

# Hillcrest Site History

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- ◉ Originally farmland/undeveloped prairie
- ◉ First developed use of property in 1920's as a golf course
- ◉ Became an 18-hole private golf and country club including:
  - clubhouse
  - swimming pool
  - maintenance facilities
- ◉ Golf course ceased operations in 2017
- ◉ Property was acquired by Saint Paul Port Authority in 2019

# Contamination

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- ◉ Caused by historic golf course operations
- ◉ Widespread mercury contamination
- ◉ Contamination also occurred from:
  - general storage and use of fertilizers, pesticides, petroleum products, and debris
- ◉ Investigation is ongoing

# Fungicide Application

→ **PLAN NOW FOR EFFECTIVE**



**SAVE MONEY AND SAVE YOUR GREENS... ORDER**



**CALO-CLOR® CALOCURE® CADMINATE®**

If disease attacks an untreated green—a Mallinckrodt fungicide will clear it up quickly...however...

**PREVENTION IS THE BEST CURE**—no worry about costly disease damage...no complaints from golfers...no rush to apply fungicides after damage is done.

**TURF DISEASE CONTROL IN '55**

**PREVENT DOLLAR SPOT WITH CADMINATE**

**LOWEST COST**—Extra effectiveness means smaller doses—fewer applications: Only ½ ounce per 1,000 square feet—**ONCE PER MONTH!** The same dose prevents red thread and copper spot!

**SAFEST**—A true cadmium compound—won't harm finest turf.

**EASIEST TO USE**—Available in ½-ounce packets—no measuring. (Also 5- and 25-pound bulk containers.)

**PREVENT BROWN PATCH WITH...**

**CALOCURE OR CALO-CLOR**

**EXTRA SAFE**—

specially designed for maximum effectiveness with maximum safety. Maintains or improves grass color consistently. Now used regularly by thousands of golf course superintendents.

**EXTRA POWERFUL**—

gives positive protection in worst brown patch areas. Stamps out and keeps out most vigorous fungi. Properly applied, it's safe for finest turf. Used by leading golf course superintendents for over 25 years.

**THEY PROVIDE THE MOST IMPORTANT ECONOMY OF ALL... POSITIVE BROWN PATCH PREVENTION TO SAVE YOUR GREENS**

**PREVENT SNOW MOLDS WITH CALO-CLOR**

Unequaled for snow mold prevention since 1926. One treatment before freezing weather is often sufficient for all-winter protection, but an additional application after a mid-winter thaw provides added protection.

In buying turf fungicides—*don't be fooled by the cost per pound!* What counts is the cost per 1,000 square feet per month...the quantity of fungicide required. Effectiveness means economy!

**ORDER CALO-CLOR OR CALOCURE AND CADMINATE FROM YOUR DEALER TODAY**

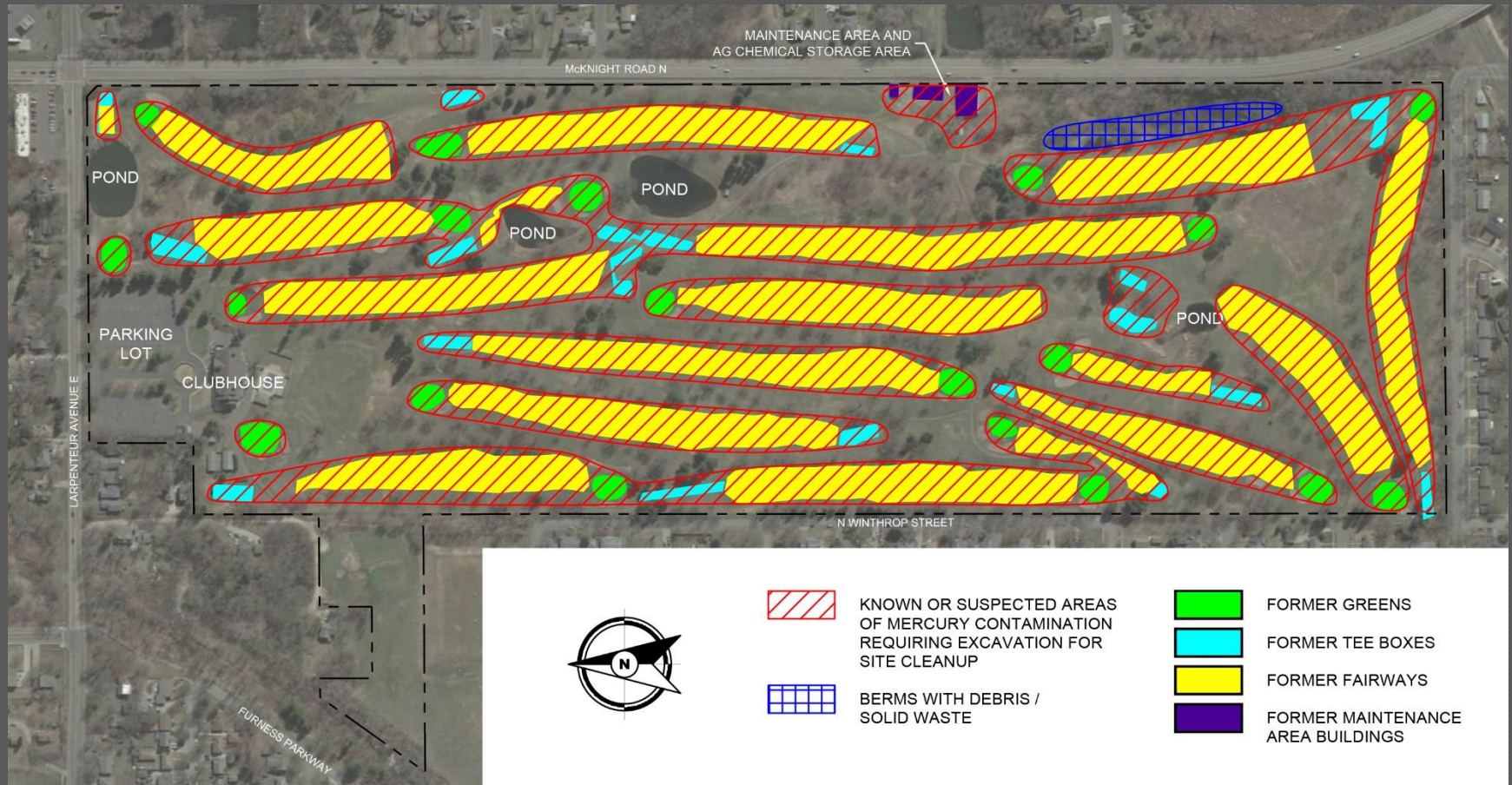


**MALLINCKRODT CHEMICAL WORKS**

Mallinckrodt St., St. Louis 7, Mo. 72 Gold St., New York 8, N. Y.  
Chicago • Cincinnati • Cleveland • Los Angeles • Montreal • Philadelphia • San Francisco • Toronto  
Manufacturers of Medicinal, Photographic, Analytical and Industrial Fine Chemicals



# Contamination Locations



# Mercury Concentrations / Standards

Site Location Description	Typical Mercury Cleanup Standard - Residential	Typical Mercury Cleanup Standard – Commercial/Industrial	Mercury Concentrations Detected at Hillcrest Site to Date
Greens/Fringes	0.5 mg/kg	1.5 mg/kg	144 mg/kg
Tee Boxes	0.5 mg/kg	1.5 mg/kg	7 mg/kg
Fairways	0.5 mg/kg	1.5 mg/kg	5 mg/kg
<b>Notes:</b> mg/kg = milligrams per kilogram			

# Regulatory Agencies

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- Minnesota Department of Agriculture
  - Contamination from use or storage of agricultural chemicals (e.g., pesticides, fungicides, fertilizers)
- Minnesota Pollution Control Agency
  - Contamination from other non-agricultural hazardous substances or petroleum (e.g., storage tanks)
- Site entered in voluntary investigation and cleanup programs in both agencies

# Site Cleanup Steps

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- Develop cleanup plan
  - Establish cleanup standards
  - Tailor to future uses
    - Residential
    - Commercial/Industrial
  - Tailor to future site grades
  - Establish documentation sampling program
  - Seek public input
- Submit plan to agencies for review & approval
- Incorporate cleanup requirements with site grading specifications
- Implement cleanup plan with mass grading

# Site Cleanup Approaches

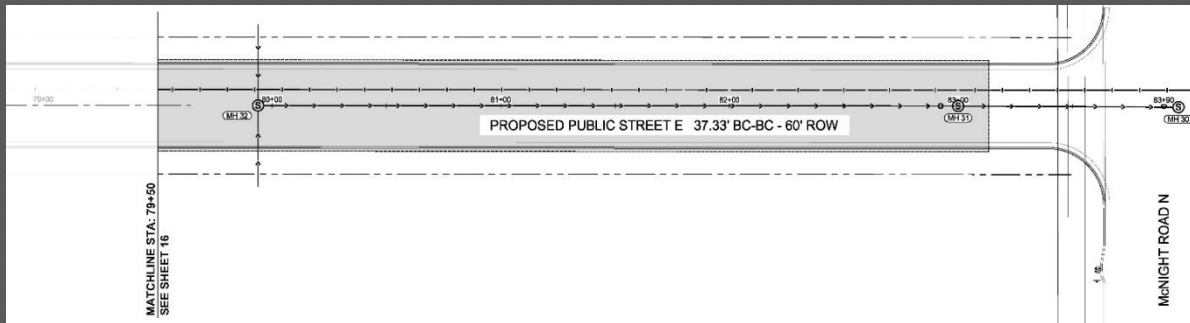
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- Off-site disposal at permitted landfill
  - Segregate contaminated soil during excavation
  - Stockpile on-site (if needed)
  - Load onto trucks and haul to landfill
- On-site management
  - Locations must be approved by regulatory agencies
  - Clean soil cover considerations
    - 4-feet in green space areas
    - 2-feet in paved areas
    - Not in groundwater or under infiltration areas
  - Must be coordinated with site grading!!!!!!
- Future Restrictions

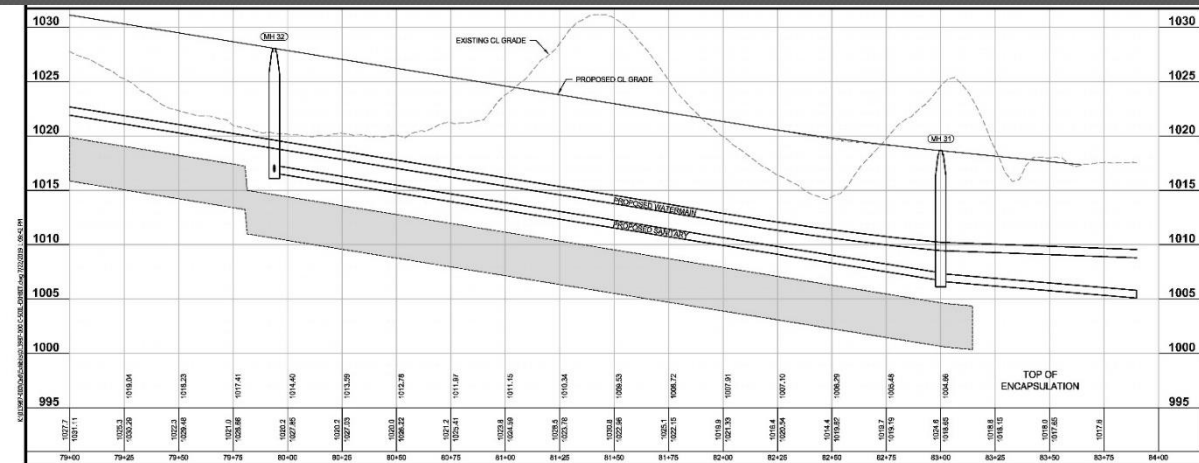


# On-Site Reuse Example

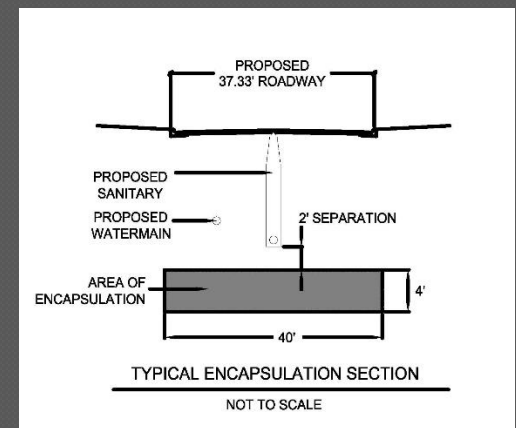
## VIEW FROM ABOVE



## VIEW FROM SIDE (CROSS SECTION)



## VIEW FROM SIDE



# Additional Considerations

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- Widespread contamination will require mass grading
- Final excavation areas for cleanup will be further estimated, but are determined during cleanup and confirmed by sampling
- Saving specific large trees or areas of trees may not be practical depending on final cleanup excavations