

**Engineering Feasibility Plan
MaskilMoreh
St. Joseph School**

1. Overview

The five acre parcel study is located on the Wisconsin shore at approximately 88 degrees longitude and 45 degrees latitude. The majority of the soil is contaminated clay, sand, and loam. This becomes very significant for transportation, water and sewer matters.

2. Water and Sewer

There are 3 major water sources: well water, lake water, and hydrogen fuel cell byproduct. Being located on the shore of Lake Michigan 100% of the required water is available from the lake. The water will be treated with reverse osmosis, which eliminates the use of chlorine, naturally treating the water and removing the chlorine smell and taste. Our secondary source will be water collected from the hydrogen fuel cells. The hydrogen fuel cell water will not need to be treated as much as the water that comes from Lake Michigan.

The existing water mains and wells are over 100 years old but in good physical condition. However, well water samples have indicated that hazardous materials are present and, therefore, the wells cannot be used. Once the mains are flushed out, they will be safe to use.

At our high-tech sewage treatment plant, we will process the sewage by using nano-bot technology to make fertilizer from solid waste. A filtering screen will remove the solids and the nano-bots will turn them into organic fertilizer by removing hazardous materials.

3. Transportation

The surrounding roads are in terrible condition. The tanker trucks that delivered gasoline to the existing gas station damaged the only main

road. There are potholes due to the refreezing of the cold ground in winter. We have new roads that are made out of recycled tires and asphalt, which are not susceptible to potholes.

A subway station will provide mass transit to the area. The new mass transit systems will include futuristic subways. Electric power for the underground subway will be supplied by hydrogen fuel cells. The high-speed above ground trains are operated via magnets. Pollution is significantly minimized due to the emphasis on clean energy sources and magnetic power.

4. Soil Analysis and Contamination

Many types of loam have been identified and are eroded or severely eroded including: Boyer loamy fine sand, Hochheim loam, Kewaunne sandy loam, Manistee loamy fine sand, Oshkosh silt loam, and Sisson fine sandy loam. Loam is a type of soil which consists of clay, sand, gravel, silt and organic matter.

The gas station sitting in the middle of the barren field has caused significant soil contamination due to leaking gas tanks. High levels of lead, benzene, and acrolein were found in the soil samples. All must be removed from the area. Lead and benzene are harmful to humans and animals. Acrolein is a herbicide that is used to keep algae (and other plant life) from growing in fuel storage tanks. The dirt has been loosened by the lack of plant life. Rainwater had mixed the contaminated soil with other soil, which widened the contamination radius.

5 Engineering Discipline

A civil engineer evaluated the feasibility of the city's energy system, water treatment, transportation system, and waste disposal. The fuel cell energy system was analyzed for the number of stationary fuel cells, capacity for the transportation system, and environmental impact. The reverse

osmosis process, given the 90% purification rate was analyzed for the size of the system, the amount of population and the abundance of surrounding water required. The transportation system was evaluated for accessibility and connectivity to major hospitals, schools, and other cities within the state. In addition, given the population, the waste disposal system was designed to recycle for fertilizing the agriculture of the area. The Civil Engineer called in and directed experts in their respective areas; soil analysis experts were brought in to analyze the soil contamination and to give their opinions on how best to proceed with the decontamination process. The environmental and civil impacts on our neighboring communities were taken into account during this evaluation to make sure that no adverse impact or affect would harm these communities.

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INTERVIEW

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