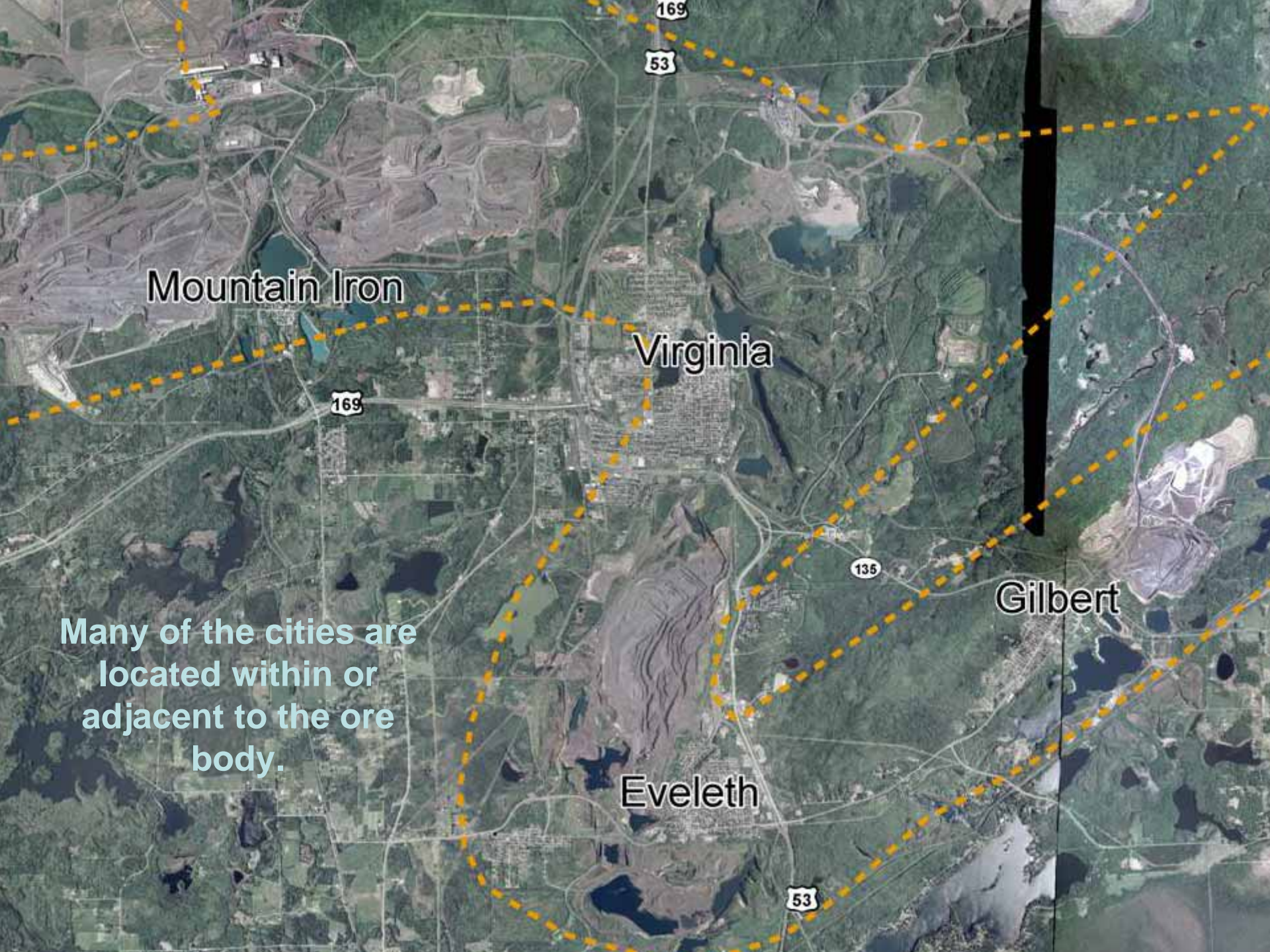


Fairview Addition

Contingency Plan Implementation Case Study

- Mining history has affected land use planning & incentives for redevelopment
- “Historical Use & Development” does not always lead to identification of releases
- Fairview Addition in Virginia is an example of using contingency plans as integral parts of the assessment/investigation process





Mountain Iron

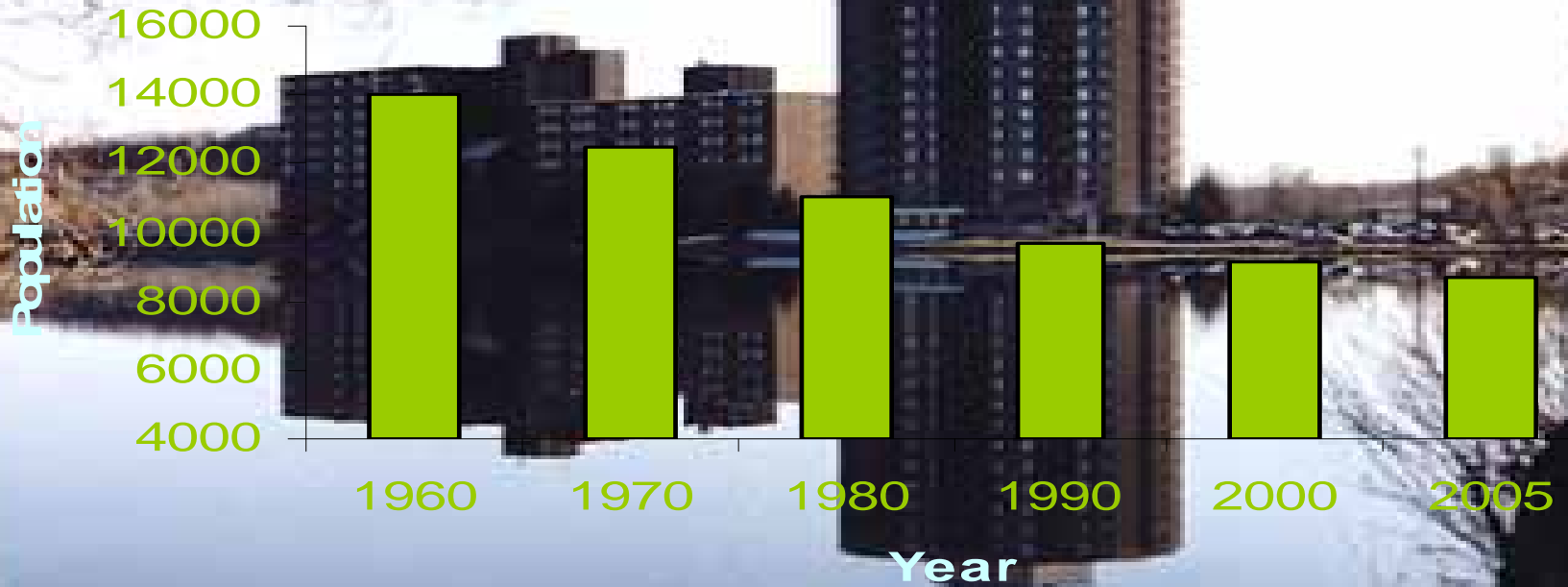
Virginia

Gilbert

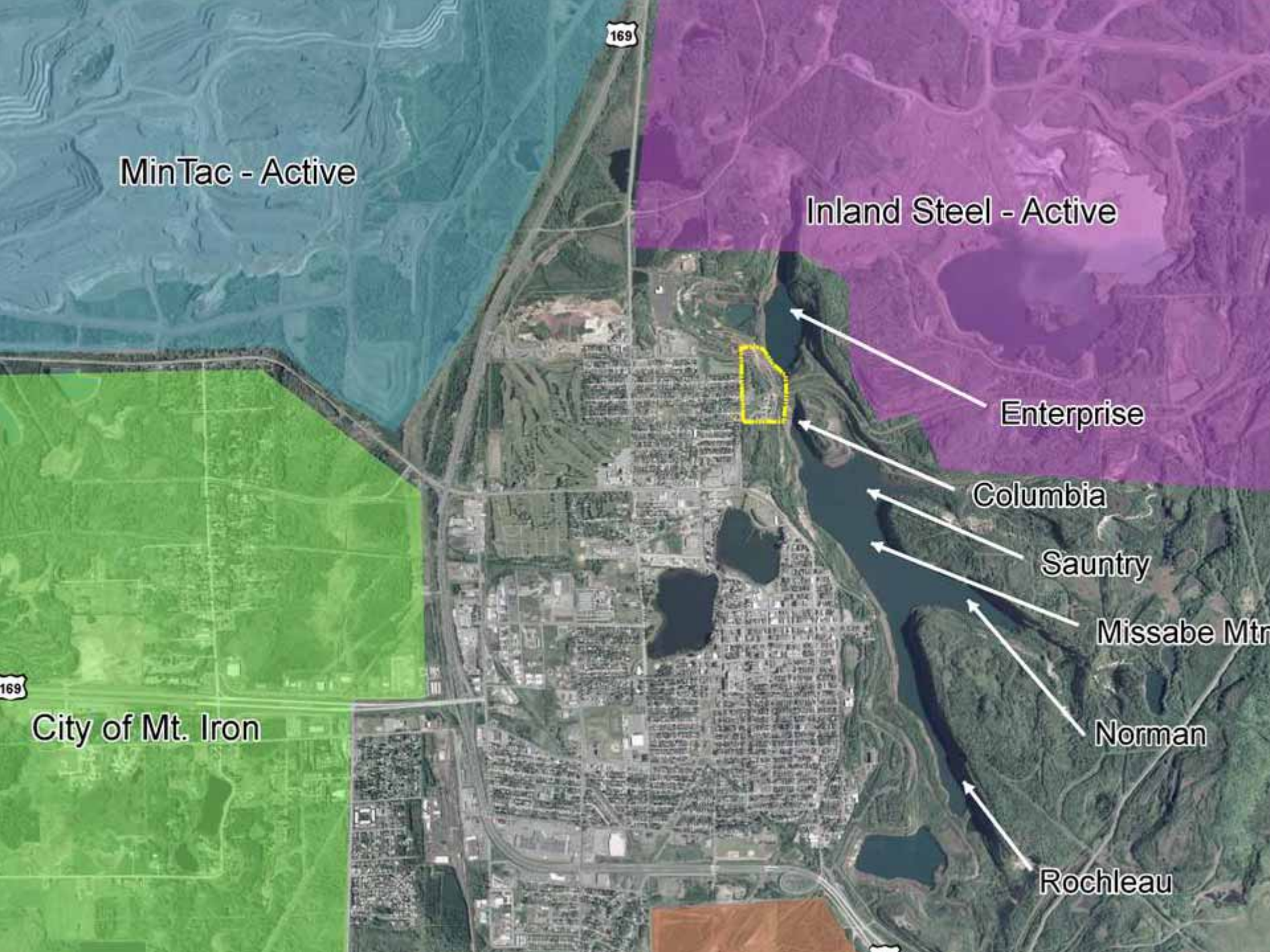
Eveleth

Many of the cities are located within or adjacent to the ore body.

City of Virginia - Population Trends



- Changes in mining and a down-turn in the industry starting in the 1980s has lead to:
 - Decreasing population
 - Very little investment in new housing or redevelopment
 - An economy struggling to diversify



169

MinTac - Active

Inland Steel - Active

Enterprise

Columbia

Saunry

Missabe Mtn

Norman

Rochleau

169

City of Mt. Iron

To facilitate economic development, Virginia began a deliberate effort to acquire lands and make them available for commercial and residential development.

BUT.....

These lands had a history.



Norman Mine pit 1894.
It had just been stopped and
was now ready for mining.



Mesabi Mountain Mine 1894, owned
by the Oliver Mining Co. Drake &
Stratton stripped the mine in 1893.
2.5 Ton Cars are being filled by the
steam-shovel





PIT, CAVE
OF IRON ORE

PIT CAVE



MISSABE PIT
" VIRGINIA MINN.





This property has been operated by open pit method, and being of somewhat restricted area, the track grades became so steep as to reach the economical limits of standard steam locomotives. A modified milling system was adopted in which the ore is loaded by the electric shovels into small cars, which are in turn hauled through tunnels to a shaft and hoisted to surface in skips, where it is transferred to railroad cars.

The following description covers briefly the principal features of the installation for the milling system

Shaft

Five compartment, designed to handle two eight ton skips, cage, counterweight, and ladder road. Ultimate depth approximately 410 feet.

Tunnels

Three tunnels will be driven at 290 feet, 350 feet and 410 feet.

Electric Shovels

Three 120 B Bucyrus Erie electric. All machines equipped with direct current motors, operated from Motor Generator set, and having Ward Leonard system of control. Power supply carried at 2200 volts, 3 phase, 60 cycles, on pole lines in pit and conveyed to shovels by flexible cables.

Electric Haulage

This consists of four locomotive cars, and twenty-eight trailer cars, all with capacity of $4\frac{1}{2}$ cu. yds. water level. Gauge 4'8 $\frac{1}{2}$ " Trolley voltage 600 volts D.C. All rolling stock equipped with Timken bearings, and air brakes throughout. This equipment built by The Differential Car Company.

Trolley Wire System

Wire installed at side of tracks in pit a distance of 8 feet from center of track, and 8 feet above top of rail. In tunnels wire installed 2 feet from center of track and 8 ft. 0 in. above top of rail.

Hoisting Plant

This consists of a cage hoist driven by 150 H.P. motor, and ore hoist with cylindro conical drum driven by 500 H.P. motor. Both hoists furnished by the Ottumwa Iron Works, and motors by General Electric Company.

Headframe

Steel structure with four pockets. Distribution of material from skips to pockets by automatic transfer car. Shaking screen in headframe for screen ore. Headframe designed by H.C. Felver, and fabricated and erected by Worden-Allen Company.

Power Supply and Substation

Power purchased from Minnesota Power & Light Company at 20,000 volts, 3 phase, 60 cycles, and stepped down 2200 volts for use of hoists, electric shovels, pumps and air compressors. An additional bank of transformers steps down voltage for 300 K.W. Rotary converter supplying 600 volts D.C. power to haulage system.

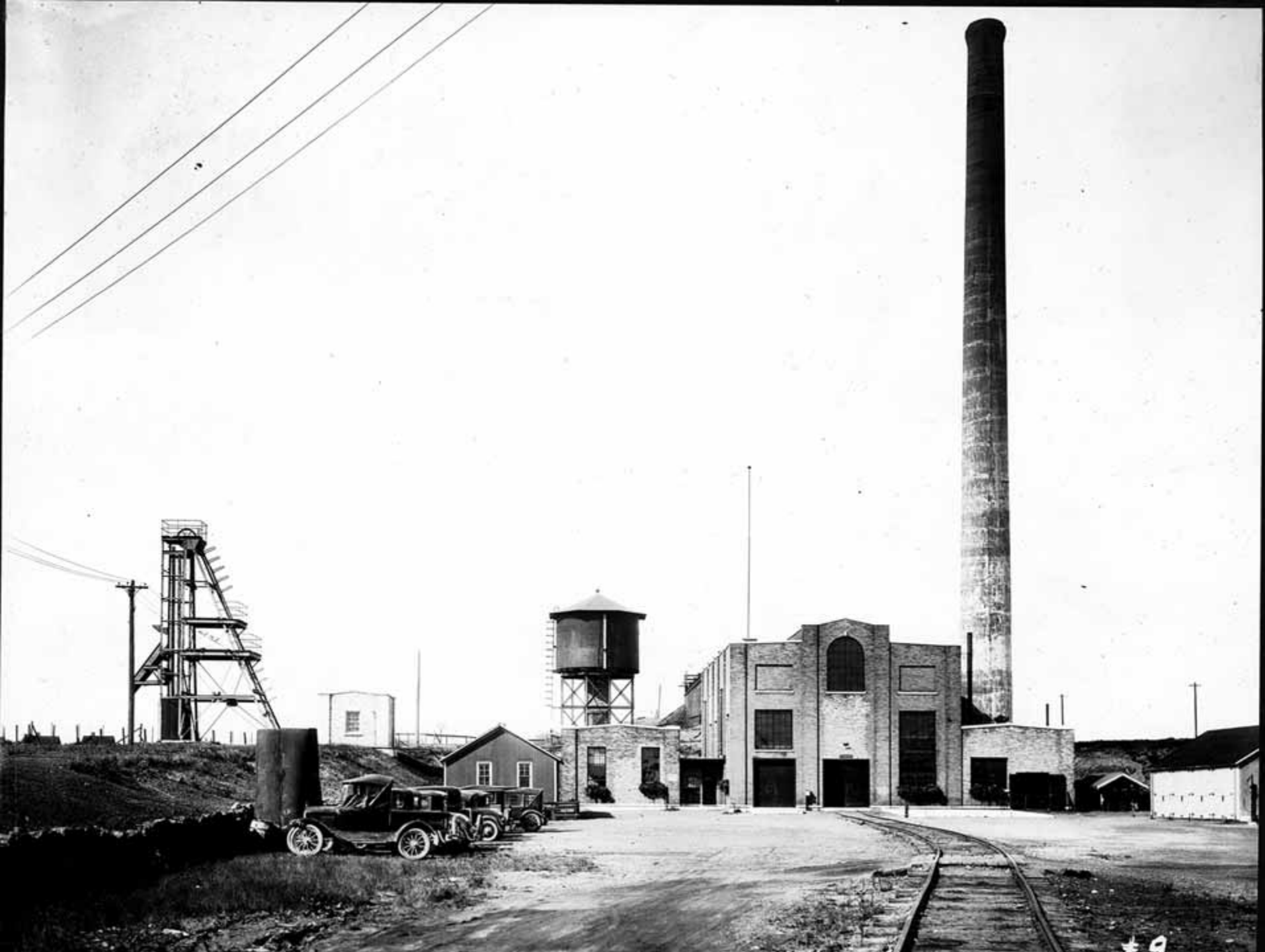


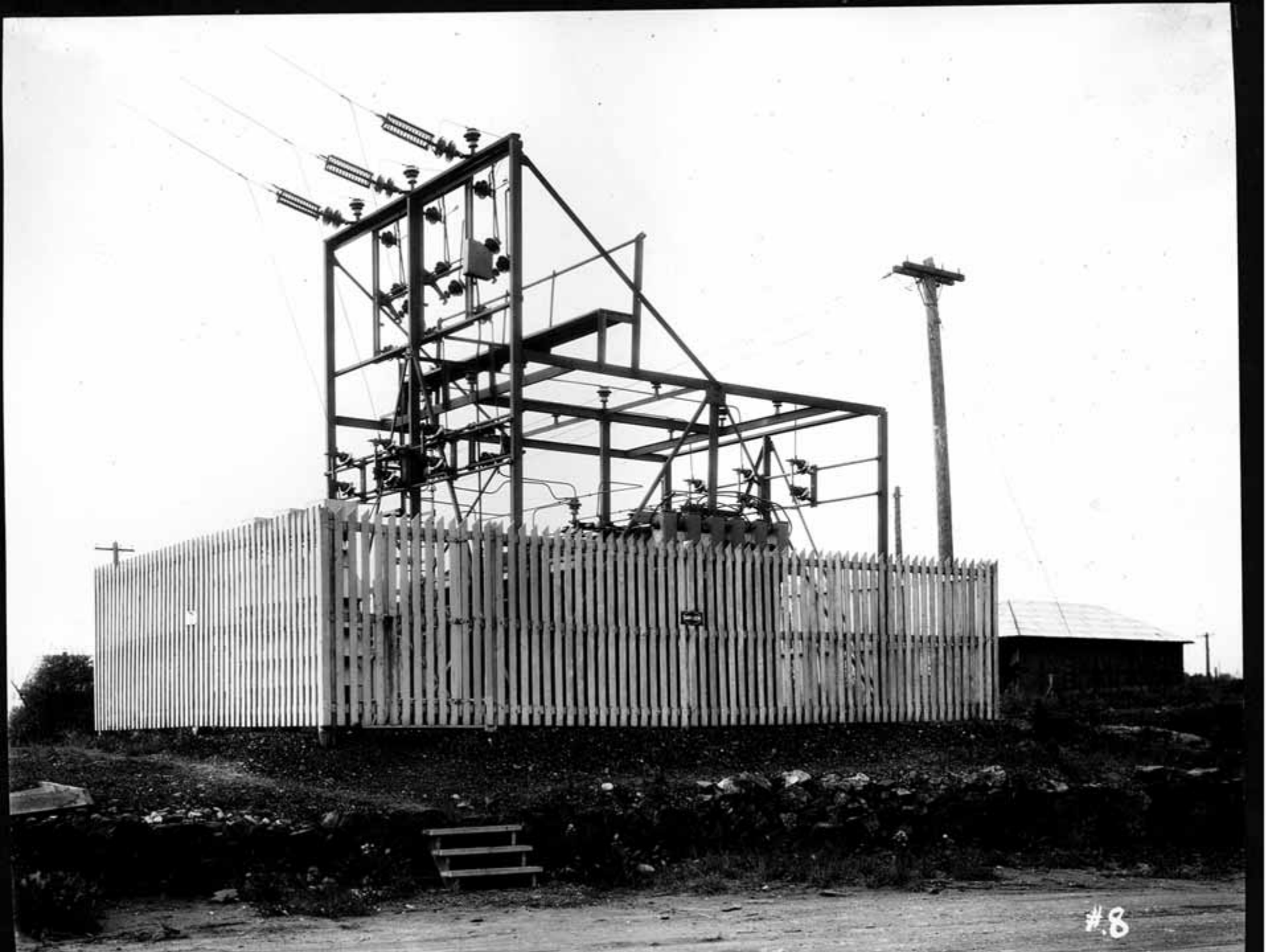
MISSABE MTN. & COLUMBIA MINES, 1947



HEADFRAME AND HOIST HOUSE







#8



Shops - Virginia





Important Points Regarding The Pre-Taconite History

- Activities and infrastructure around the pit rim were distinct from those within the pit
- Even land around the pit rim was highly disturbed
- Infrastructure was transient
 - If no record of a structure or activity was found does not mean it did not exist



Potential Contaminants from Historical Mining Activities

Activity	Potential Contaminants
Coal Fired Boilers	Metals/PAH
Headframes/Motor Houses	DRO/VOC/Metals/PAH/PCB
Electric Generation/transformers/substations	DRO/PCB/VOC
Railroad	DRO/PCB/PAH/Metals
Locomotive Service	DRO/PCB/PAH/Metals/VOC
Heavy Equipment Service	DRO/GRO/VOC/Pb
Millwright/Fabrication	Metals/VOC
Paint Shop	Metals/VOC
Electrical Shop	PCB/VOC
Panel Yards	Creosote/As/DBCP (?)
Fueling Stations	DRO/GRO/VOC
Wash Plants	DRO/GRO/VOC/Metals/PCB



Phase I on Fairview Begins 1995

- Phase I ESA included a typical historical search which discussed the proximity to the pit rim
- The only historical uses which were located by the Phase I were employee gardens and a city plat with utility extensions
- The REC were
 - former RR corridor and
 - unknown fill



Phase II

- The Phase II consisted of 8 test pits and sampling for DRO/PAH/Metals
- One fuel oil release was identified, approximately 20 yd³ soil was excavated and the City completed the purchase with their Phase I, Phase II and closure letter in hand.
- A much different release was identified during the first day of grading and the City enrolled in the VIC Program.



Highlights of the first VIC Work on Phase 2

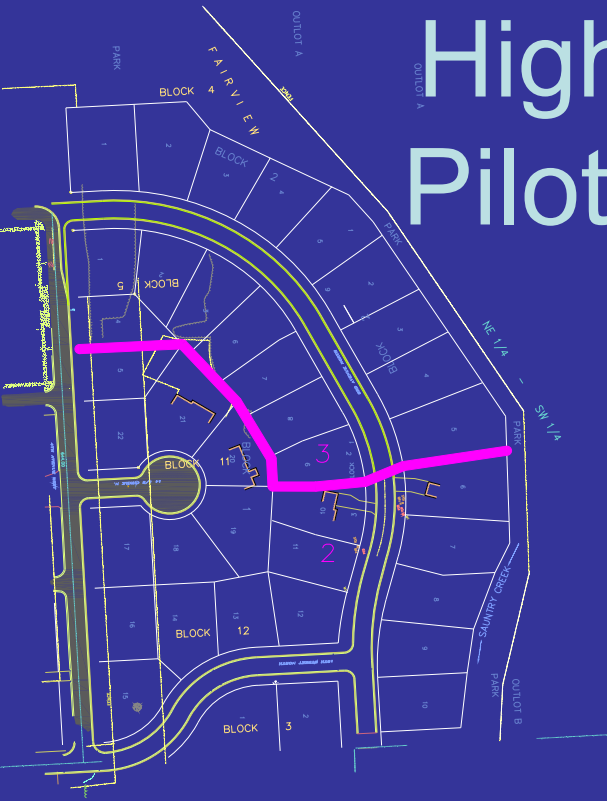


- Historical “Data Gaps” were researched
 - Virginia Historical Society archives
 - Iron World archives
 - Mine inspector records
 - Oliver Mining (US Steel) archives
 - City archives
 - Old Timer interviews
- The REC were still the RR and fill

- About 800 Yd³ soil (DRO/TCB/DBCP) were excavated
- A Certificate of Completion incorporated a CP which required sampling and analysis during
 - future grading
 - utility construction and
 - each building excavation



Highlights of EPA Brownfield Pilot Assessment on Phase 3



- Public meetings specifically sought historical use and development information from residents
- The only REC that were identified were
 - RR corridor and
 - unknown fill
- The Phase II identified an Arsenic release and a fuel oil release
- A No Further Action incorporated a CP that required
 - Excavation of the releases during grading
 - Sampling and analysis during grading, utility construction and each building excavation

Release Summary



Exc	Date	Volume	COC
Exc #1	1995	20	DRO
Exc#2	1998	800	DRO/TCB/ DBCP/PCB
Exc #3	2007	1940	DRO/TCB/ PCB
Exc#4	2007	84	As
Exc#5	2007	800	DRO/GRO
Exc#6	2007	100	DRO



Fairview Addition



- What we have learned about redeveloping old mine land:
 - Historical use and development is important but may not lead to spots on the map for Phase II Investigation
 - CPs work but the developer and contractors must be fully involved
 - Must consider a large list of potential contaminants