

09.03-06/17/97-00129

# Public / Restoration Advisory Board Meeting



NAB Little Creek  
June 17, 1997

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# Public/Restoration Advisory Board Meeting

## NAB Little Creek

### June 17, 1997

#### Agenda

Welcome	1:00
<i>CDR Lord, Base Civil Engineer</i>	
Introductions, Agenda	1:05
<i>Kelly Greaser, IR Program Manager, Navy Co-Chair</i>	
Video: Installation Restoration - A Navy Pledge to the Future	1:15
Site 16 Final Closeout Report, Site 7 Feasibility Study with a comparison of Alternatives 2 and 3, Proposed Remedial Action Plan, Decision Document	1:30
<i>Kelly Greaser</i>	
BREAK	2:30
Site 7 Monitoring Plan	2:40
<i>Scott MacEwen, CH2M HILL</i>	
Site 7 Remedial Design and Remedial Action	2:55
<i>Scott MacEwen</i>	
BREAK	3:25
Groundwater Monitoring Report for Sites 5 and 11	3:35
<i>Scott MacEwen</i>	
Proposed Remedial Action Plan, Groundwater Monitoring Plan, Decision Document for Sites 9 and 10	3:50
<i>Scott Park, LANTDIV</i>	
Sites 11, 12, and 13 Update	4:05
<i>Kelly Greaser</i>	
IR Program Future Plans	4:10
<i>Kelly Greaser</i>	
Question and Answer Period	4:15
Meeting Adjourn	

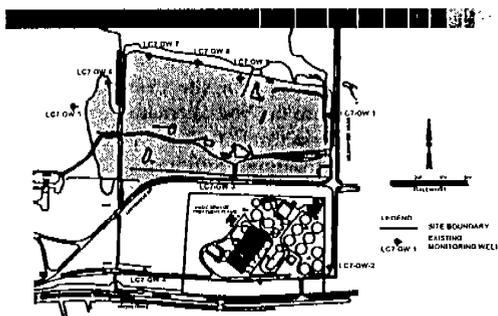
## Site 16 NFRAP Status

- PCB Removal Action, March to July 1995
- Draft Final Closeout Report, June 1996
- Final Closeout Report, September 1996
- No Further Response Action Planned (NFRAP) status
- Notice to RAB members
- Administrative Record and Information Repositories updated

## Site 7, Amphibious Base Landfill Draft Final Feasibility Study

- Operated 1962-1979
- Trench and area landfill
- 38 acres
- 1.2 million cy, mostly non-hazardous, solid, household waste
- Officially closed by Dept. of Health in 1982

## Site 7, Amphibious Base Landfill



## Site 7, Amphibious Base Landfill



## Round 1 Verification Step, 1986

- 9 GW samples - no VOCs, low level SVOCs, no Pest/PCBs, low metals: Cd, Cr, Se, Ag, Tl, Zn, oil and grease 3-47 ppm
- 5 SW samples - no VOCs, low level SVOCs, no Pest/PCBs, low level metals
- 5 SED samples - Low level VOCs, SVOCs, Pest/PCBs, metals, oil and grease to 20 ppm

## Interim Remedial Invest., 1991

- 8 GW samples - no VOCs, Pest/PCBs, or TPH, low level SVOCs and metals
- 9 SW samples - no VOCs, SVOCs, Pest/PCBs or TPH, low level metals

## Remedial Investigation/ Feasibility Study, 1994

- Concentrations compared to human health regulatory standards
- 8 SS - Elevated PCBs, metals
- 5 SB - Beryllium, Lead
- 9 GW - Al, As, Ba, Be, Cd, Cr, Fe, Pb, Mn, Ni, Zn
- 6 SW - Fe, Pb, Mn, Zn
- 6 SED - no metals above standards

## Baseline Risk Assessment

- Current Risk: Child and adult trespassers - using Surface Water as drinking water
  - Site is fenced, restricted to access
- Future Risk: Child and adult residents from Surface Soil, and Groundwater and Surface Water if used as drinking water
  - Site will be re-evaluated if ever sold or leased

## FS Remedial Action Objectives

- Reduce the risks from Surface Soil and GW
- Mitigate migration of contaminants from Groundwater to Surface Water
- Mitigate risks, attributable to Site 7, from Surface Water
  
- Restoration of the aquifer to drinking water quality is not an objective

## Baseline Risk Assessment

- Receptors: trespassers, recreational users, workers, future resident adults and children
- Pathways: ingestion and dermal contact with Surface Soil, Groundwater, Surface Water, Sediment, inhalation of Groundwater, ingestion of fish

## Draft Final Feasibility Study

- Purpose: to identify remedial alternatives to mitigate the risk posed by the site, evaluate each one, and choose the best alternative based on nine criteria from 40 CFR 300, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 1990
- Objective: Mitigate risk rather than restore the site to natural conditions, and reduce migration of contaminants

## FS Alternative Development

- Evaluate General Response Actions: broad categories of remedial actions capable of addressing the contamination
- Identify and evaluate remedial technologies for each General Response Action
- Group feasible technologies into remedial alternatives that can meet RAOs

## FS Alternatives

- 1 No Further Action, \$25,000
- 2 Institutional Controls, \$1.4 million
- 3 HDPE/Clay Cap, \$5.9 million
- 4 Cap and Slurry Wall, \$14 million
- 5 Selective removal and treatment of hot spots, \$43 million

## NCP, CERCLA Criteria

- Nine evaluation criteria for remedial alternatives:
  - Overall Protection of Human Health and the Environment; Compliance with ARARs; Long-Term Effectiveness and Permanence; Reduction of Toxicity, Mobility, and Volume Through Treatment; Short-Term Effectiveness; Implementability; Cost; State Acceptance; Community Acceptance

## FS Alternatives

- 1 - Won't mitigate risks
- 4 - The additional cost does not represent extra protection of human health and the environment
- 5 - Similar excessive cost as 4, and hot spots have not been identified as a concern with THIS landfill

## A2: Institutional Controls

- Install 15,000 cy of fill/topsoil in middle, open area, grade and vegetate
- Remove approx. 1000 cy of debris
- Install a new fence on south and east sides
- Post warning signs
- Reinforce the road crossing the canal
- Implement land use restrictions
- Perform semi-annual, long-term monitoring

## A2: Institutional Controls

- Overall Protection of Human Health and the Environment - Short and long-term risk reductions, eliminate contact with contaminants, RAOs met
- Compliance with ARARs - All action and location-specific ARARs can be met with proper control. Chemical specific ARARs are not applicable for GW

## A2: Institutional Controls

- Long-Term Effectiveness and Permanence - Installation of soil cover reduces risk from surface soil. Soil cover also reduces contaminant transport from erosion and infiltration/leaching. Fencing, signs, and land use restrictions will restrict access
- Reduction of Toxicity, Mobility or Volume - Mobility of contaminants is reduced through installation of the soil cover

## A2: Institutional Controls

- Short-Term Effectiveness - Safe working practices and personal protective equipment will reduce risks to on-site workers. Environmental impacts include increased traffic, noise, and dust. Control measures and air monitoring will be implemented.
- Implementability - Technically feasible. Site reviews and land use restrictions will require administrative coordination.

## A2: Institutional Controls

- Cost - \$1.4 million
  - Includes capital costs for construction work, maintaining the vegetative cover, monitoring for 30 years, and administrative expenses

## A3: HDPE/Clay Cap

- Install a HDPE/Clay Cap
- Install a new fence on south and east sides
- Post warning signs
- Implement land use restrictions
- Perform semi-annual, long-term monitoring

## A3: HDPE/Clay Cap

- Overall Protection of Human Health and the Environment - Short and long-term risk reductions, eliminate contact with contaminants, RAOs met
- Compliance with ARARs - All action and location-specific ARARs can be met with proper control. Chemical specific ARARs are not applicable for GW. E.O. 11990 concerning wetlands is not met.

## A3: HDPE/Clay Cap

- Long-Term Effectiveness and Permanence - Installation of cap reduces risk from surface soil. Cap also reduces contaminant transport from erosions and infiltration/leaching. Fencing and institutional controls will continue to restrict access to the site
- Reduction of Toxicity, Mobility or Volume - Mobility of contaminants is reduced through installation of the cap

## A3: HDPE/Clay Cap

- Short-Term Effectiveness - Safe working practices and personal protective equipment will reduce risks to on-site workers. Environmental impacts include increased traffic, noise, and dust. Control measures and air monitoring will be implemented.
- Implementability - Technically complex due to estimated site boundaries. Wetlands will be destroyed.

### A3: HDPE/Clay Cap

- Implementability - Administrative - Extensive coordination will be required for wetlands issues. Site reviews, cap inspections, and land use restrictions will require coordination.
- Cost - \$5.9 million
  - Includes capital costs for construction work, maintaining the cap, monitoring for 30 years, and administrative expenses

### Compare A2 and A3

- Both Alternatives meet RAOs and adequately reduce site risks
- Both meet action and location-specific ARARs, neither meet chemical-specific ARARs. A3 does not meet E.O. 11990
- Both are effective in the long and short-term
- A3 reduces mobility of contaminants through infiltration and leaching more than A2

### Compare A2 and A3

- Lack of significant GW contamination indicates that infiltration and leaching is not a dominant process
- A2 is easily implementable. A3 will require an extensive investigation to determine the landfill boundaries, extensive coordination for the wetlands destruction, and maintenance requirements for the cap.
- A2 cost ~ \$1.4 million, A3 ~ \$5.9 million

### Site 7 FS Recommendation

- A2 - provides the best balance between the evaluation criteria. A3 provides greater protection, but the added benefit is minimal and directed at SB/GW interface, which is not a significant risk driver, making the benefit uncertain at a very high cost
- Following CERCLA, A2 *"provides a balance between protecting public health and the availability of funds."*

### Site 7 Draft Final Proposed Remedial Action Plan

- Alternative 2, Institutional Controls - Soil/vegetative cover, remove debris, install new fence, post warning signs, implement land use restrictions, reinforce canal road, long-term monitoring
- Meets the RAOs: reduces risk from surface soil, reduces migration of contaminants from GW to SW, reduces risks from Site 7 to SW

## Site 7 Decision Document

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- Draft Final will be available for review after the PRAP is finalized
- Documents that the decision is consistent with NCP
- Records and summarizes selection of remedy

## Site 7 Decision Document

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- Describes how the Institutional Controls will be implemented
  - Warning Signs, fence
  - Land use restrictions
    - » Base Master Plan - Restrict excavation, groundwater and surface water use, and future development
    - » Base operational requirements - Notification and concurrence of Base Environmental office prior to intrusive activities

## Site 7 Decision Document

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- Institutional Controls
  - Land use restrictions Cont.
    - » Real estate records - Document nature of site for future disposition
- If the Base or the Site is ever leased or sold, the site will be re-evaluated for risk posed by the new intended use.

## Site 7 Monitoring Plan Status

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- ◆ Draft Final plan submitted
- ◆ Final plan to be prepared upon receiving comments

## Site 7 Monitoring Plan Objectives

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- ◆ Part of institutional controls alternative
- ◆ Necessary because potential source of contamination (waste in landfill) will remain at site
- ◆ Monitor possible discharges from site to groundwater, surface water, and sediment
- ◆ Evaluate changes in potential site-related risks over time

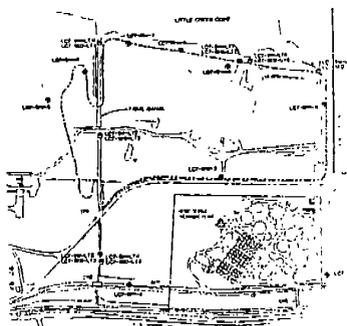
## Site 7 Monitoring Plan Scope

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- ◆ Monitor groundwater, surface water and sediment
- ◆ Semi-annually for 5-years
- ◆ Compare results to established trigger levels that are protective of human health and the environment
- ◆ Reevaluate potential site-related risks after 3 years and 5 years

## Site 7 Monitoring Points

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## Groundwater Monitoring

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- ◆ Groundwater flow is from south to north
- ◆ Discharge into Little Creek Cove and canals
- ◆ Sample 6 wells: LC7-GW1, GW3, GW6, GW7, GW8 and GW9
- ◆ Analyze for VOCs, SVOCs, PCBs, total and dissolved metals

## Surface Water Monitoring

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- ◆ Focus on Little Creek Cove and canals
- ◆ Sample 7 locations:
  - 2 background locations
  - 5 downstream locations
- ◆ Locations selected to identify effects from site with minimal interference from other sources
- ◆ Analyze for VOCs, SVOCs, PCBs, total and dissolved metals, and hardness

## Sediment Monitoring

- ◆ Focus on Little Creek Cove and canals
- ◆ Sample 7 locations at a depth of 0" to 6":
  - 2 background locations
  - 5 downstream locations
- ◆ Locations selected to identify effects from site with minimal interference from other sources
- ◆ Analyze for SVOCs, PCBs, total metals, and TOC

## Trigger Levels

- ◆ The concentration of a contaminant which, if exceeded, will trigger further evaluation of the site conditions
- ◆ Currently being established for groundwater, surface water, and sediment
- ◆ Will consider risks to both human health and environmental receptors

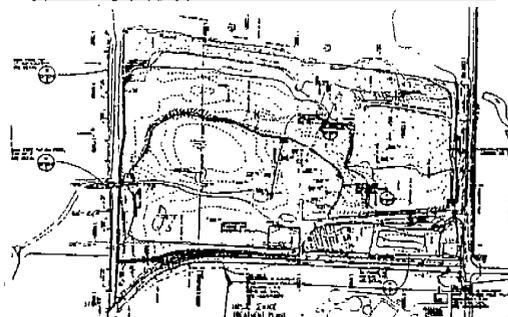
## Site 7 Remedial Design - Scope

- ◆ Remedial Action Contractor (RAC) design
  - Debris removal
  - Perimeter fence reconstruction
- ◆ Fixed price design
  - Soil/topsoil cover and revegetation
  - Access road
  - Erosion control measures
  - Cautionary signs

## Pre-Design Survey

- ◆ Existing cover/topsoil thickness survey
  - 30 hand auger borings into cover
  - 0-12" cover in central area
  - 12-24" cover with 2" topsoil in west area
  - No waste present in east area
- ◆ Preliminary surface debris survey
- ◆ Topographic survey

## Landfill Design Drawing



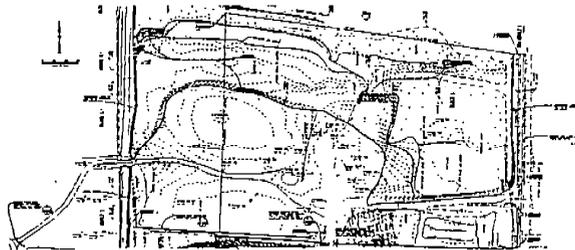
## Debris Removal

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- ◆ Estimated 1,000 cy of mixed debris
  - Primarily along northern side of site
  - Unknown origin
- ◆ Visual survey to I.D. and tag all debris to be removed
- ◆ Removed and recycled/disposed
- ◆ Potentially hazardous material to be sampled and characterized

## RAC Drawing

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## Site Fencing

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- ◆ Existing fence is in poor condition and only borders the south side of the site
- ◆ Existing fence to be removed where it is visible
- ◆ New 6-foot high chain link fence along east and south sides
- ◆ New access gate on west side

## Improvements to Soil Cover

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- ◆ Temporary erosion control measures
- ◆ 12" of cover and 6" of topsoil on central area - 4,900 cy of fill and 2,500 cy of topsoil
- ◆ 4-6" of topsoil on west area, 7,200 cy
- ◆ Recestablish grass cover
- ◆ No additional cover on north or east areas

## Other Design Features

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- ◆ 12-foot-wide gravel access road
  - Geotextile base
  - 6 inches of gravel
  - Surface water drainage features
- ◆ Riprap on canal embankment at road crossing
- ◆ Cautionary signs at access gates and around perimeter

## Construction Schedule

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- ◆ RAC construction (debris mapping and removal, fencing) to begin after Decision Document is finalized
- ◆ Fixed price construction (soil cover, access road, other features) to begin FY 1998

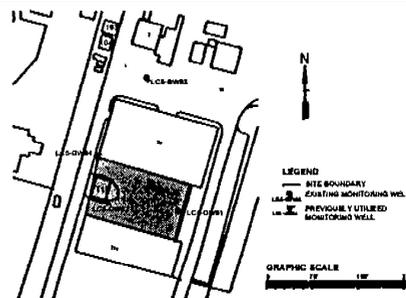
## Sites 5 and 11 Groundwater Monitoring Report Status

- ◆ Site 5 Motor Oil Disposal Area
- ◆ Site 11 School of Music Plating Shop
- ◆ Two rounds of verification groundwater monitoring at each site:
  - May 1996
  - December 1996
- ◆ Draft Final monitoring report issued June 1997

## Site 5 - History

- ◆ Reported motor oil disposal area
- ◆ Building 9 - motor pool maintenance
- ◆ Building 11 - boat engine maintenance 1969 -1981
- ◆ Reported oil disposal in pits within Bldg 11 and on ground between Bldgs 9 and 11
- ◆ >50K gallons of used oil generated at site

## Site 5 Motor Oil Disposal Area



## Site 5 - History (cont.)

- ◆ PSI 1991, SI 1993
- ◆ Low concentrations of TPH in soil
- ◆ 1,1-DCA in well LC5-GW2 ranging from 23 to 76  $\mu\text{g/l}$  (no MCL, RBC: 810  $\mu\text{g/l}$ )
- ◆ No unacceptable risk posed by soil or groundwater

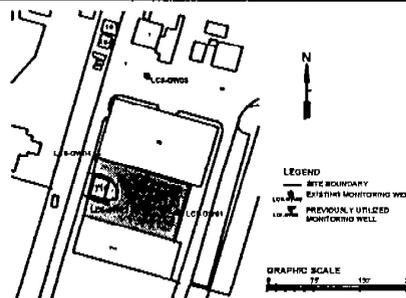
## Site 5 - Objectives of Monitoring

- ◆ Confirm no-risk determination in groundwater
- ◆ Evaluate potential migration or increase in 1,1-DCA concentrations in groundwater

## Site 5 - Monitoring Results

- ◆ LC5-GW2
  - Round 1: 1,1-DCA - 31 µg/l  
Chloroethane - 25 µg/l
  - Round 2: 1,1-DCA - 18 µg/l  
Chloroethane - 35 µg/l
- ◆ No contaminants were detected in other wells
- ◆ Well LC5-GW4 was destroyed between Rounds 1 and 2

## Site 5 Motor Oil Disposal Area



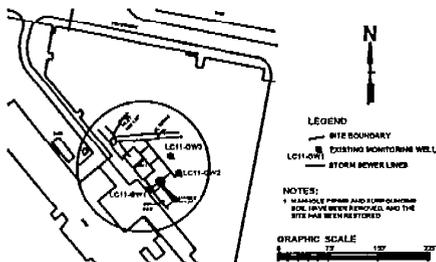
## Site 5 - Conclusions and Recommendations

- ◆ Confirmed no-risk determination
- ◆ Reports of possible onsite disposal of large quantities of used oil were overstated
- ◆ Recommend no further action and preparation of a NFRAP decision document

## Site 11 - History

- ◆ School of Music plating shop: 1964 - 1974
- ◆ Disposal of plating wastes to sewer via a subsurface neutralization tank and pipe
- ◆ RVS 1986, IRI 1991, RI/FS 1994

## Site 11 School of Music Plating Shop



## Site 11 - History (cont.)

- ◆ Metals previously detected in soil present some future risk
- ◆ Chlorinated hydrocarbons detected in one of three groundwater monitoring wells
  - TCE: 340 µg/l (MCL 5 µg/l)
  - 1,1-DCE: 34 µg/l (MCL 7 µg/l)
  - No risk under future scenario
- ◆ Tank, piping, and soil removed in 1995

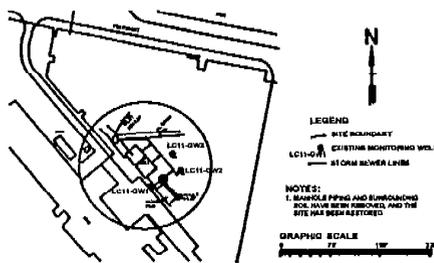
## Site 11- Objectives of Monitoring

- ◆ Determine if tank removal resulted in decrease in groundwater contamination
- ◆ Verify no risk determination for groundwater

## Site 11 - Monitoring Results

- ◆ LC11- GW1
  - Round 1: TCE - 250  $\mu\text{g/l}$  (MCL 5  $\mu\text{g/l}$ )  
1,1-DCE - 21  $\mu\text{g/l}$  (MCL 7  $\mu\text{g/l}$ )
  - Round 2: TCE - 100  $\mu\text{g/l}$   
1,1-DCE - 9  $\mu\text{g/l}$
- ◆ No contaminants were detected in other wells - removal action was successful
- ◆ Groundwater flow direction fluctuates but is predominantly to the south or southwest

## Site 11 School of Music Plating Shop



## Site 11 - Conclusions and Recommendations

- ◆ Groundwater contamination at LC11-GW1 appears to be decreasing but is still above MCLs
- ◆ Extent of contamination has not been determined
- ◆ Further delineation of chlorinated hydrocarbons in groundwater is necessary to verify no-risk determination

## Site 11 - Conclusions and Recommendations (cont.)

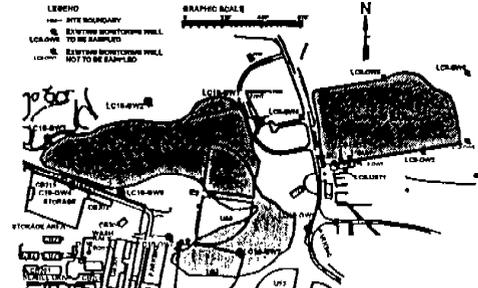
- ◆ Geoprobe sampling to define extent
- ◆ New wells to provide downgradient perimeter monitoring points
- ◆ Focus sampling on chlorinated hydrocarbons only

## Sites 9 & 10: Final Proposed Remedial Action Plan

- ✦ Site 9 - Driving Range Landfill
- ✦ Operated from 1950 - 1956
- ✦ 6 acres
  
- ✦ Site 10 - Sewage Treatment Plant Landfill
- ✦ Operated from 1941 - 1968
- ✦ 18 acres



## Sites 9 & 10



## Sites 9 & 10: Final Proposed Remedial Action Plan

- ✦ At each Site:
  - Approximately 40,000 cy of mostly non-hazardous, solid, household wastes
  - 3 rounds of groundwater sampling performed
  - 1 round of surface soil sampling performed



## Sites 9 & 10: Final Proposed Remedial Action Plan

- ✦ Site 9 - No current risks
- ✦ Site 10 - No current risks
  
- ✦ Proposed remedy
  - Long-term groundwater monitoring
  - Institutional controls



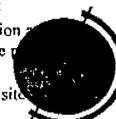
## Sites 9 & 10 Draft Final Decision Document.

- ✦ Documents decision is consistent with NCP
- ✦ Records & summarizes selection of remedy
  
- ✦ Selected remedy for each Site
  - Long-term groundwater monitoring
  - Institutional controls

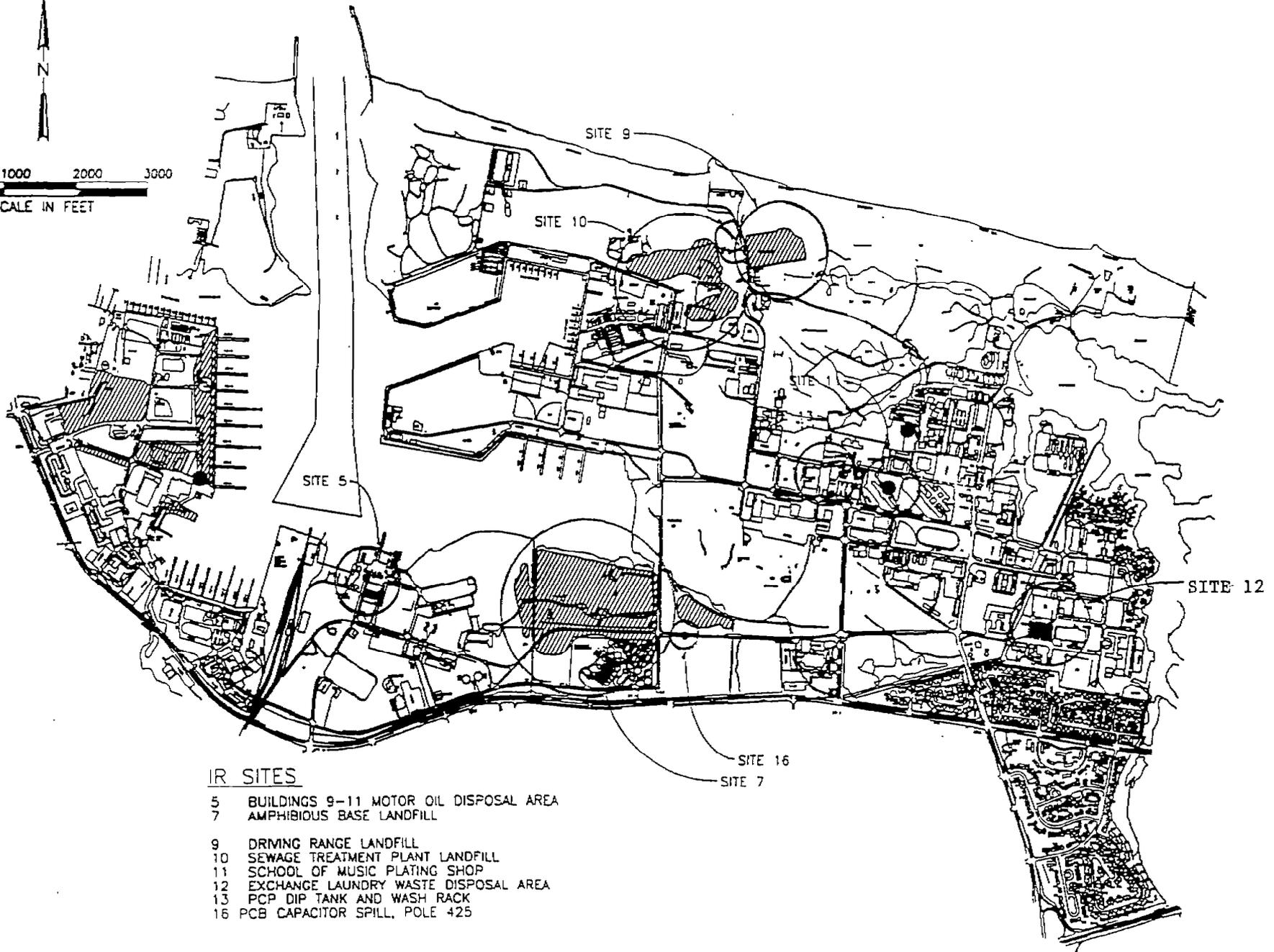
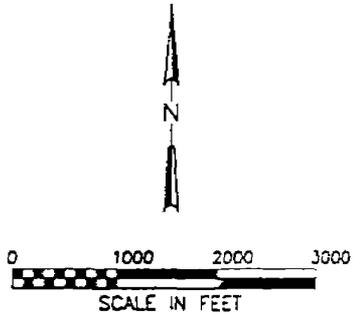


## Sites 9 & 10 Draft Final Decision Document

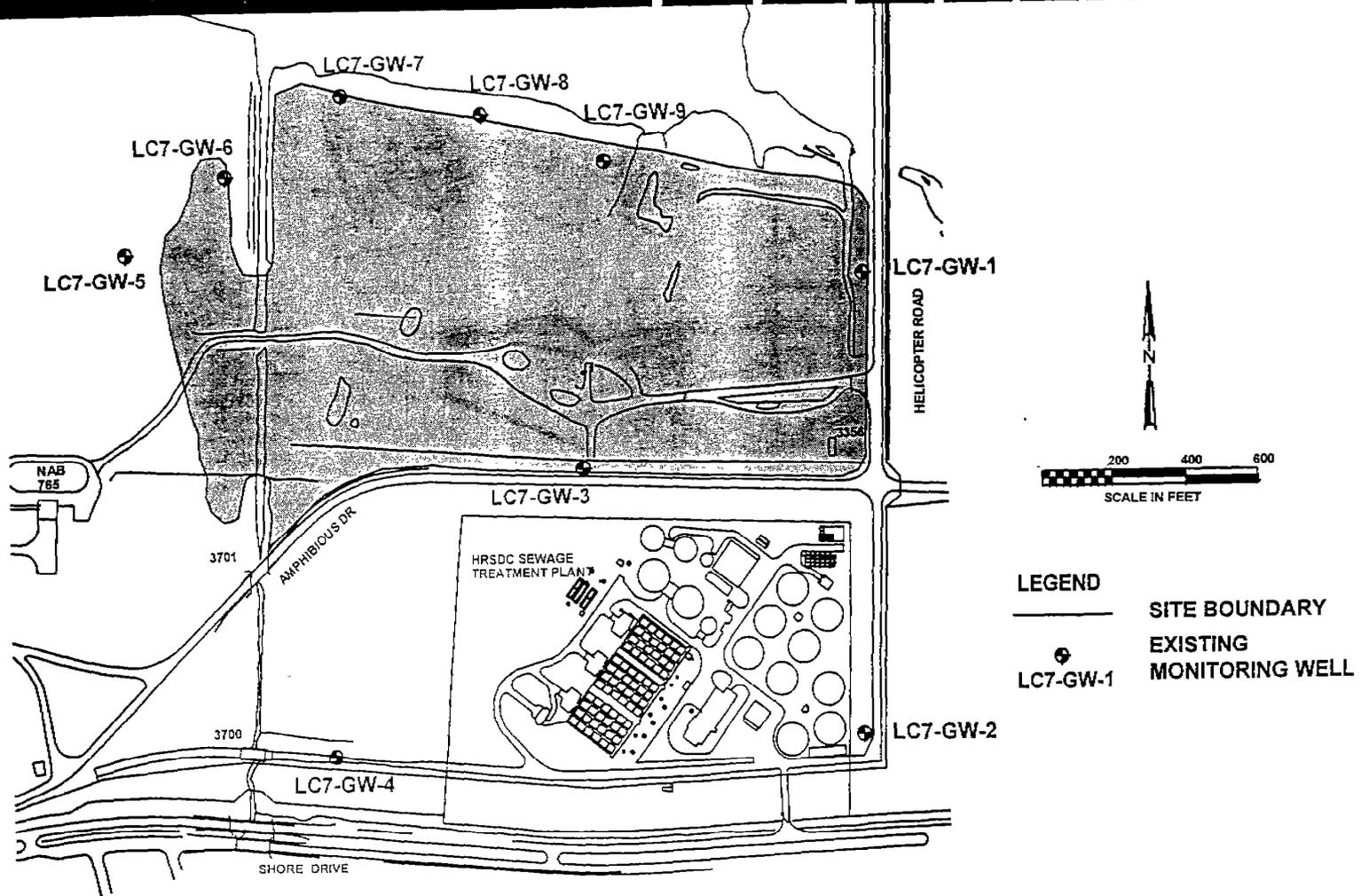
- ✦ Long-term GW monitoring (GWMP)
- ✦ Institutional controls
  - Warning signs
  - Land-use restrictions
    - ◆ Base Master Plan - Restrictions on excavation, groundwater use, and future development
    - ◆ Base operational requirements - Notification and concurrence of Base Environmental office on intrusive activities
    - ◆ Real estate records - Document nature of site and future disposition







# Site 7, Amphibious Base Landfill

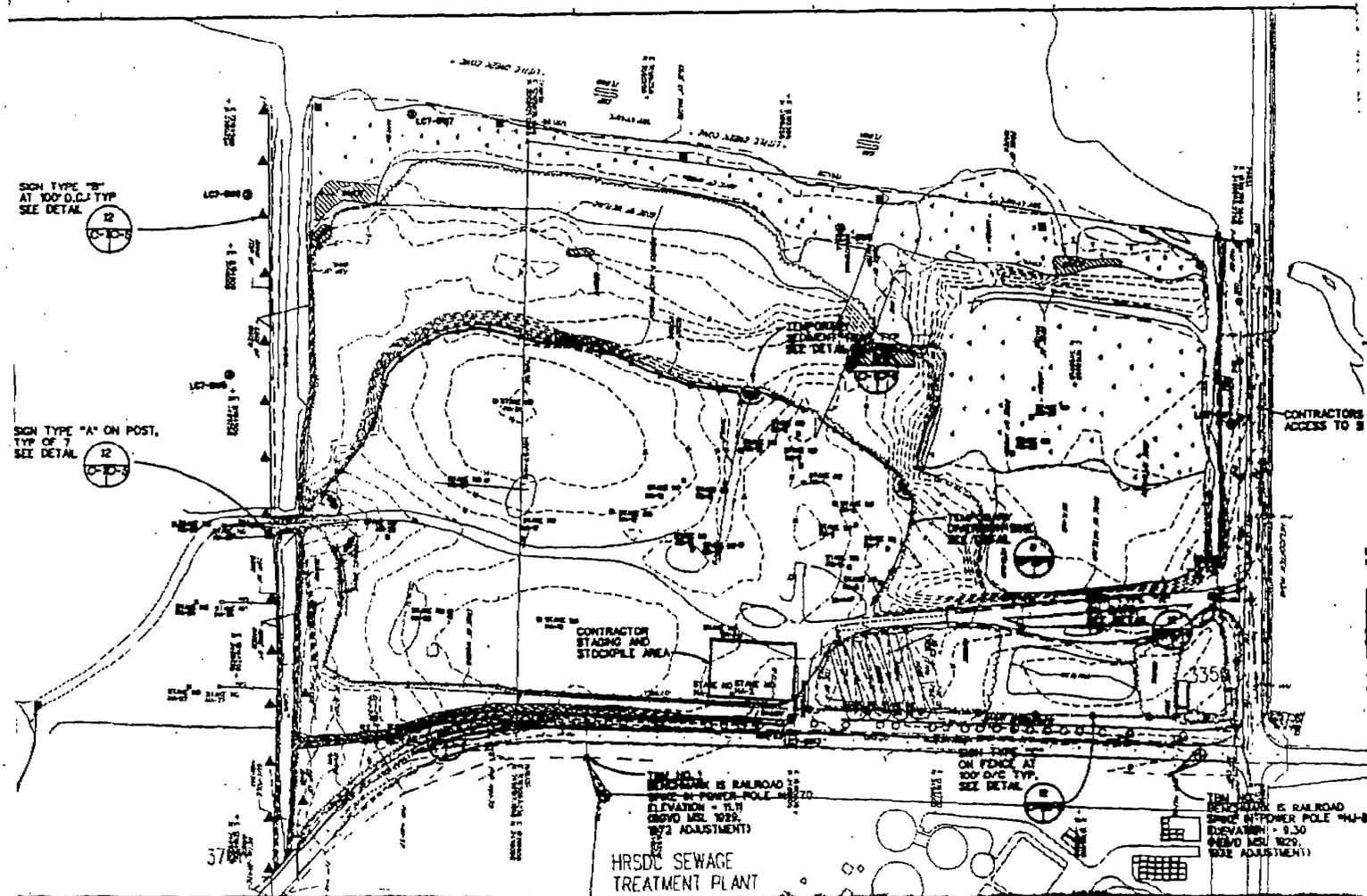


# Site 7, Amphibious Base Landfill

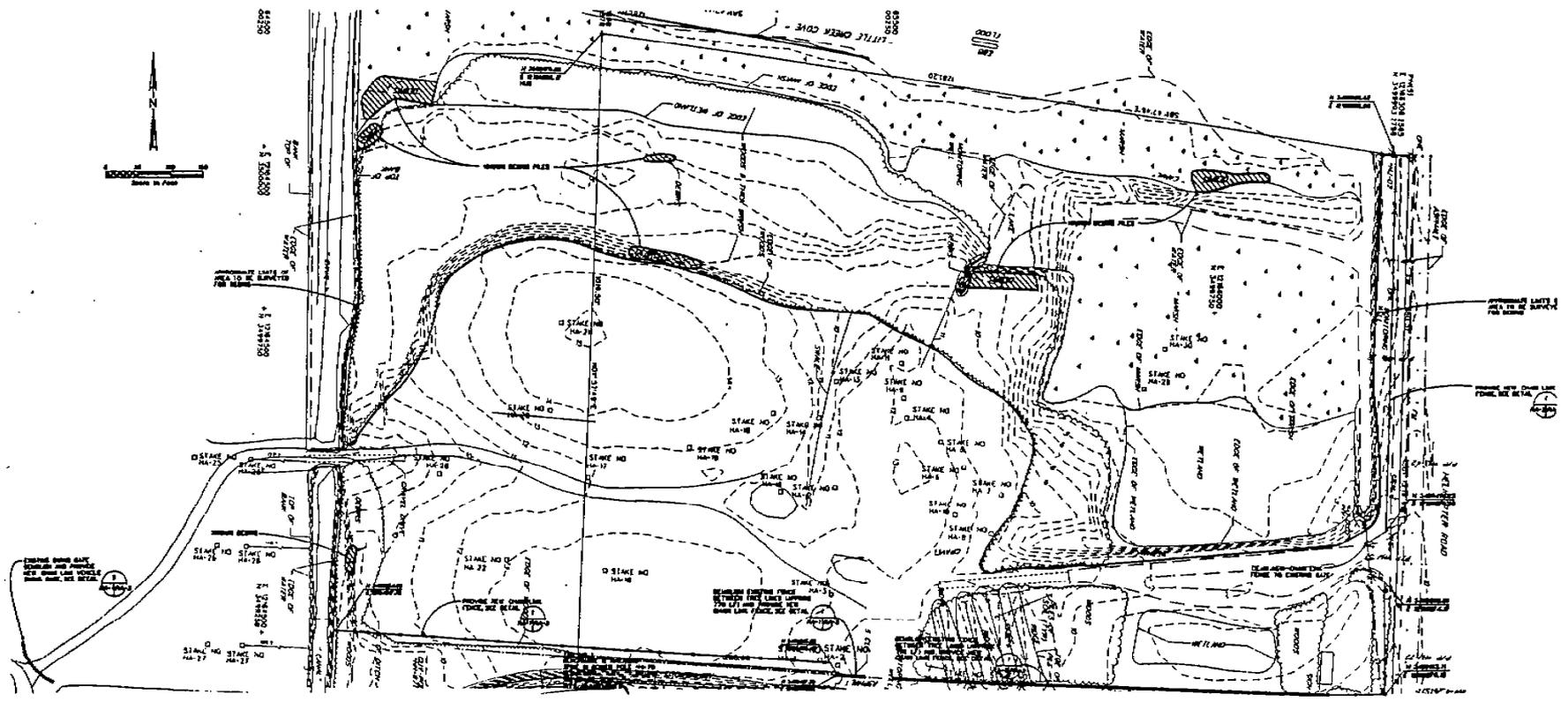




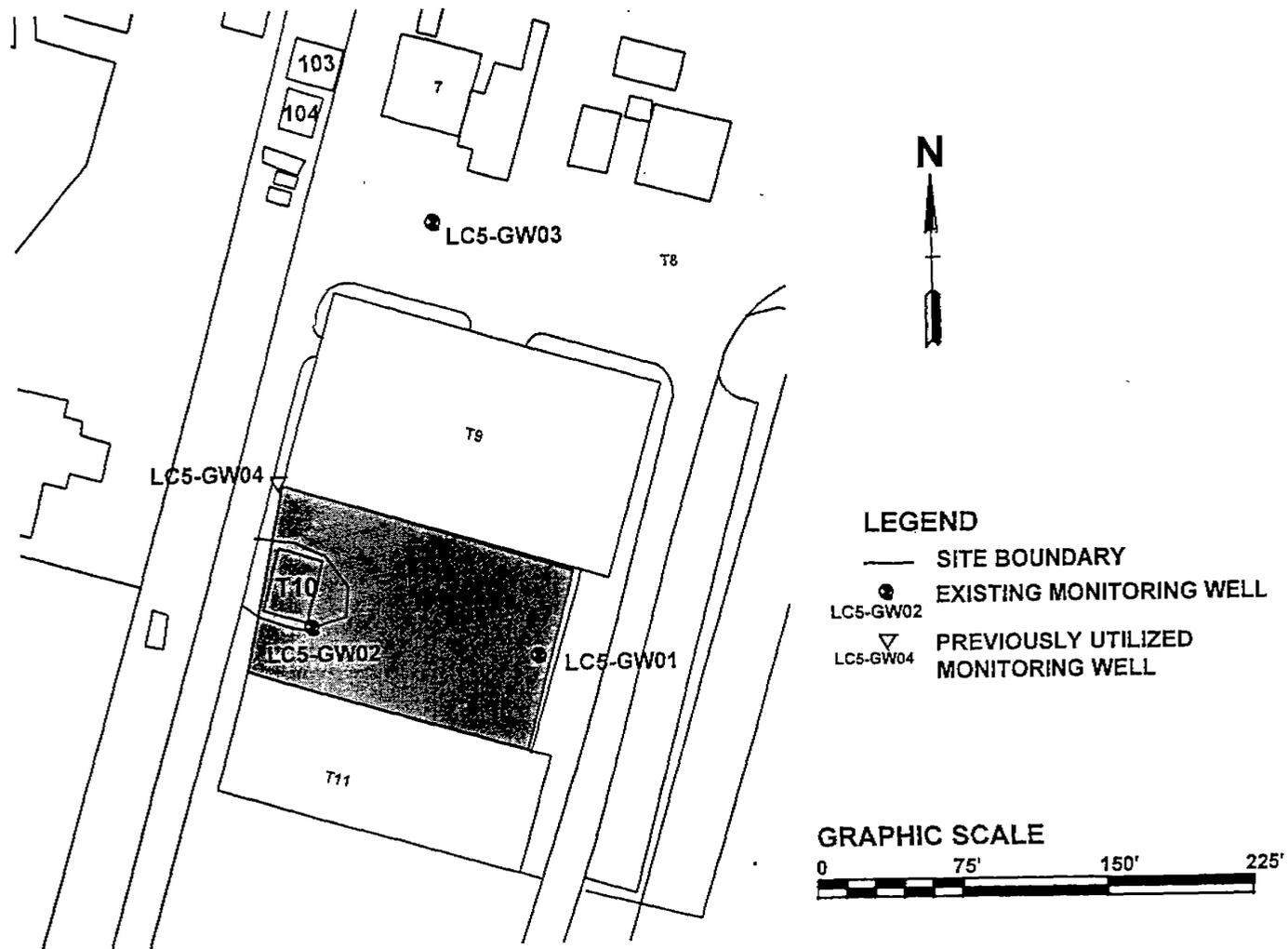
# Landfill Design Drawing



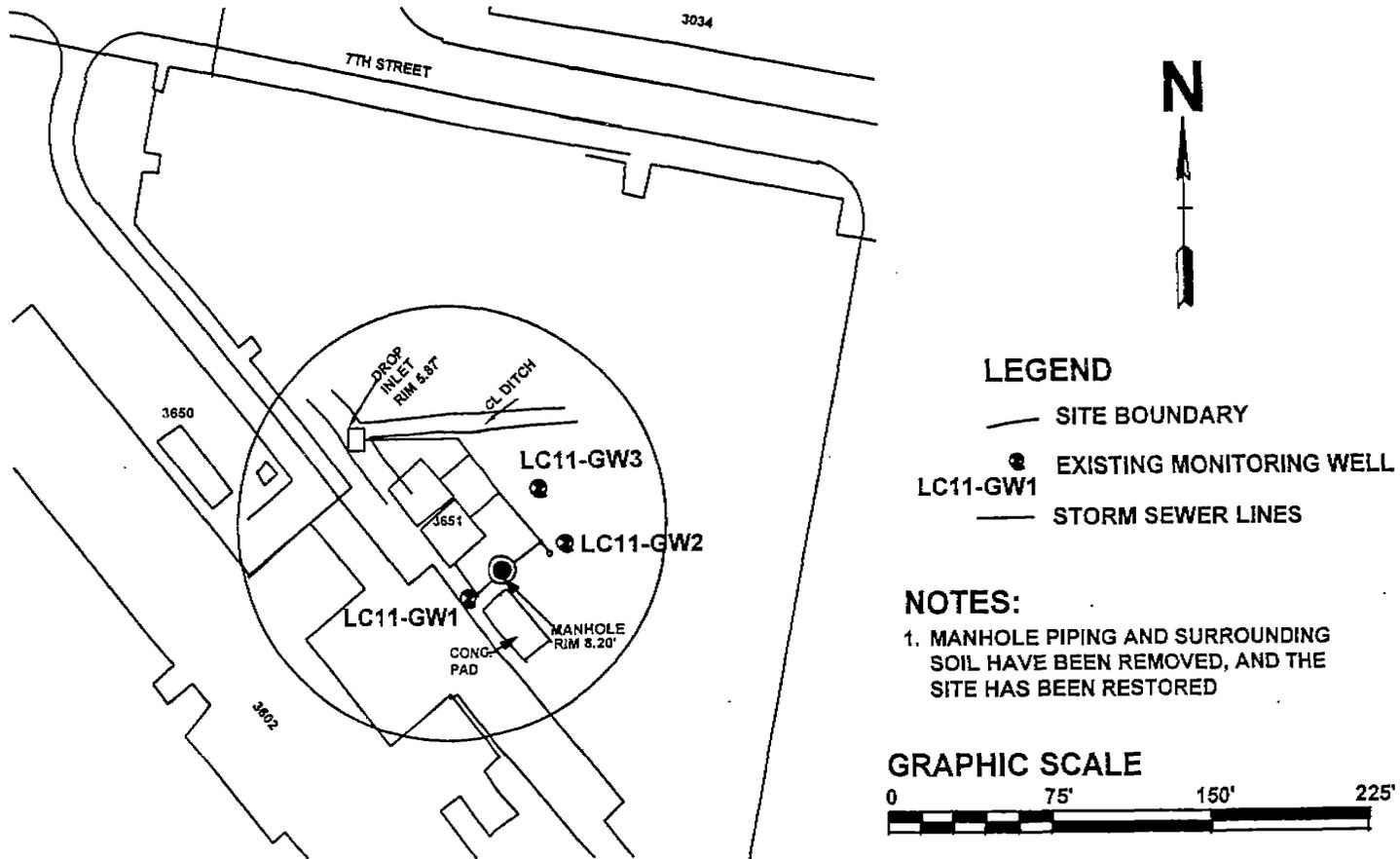
# RAC Design



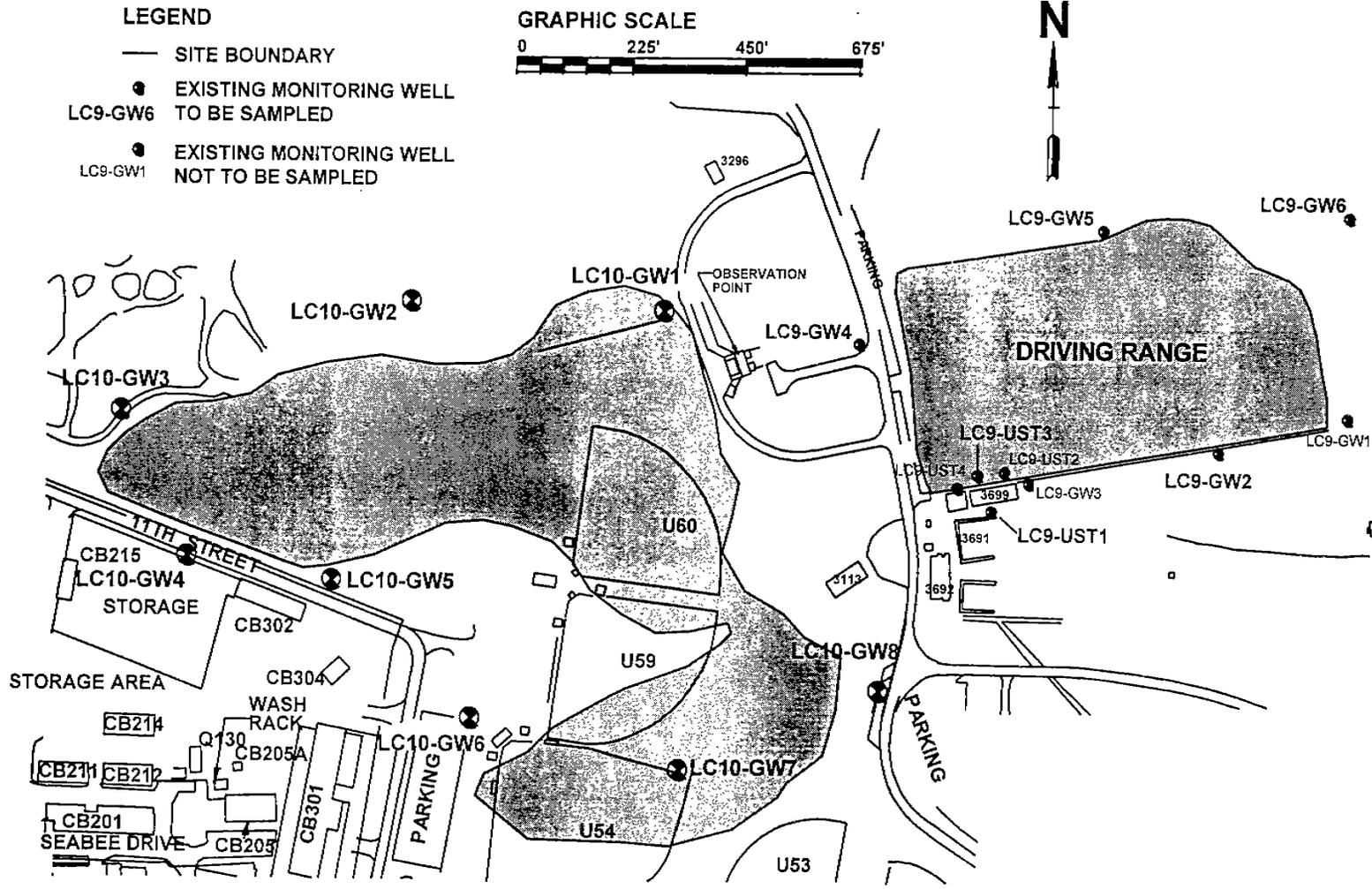
# Site 5 Motor Oil Disposal Area



# Site 11 School of Music Plating Shop



# Sites 9 & 10



**LEGEND**

- SITE BOUNDARY
- EXISTING MONITORING WELL  
LC9-GW6 TO BE SAMPLED
- EXISTING MONITORING WELL  
LC9-GW1 NOT TO BE SAMPLED

**GRAPHIC SCALE**



## Acronyms

Ag	Silver
Al	Aluminum
ARAR	Applicable or Relevant and Appropriate Requirement
As	Arsenic
Ba	Barium
Be	Beryllium
Cd	Cadmium
CERCLA	Comprehensive Envir <sup>l</sup> Response, Compensation, & Liability Act
CFR	Code of Federal Regulations
Cr	Chromium
cy	cubic yards
1,1-DCA	1,1 - Dichloroethane
1,1-DCE	1,1 - Dichloroethene
DD	Decision Document
E.O.	Executive Order
Fe	Iron
FS	Feasibility Study
GW	Groundwater
GWMP	Groundwater Monitoring Plan
HDPE	High Density Polyethylene
IR	Installation Restoration
IRI	Interim Remedial Investigation
LANTDIV	Naval Facilities Engineering Command, Atlantic Division
MCL	Maximum Contaminant Level
Mn	Manganese
NCP	National Oil & Hazardous Substances Pollution Contingency Plan
NFRAP	No Further Response/Remedial Action Palned
Ni	Nickel
Pb	Lead
PCB	Polychlorinated Biphenyl
Pest/PCB	Pesticides and Polychlorinated Biphenyl
ppm	part per million
PRAP	Proposed Remedial Action Plan
PSI	Preliminary Site Inspection
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RBC	Risk Based Concentration
RI/FS	Remedial Investigation/Feasibility Study
RVS	Round 1 Verification Step
SB	Subsurface Soil
Se	Selenium
SED	Sediment
SI	Site Inspection
SRI	Supplemental Remedial Investigation
SS	Surface Soil
SVOC	Semi-Volatile Organic Compound
SW	Surface Water
TCE	Trichloroethene
Tl	Thallium
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbon
VOC	Volatile Organic Compound
Zn	Zinc