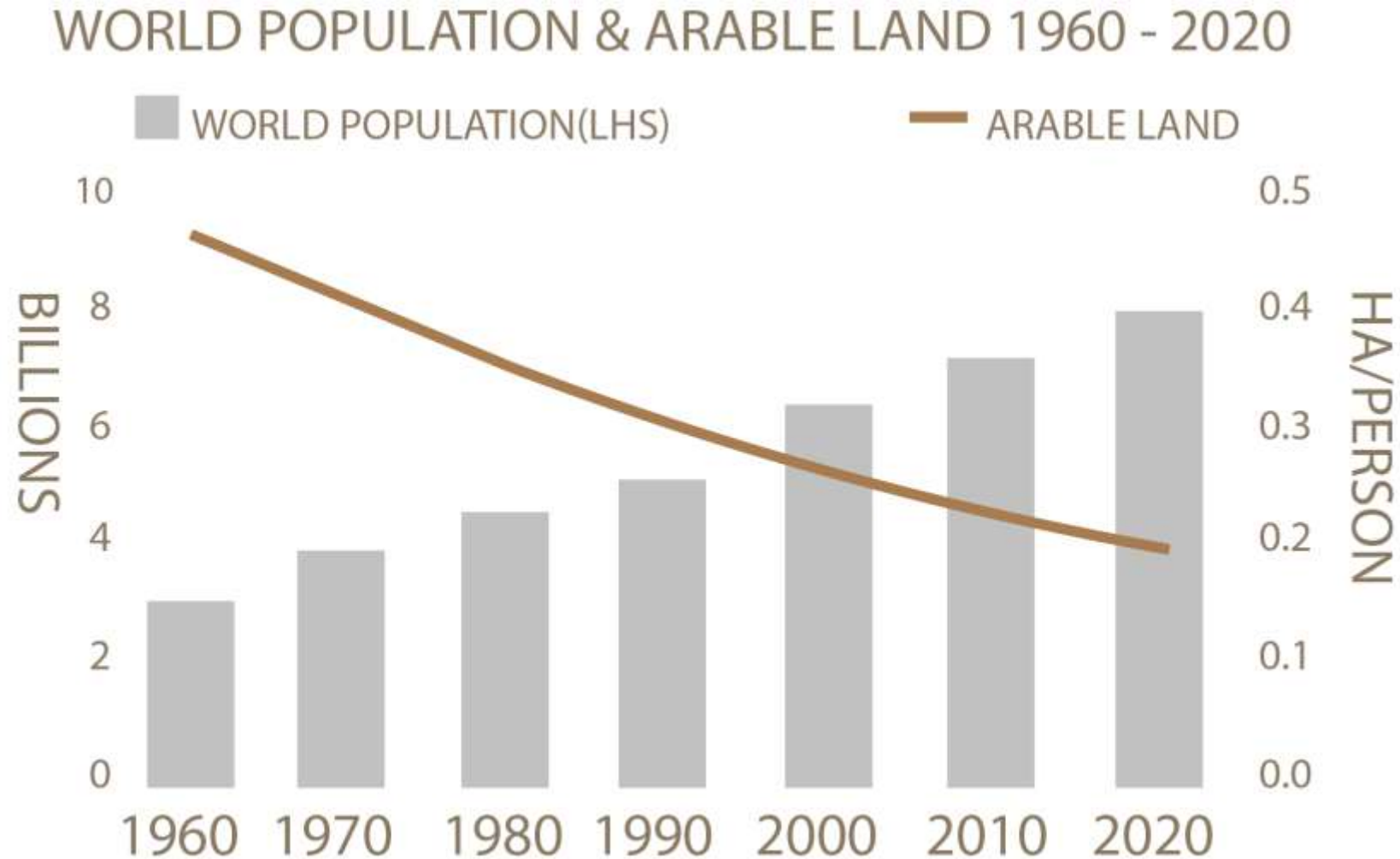
Ecolux Communities

Blaze Irwin

PROBLEM

Rapid population growth and expanding cities continue to take a toll on land used for sustenance. As it stands right now, we currently do not produce enough food to feed the near 8 billion people on this planet and with the population expected to keep growing at this rate, arable land will only decrease, thus worsening the issue. This provokes the question, “How do we offset the increase in population growth and the decrease in amount of agricultural land?”

PROBLEM



Source: GS&PA Research, FAO

DESIGN SOLUTION

SUSTAIN

Sustain arable land by incorporating food production areas within the building, as well as on the exterior. The public gardens would donate portions of the food produced while the residents with the private gardens would have the option to sell, donate or use the food for consumption.

SUPPORT

Support the local economy by reimagining the Red River Market and making it a more prominent part of Fargo culture. This would be done by creating a more permanent space for use and the opportunity for more operating hours throughout the week.

EMBRACE

Embrace the Red River and the building opportunities it presents, as well as the challenges such as designing a building for flood resilience. Exploring these new challenges allows for growth in areas that do not take up arable land.

COMMUNITY

Create a high-dense community that maintains and promotes health and wellness through private gardens and green spaces for every unit, as well as amenities such as fitness centers and office space. This community also utilizes multiple property types such as apartment rental units, ownership condos and ownership homes.

SITE



USA



ND & MN



RED RIVER



SITE - Solution



Ecolux Community

Elevated Parking

Walking Path

Bike Path

Road

Original Site Path



BUILDING PROGRAM

4 BUILDINGS. 2 COMPLEXES. 1 COMMUNITY

Tenant Spaces 16 Total Units - 12,300 Total SF

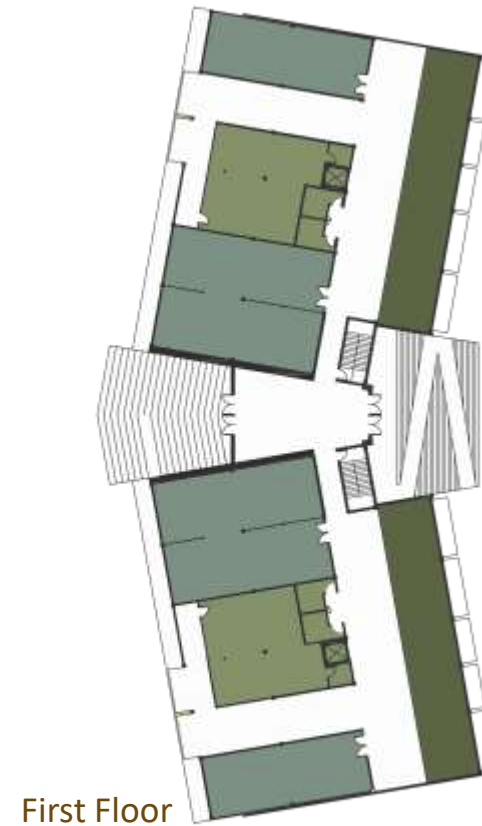
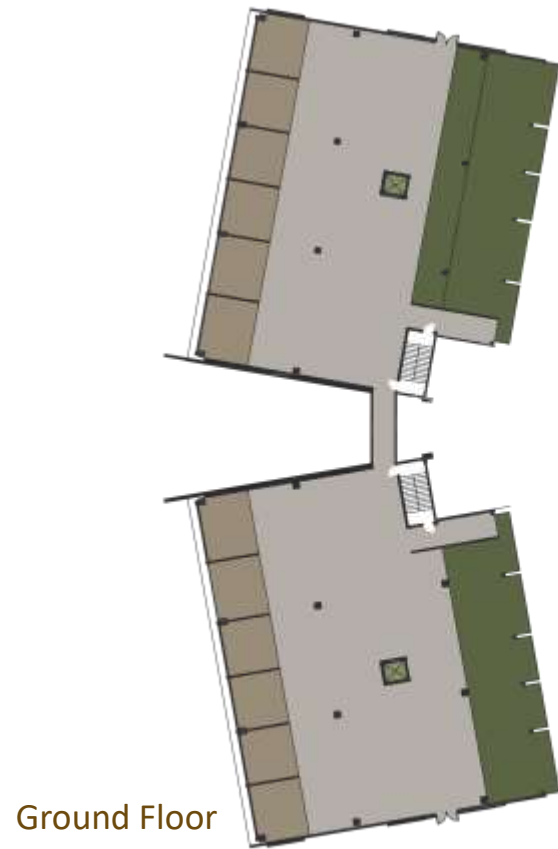
Green Space 18,000 Total SF

Rental Units 8 Total Units - 6,100 Total SF

Ownership Units 20 Total Units - 23,800 Total SF

Market/Flex Space 30,200 Total SF

FLOOR PLANS – East Complex



- Market stall
- Market Flex Space
- Green Space
- Tenant Space
- Mechanical
- Living

FLOOR PLANS – East Complex



BUILDING INTEGRATED AGRICULTURE

Building integrated agriculture is a response to the growing scarcity of arable land and integrates food production into the overall building design. This project provides modern methods of BIA combined with traditional crop producing techniques to create an effective, energy efficient solution to increased demand for agricultural land and food production. Modern methods such as vertical farming have been successful at producing large amounts of food throughout the year but at the cost of extensive energy use through constant need of artificial light. My design incorporates indoor growing, however, it incorporates natural sunlight to greatly reduce the need for any artificial light. This is done through operable glazing on the exterior of the building that encloses traditional public and private gardens, as well as balconies to create a 'greenhouse' effect and lengthen the growing season. The operable design allows for the residents to adjust the glazing based on the season and comfort level they desire.

BUILDING INTEGRATED AGRICULTURE

Operable Windows

Mini Garden

Mini Yard

Public Market



Full Yard



Inner Garden

Bifold Doors

BUILDING INTEGRATED AGRICULTURE

Most Profitable Greenhouse Crops

Tomatoes



Lettuce



Cucumbers



Spinach



ANALYSIS

Pounds of Food

Grown per Space Annually

1. Public Space -

5,600 SF per Complex
16,800 LBs/yr per Complex

2. Condo Units -

1,900 SF per Complex
5,700 LBs/yr per Complex

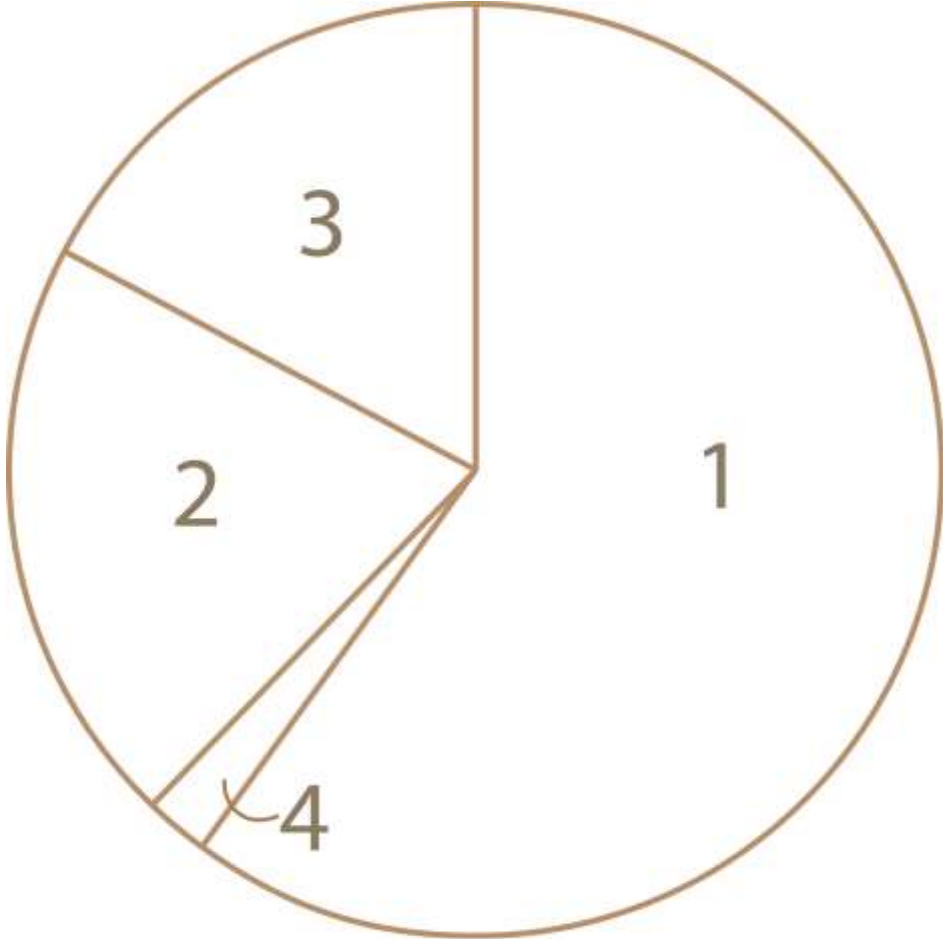
3. Home Units

1,600 SF per Complex
4,800 LBs/yr per Complex

4. Apartment Units

200 SF per Complex
600 LB/Syr per Complex

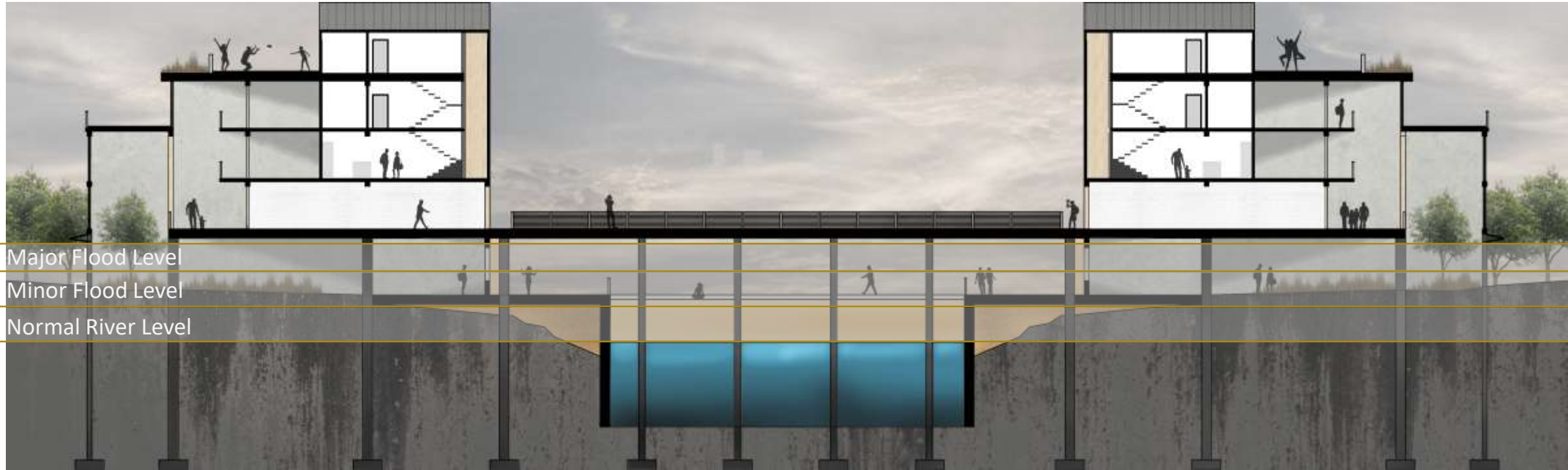
TOTALS:
27,900 LBs/yr per Complex
55,800 LBs/yr for Total Community



FLOOD RESILIENCE

Exploring alternative building sites is also a crucial part of sustaining arable land. Building along the Red River is one of these sites that Fargo can explore, especially with the now numerous diversions used to prevent flooding. This solution places the major living and working spaces above the flood plane, while still taking advantage of the space below. The flood area is used as a market and flex space that can be taken down and moved if needed during the flood season. The materials at this level are very flood resilient with the main use being concrete to allow for very little to no damage being done throughout different flood stages.

SITE SECTION



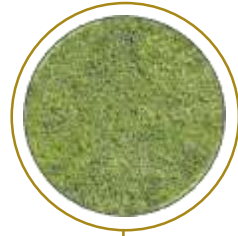
Major Flood Level
Minor Flood Level
Normal River Level

Building Elevations

Heavy Timber



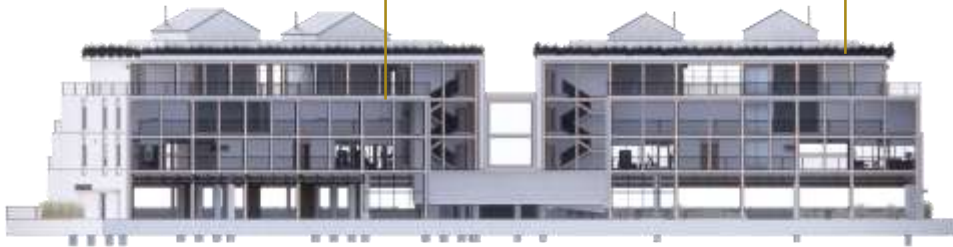
Green Roof



Concrete



Recycled Metal Siding



East

West

South

VIDEO



OPERABLE WINDOWS



TENANT SPACE - FLOODED



LIVING SPACE



SOUTH ENTRANCE



RIVERWALK





Thank You