

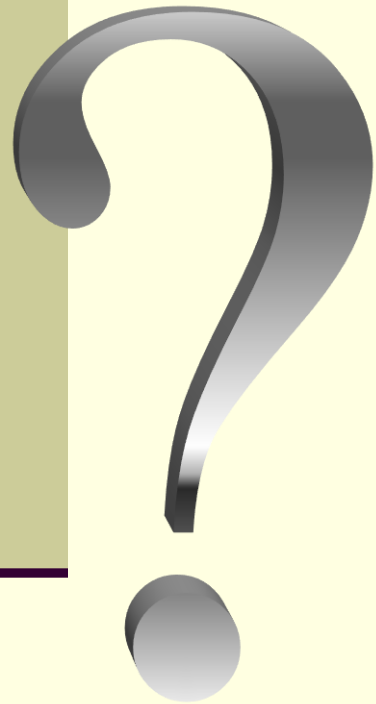


Shipping Container Transport System Solutions

Introduction

- The critical aspects of local transportation problem in the Chicago area continue to be addressed.
- Moving freight represents a substantial and growing part of the challenge.
- The first two years of this IPRO project focused on novel capital-intensive solutions for the movement of containers through Chicago.
- Fall 2005: MiJack Products sponsored the team to review the “ThroughPort” concept

What is there to know?

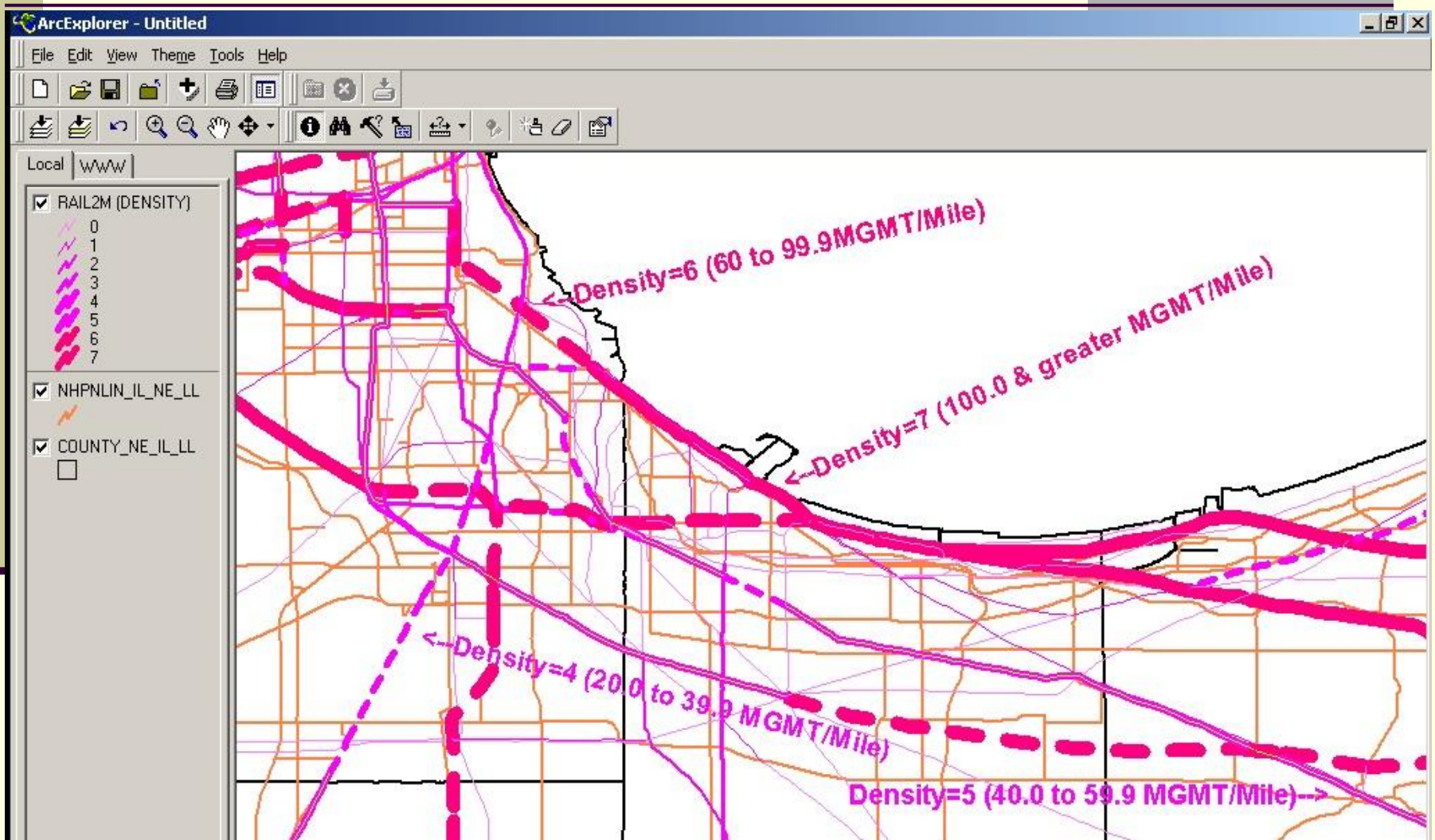


- Background information
- Intermodal facility design
 - Physically, what does the site look like
 - What happens at the facility
- Zoning and land ownership
 - Can we build here?
 - Who owns the land?
- Environmental issues
 - Pollution
 - Public works
- Communication/Technology

Background

- Chicago land area
 - 3rd largest intermodal shipping container hub in the world
 - 6 major railroad companies that contribute to intermodal traffic in the area
- CSX Bedford Park
 - 2nd largest intermodal facility in the U.S.
 - Largest Intermodal facility in the Chicago area.
 - Capacity: 1,000,000 lifts per year
- Research and statistics show that intermodal traffic is expected to double in the U.S. within the next 10 years.

Area Intermodal Density



I PRO Time Line

- Field visit to CSX Bedford Park, IL 1/25/07
- Charrette formations and class goal plan 1/30/07
- Presentation to Chuck Allen, Norfolk Southern 3/27/07
- Presentation to Gary Chamber of Commerce 4/17/07
 - Len Pryweller, Adrian Muhammed
- I PRO Day 4/27/07

The Intermodal Facility: CSX Bedford Park

- What happens there?
 - Trains drop off, pick up, or switch containers
 - Cranes maneuver containers
 - Trucks pick up containers
- What makes up the site?
 - Tracks and trackside operations
 - Holding and storage areas
 - Gates and administration

The Intermodal Facility: CSX Bedford Park (cont'd)

- Equipment
 - Cranes
 - Side-loaders
 - Trucks
- How do they operate?
 - Radio frequency
 - Containers are tracked in real time
 - Truckers check in by gate
- What kind of fuel is used, and how much?
 - Diesel
 - (Amount)

The Goal

- Select a site and plan the physical layout of an Intermodal yard which maximizes efficiency and minimizes any negative effects on the surrounding areas.
- Make recommendations concerning the appropriate number, size, and type of cranes capable of handling the predicted capacity.
- Develop a demonstration of software capable of tracking containers and trucks both within the yard and regionally.

Team Functions

- Meetings

- The Meeting Leader would designate a Secretary, who will take notes, and then becomes the next Meeting Leader

- Charrette: a collaborative session which the group divides into sub-groups then presents its work to the full group

- Civil Design
- Mechanical/Environment
- Zoning
- GIS
- Demo Program

Charrette Teams

Design

- Yousef Zaatar
- Jon Kohler
- Mary Sisay
- Nate Roth

Environmental

- Ben Russo

Team Advisors

- Laurence Rohter
- Peter Mirabella, Mi-Jack
Products Representative
- Doug Daun, CSX
Intermodal Manager
- *Chuck Allen, NS*

Zoning

- Maria Aguirre
- Joanna Ruiz

Mechanical

- Axita Patel
- Josie Truong
- Mike Grilley

GIS/CAD

- Joanna Ruiz
- Cesar Sotelo

Information Technology

- Zack Borschuk

Process

- Meetings
 - Recap Previous Meetings
 - Discuss New Developments
 - Improve Current Completed Tasks
 - Made Decisions on Team Issues
 - Assign New Tasks
- Ethics
- Project Management

Project Plan

Task Name	Duration	Start	Finish
Initialize	18 days	Tue 1/16/07	Thu 2/8/07
Define the problem	14 hrs	Tue 1/16/07	Wed 1/24/07
Structure Groups	2 hrs	Thu 1/25/07	Thu 1/25/07
Project Plan	6 hrs	Tue 2/6/07	Thu 2/8/07
Research	15 days	Tue 1/23/07	Mon 2/12/07
Define Client Needs	30 hrs	Tue 1/23/07	Mon 2/12/07
Bedford Park Site Visit	1 day	Thu 1/25/07	Thu 1/25/07
Equipment Needed	10 hrs	Tue 1/30/07	Mon 2/5/07
Define Demo Program	10 hrs	Tue 1/30/07	Mon 2/5/07
Gary Demographics	10 hrs	Tue 2/6/07	Mon 2/12/07
Familiarization with Project Software	8 hrs	Tue 1/30/07	Fri 2/2/07
Effects of Yard on Gary	10 hrs	Tue 2/6/07	Mon 2/12/07
Design	20 days	Thu 1/25/07	Wed 2/21/07
Site Plan	40 hrs	Thu 1/25/07	Wed 2/21/07
Coding Demo Program	20 hrs	Thu 2/8/07	Wed 2/21/07
Yard Requirements	10 hrs	Tue 2/6/07	Mon 2/12/07
Construction of Model	20 hrs	Wed 2/7/07	Wed 2/21/07
IPRO Deliverables	27.5 days	Tue 3/20/07	Fri 4/27/07
Midterm Report	5 hrs	Tue 3/20/07	Fri 3/23/07
Abstract	3 hrs	Wed 4/18/07	Fri 4/20/07
Poster	8 hrs	Mon 4/16/07	Fri 4/20/07
Presentation	10 hrs	Wed 4/18/07	Wed 4/25/07
Information CD	2 hrs	Thu 4/26/07	Fri 4/27/07

Site Problems

- Zoning
- Existing Layout
- Surrounding Environment



- Trackside
- Container on Chassis
- Chassis Yard
- Empty container Yard
- New Parking Lot
- Gates, Repairs, & Administration
- New EJ&E Rail Yard
- New NS Elevated Main Line
- CSX Main Line
- New EJ&E Rail Line
- New Intermodal Tracks

9000 ft

Engineering Cost Estimate

■ Materials	\$146,123,723
■ Construction Equipment	\$706,680
■ Labor	\$2,423,783
■ Total Construction Cost	\$149,254,186

Environmental Impact

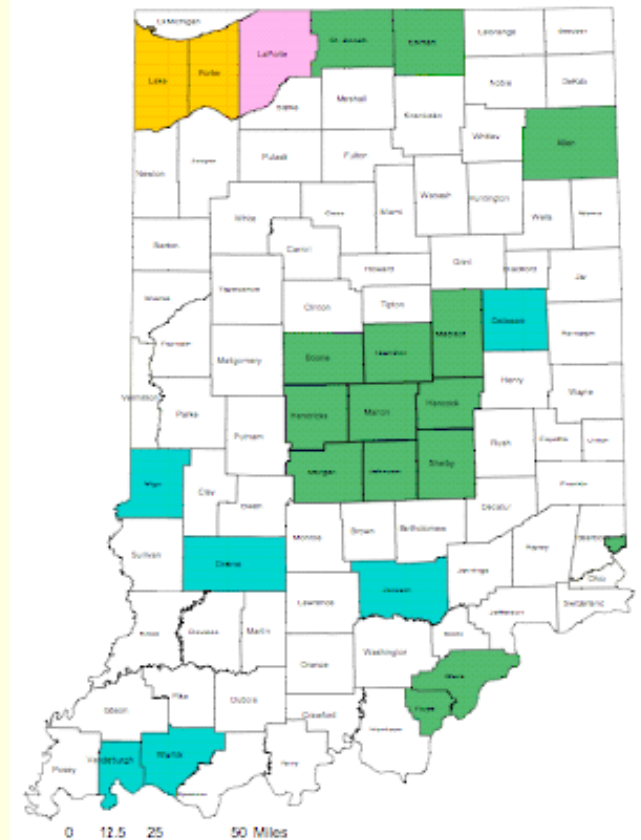
- Creating a net positive environmental impact
 - Research into environmental regulations
 - Minimize or eliminate negative impacts
 - Facilitate positive environmental improvements
 - Act as a buffer for current industrial uses and airport expansion

Air Emission

Lake County, Indiana Attainment/Nonattainment Information

Pollutant	Area Name	Nonattainment in Year	Classification	Pop (2000)
1-Hr Ozone	Chicago-Gary-Lake County, I-IN	92 93 94 95 96 97 98 99 00 01 02 03 04 05 06	Severe-17	484,564
8-Hr Ozone	Chicago-Gary-Lake County, IL-IN	04 05 06	Moderate	484,564
CO	East Chicago, IN	92 93 94 95 96 97 98 99	Not Classified	5,088
PM-10	East Chicago, IN	92 93 94 95 96 97 98 99 00 01 02	Moderate	209,913
PM-2.5	Chicago-Gary-Lake County, IL-IN	05 06	Nonattainment	484,564
SO2	Lake County, IN	92 93 94 95 96 97 98 99 00 01 02 03 04 05	Primary	484,564

Indiana 8-Hour Ozone Nonattainment Areas as of February 6, 2006



- Attainment Counties
- Attainment with a Maintenance Plan
- Nonattainment (Subpart 1/EPA-Basic)
- Nonattainment (Subpart 2/EPA-Moderate)
- Nonattainment (Subpart 2/EPA-Marginal)

Negative Impacts

- Some Wetlands Overwhelmed
 - Approximately 20 unprotected acres within boundaries
 - Evidence of previous disruption
- Increased Pollution Locally
 - Introduction of diesel trucks, heavy-duty cranes, etc.
 - Pollution can be minimized
 - Alternative Fuels
 - GWAN

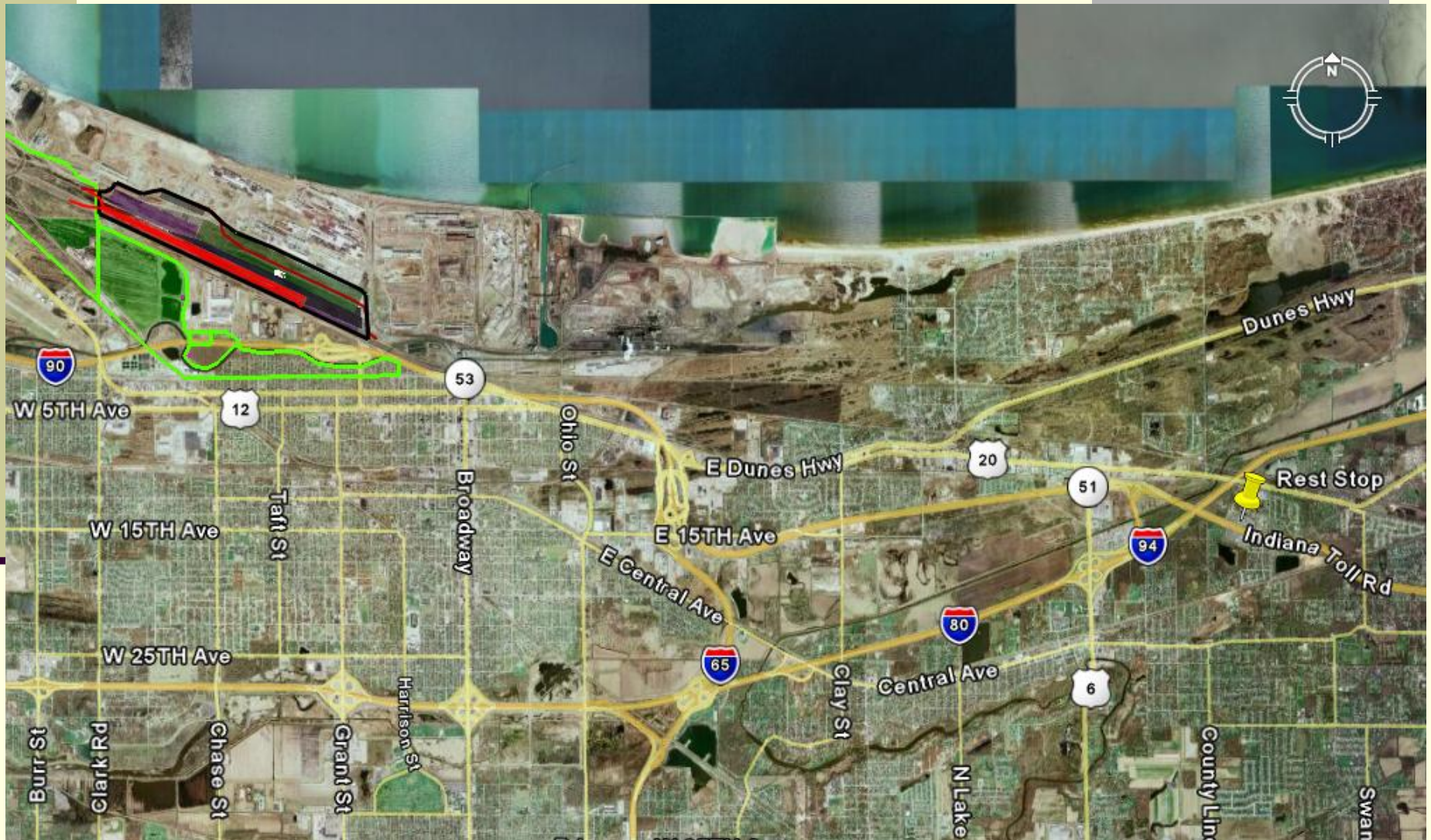


Accommodates Positive Environmental Impacts

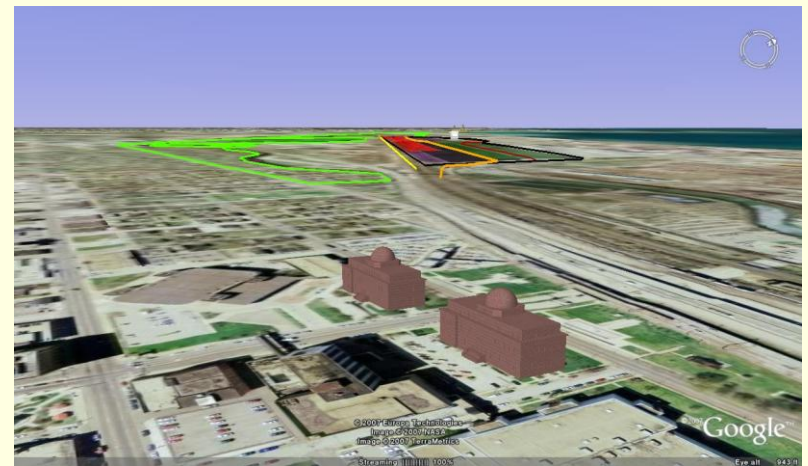
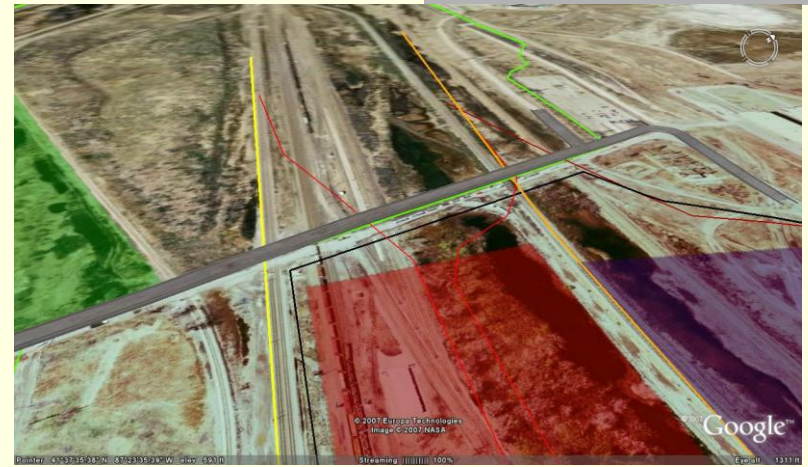
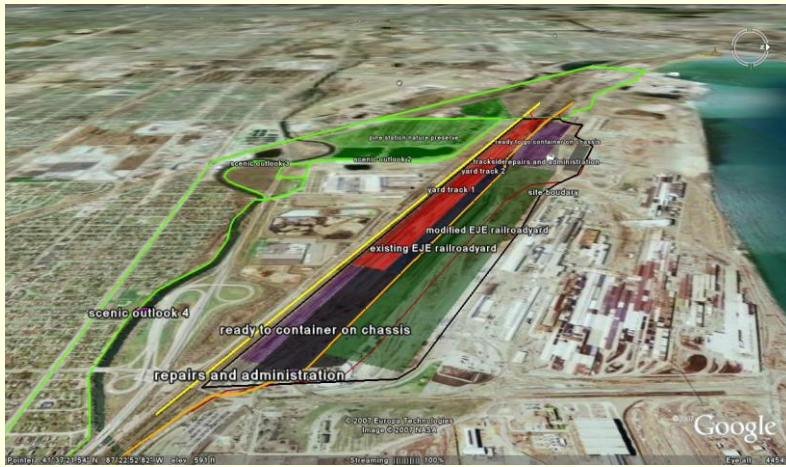
- Wetland Preservation and Expansion
 - Clark and Pine & Pine Station Preserves
- Gary Greenlinks Plan
 - New bicycle trails
 - Scenic viewing areas
- Encourages Lake Access
 - Clark Road Bridge
- Decreased pollution regionally



Gary Wide Area Network (GWAN)



Google Earth



Sponsor Deliverables

- **A new intermodal yard that has a net positive environmental impact**
- **A pedestrian/motor vehicle bridge along Clark Ave**
- **GWAN Information Technology (I.T.) solutions**
- **Cost Estimate**



Question/Answer