

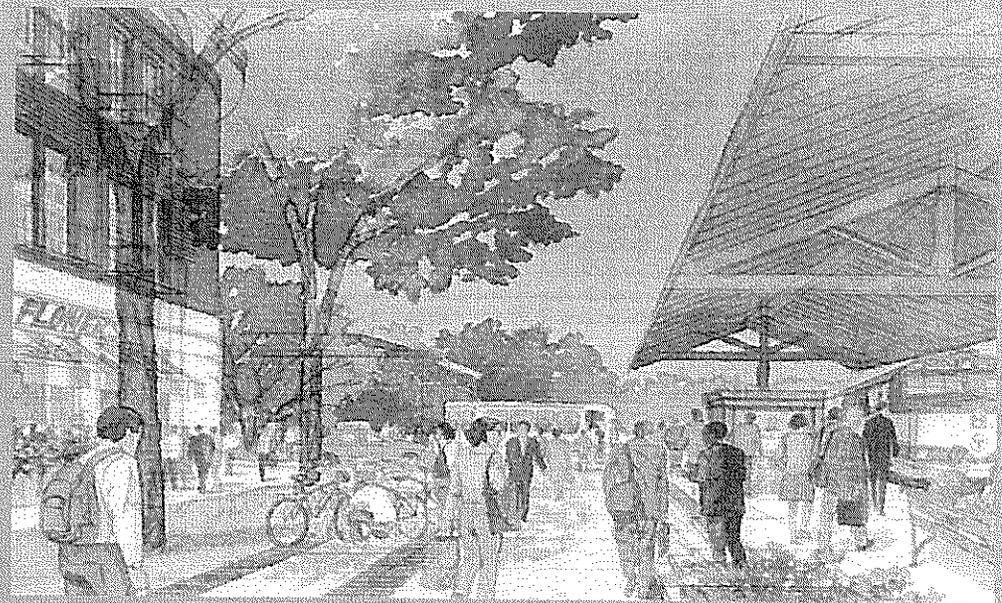
Status Report on Extended Duration Pump Test

Presented by:

Rizzo Associates, Inc.

Jack Henderson, P.E.

May 11, 2006



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ASSOCIATES

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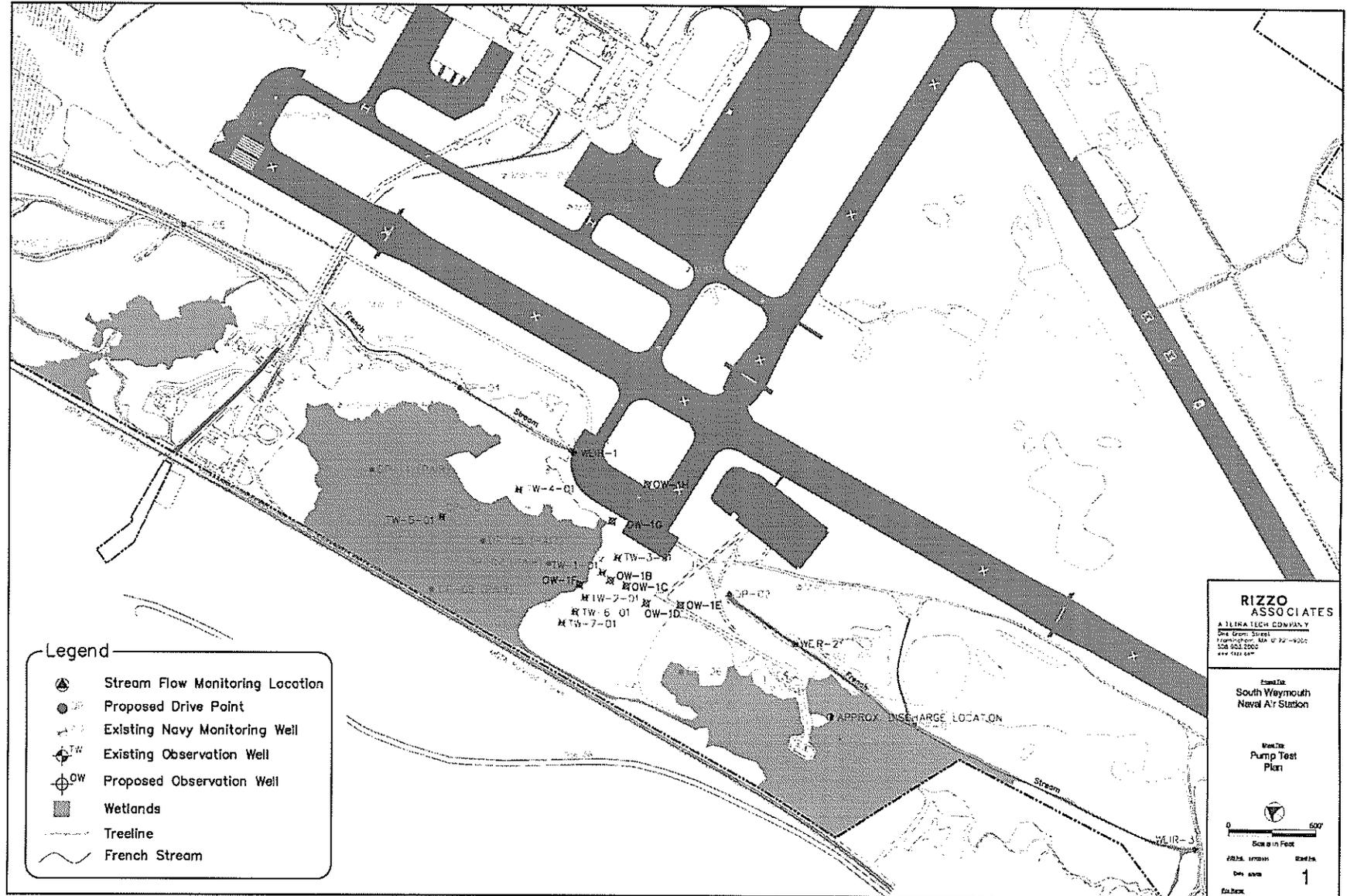
Outline

- Pump test objectives
- Pump test plan
 - Water levels
 - Stream flows
 - Contaminant transport
- Pump test operations
 - Data collected
 - Photos
- Pump test results
 - Area of drawdown
 - “Trigger” well observations
 - Water quality testing
- Pump test modeling

Pump Test Objectives

- Assess quantity and quality of available water
- Assess safe yield of well
- Assess impact of continuous pumping on wetlands, streams, and contaminated sites

Pump Test Plan - Monitoring Locations



- Legend**
- Stream Flow Monitoring Location
 - Proposed Drive Point
 - Existing Navy Monitoring Well
 - Existing Observation Well
 - Proposed Observation Well
 - Wetlands
 - Treeline
 - French Stream

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Scale:
 South Weymouth
 Naval Air Station

Map Title:
 Pump Test
 Plan

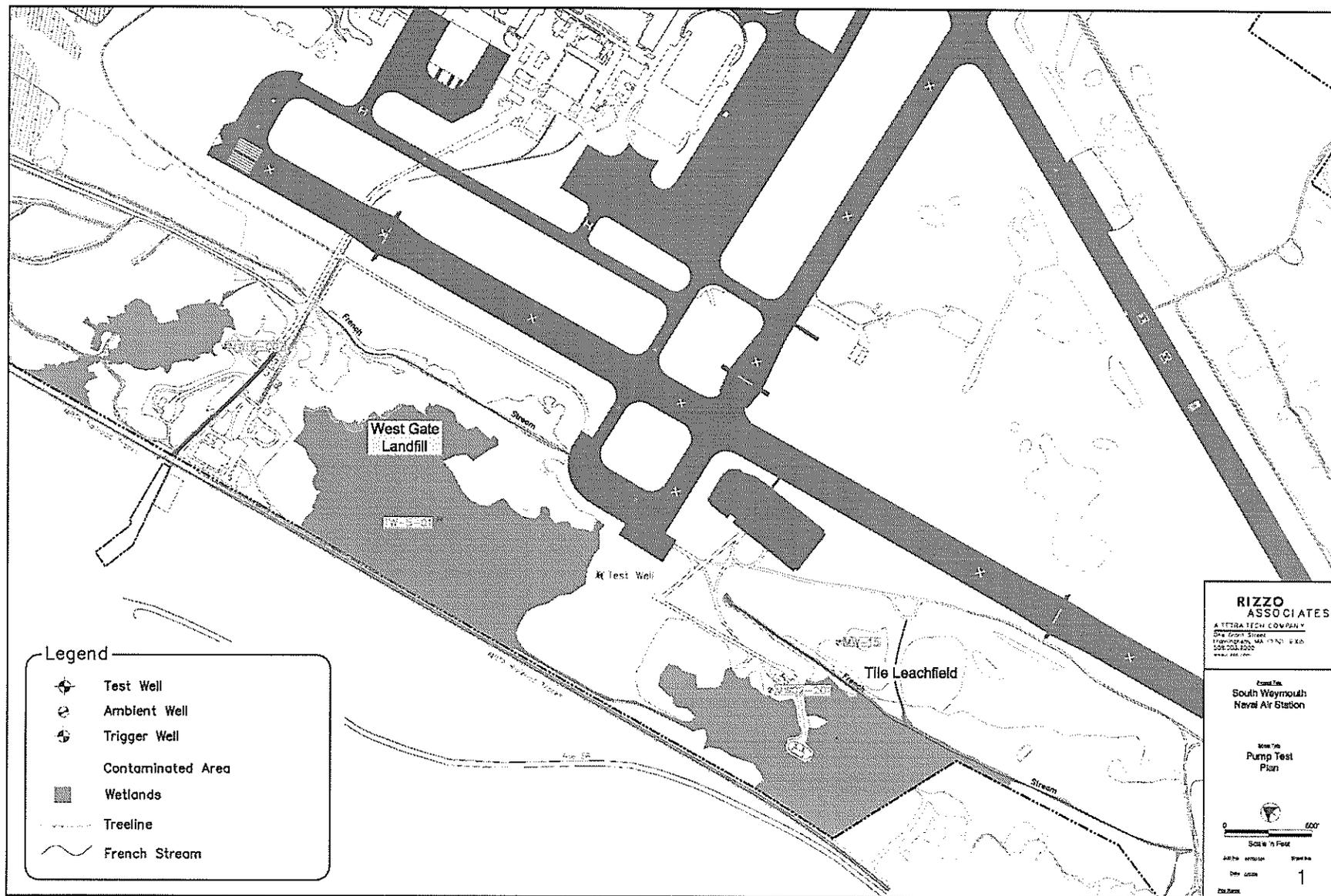
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Pump Test Plan – Monitoring Locations

- Pumping test well was located in the most promising aquifer area, based on USGS well yield predictions and previous field explorations
- Water levels/flows were observed at
 - 39 Observation Wells
 - 16 Drive Points
 - 3 Weirs installed in French Stream
- Water quality was sampled before, during, and after pumping
 - Test Well
 - Four Observation Wells
- “Trigger” Wells were used to monitor possible contaminant transport

Pump Test Plan - Contaminant Monitoring



Pump Test Operations – Summary

- Water level readings began February 17 and ended March 10
- Test well was pumped for 6 days at 195 gallons per minute (approximately 280,000 gallons per day)
- After six days, there was no sign of stabilization
- DEP only allowed shut-down without stabilization for an irrigation supply well
- Stabilization will be required for use as potable water supply

Pump Test Operations – Photos



Above: Pumping well, with weather station in background



Above: Manual stream flow measurement, downstream of pumping well

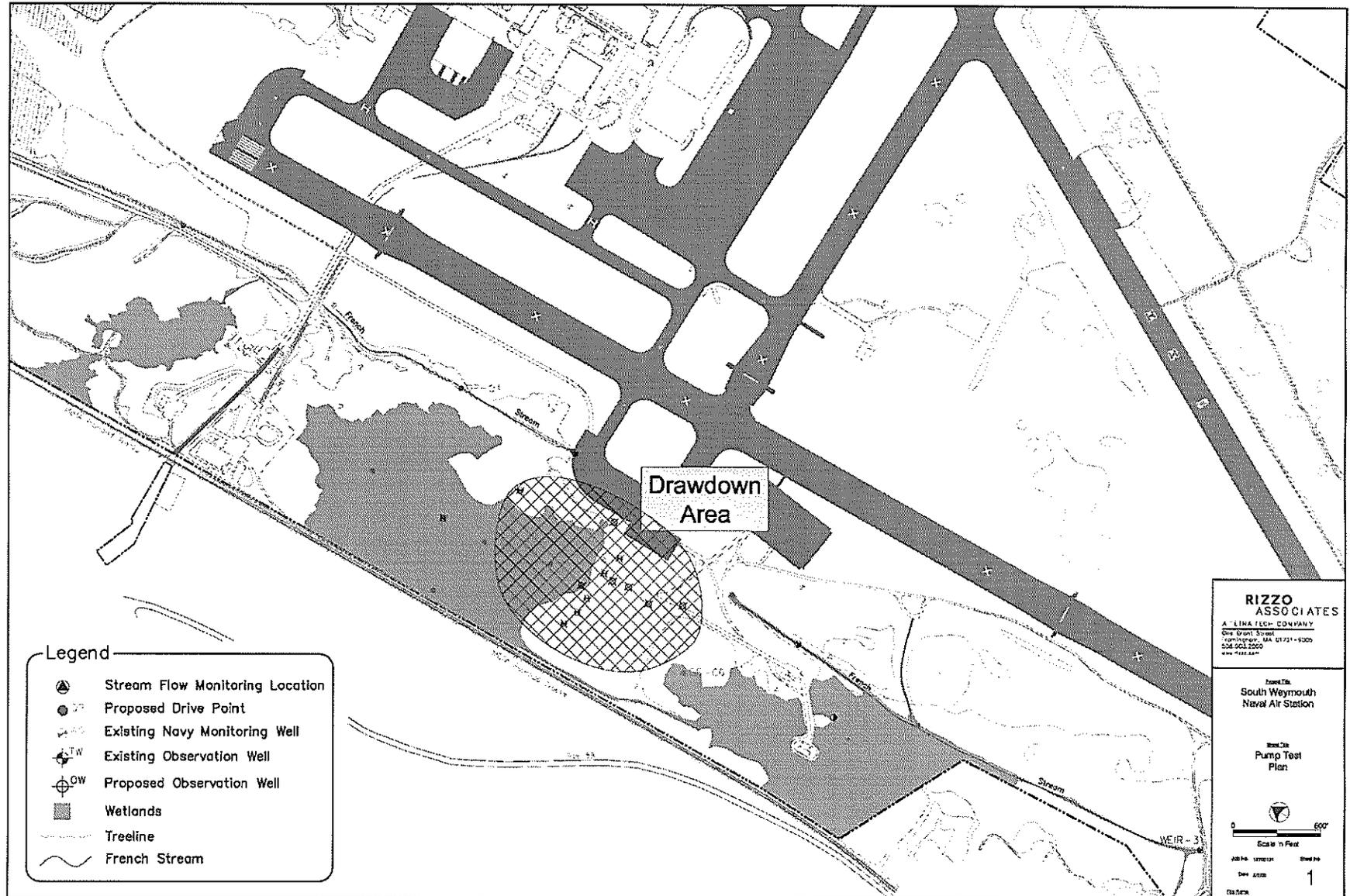


Above: Weir at culvert entrance, upstream of pumping well

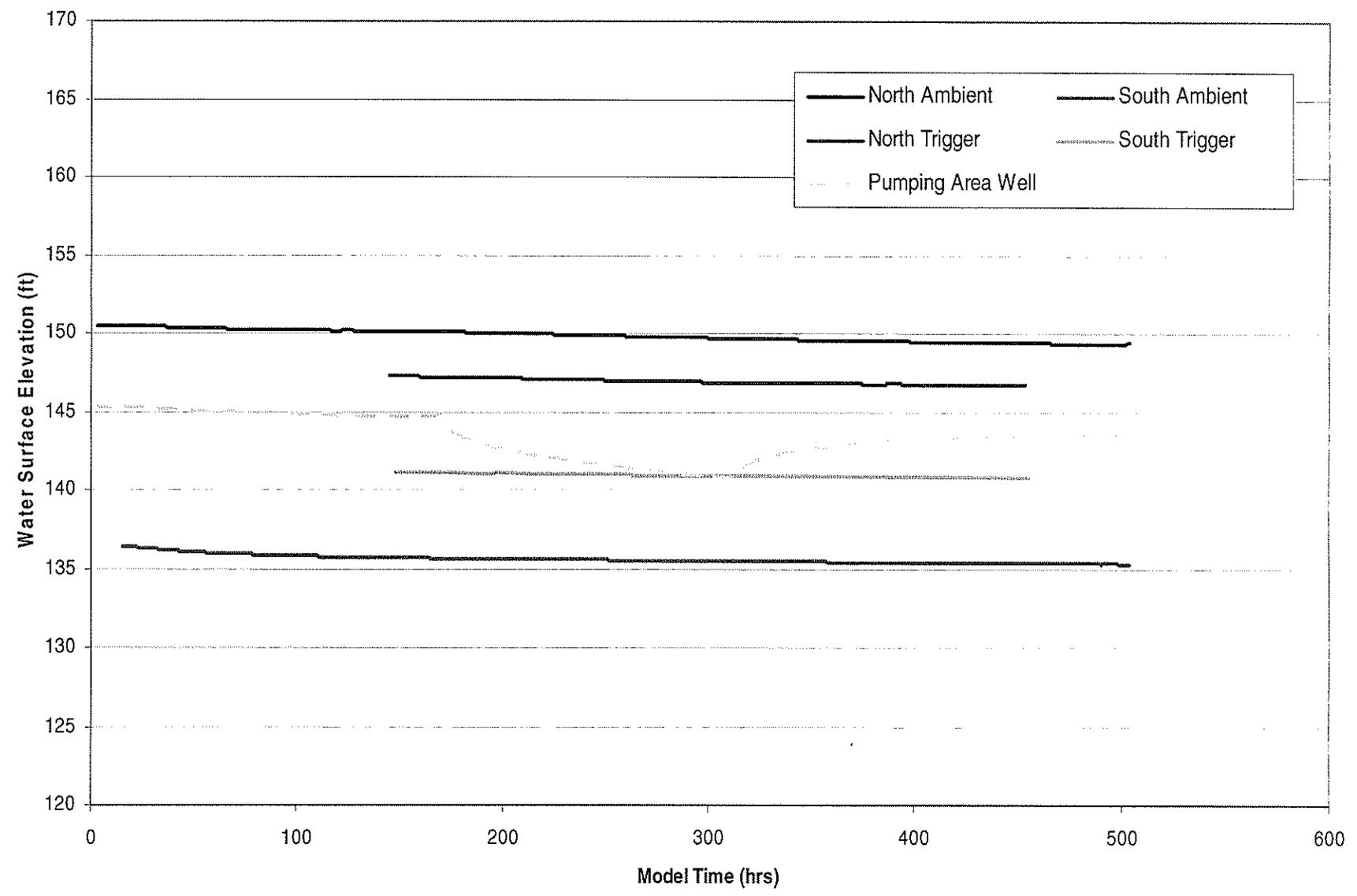


Left: Pumping well, with discharge hose to wetlands

Pump Test Results - Drawdown Area



Pump Test Results - "Trigger" Well Levels



Pump Test Results – Water Quality

- Yield – Less than 280,000 gallons per day
- Water Quality
 - No volatile organic contaminants (VOCs) detected
 - No synthetic organic contaminants (SOCs) detected
 - No petroleum hydrocarbons (EPH/VPH) detected
- Metals Requiring Treatment for Potable Water
 - Iron (5.2 mg/L / 0.3 mg/L) - Manganese (0.5 mg/L / 0.05 mg/L)
- Other standard tests
 - Potassium
 - Sodium
 - TDS
 - Fluoride
 - Specific conductance
 - Turbidity
 - Magnesium
 - Calcium
 - Chloride
 - pH
 - Sulfate
 - Alkalinity

Conclusions To Date

- Well is not currently economical for development as potable water supply
 - Yield is too low
 - Treatment costs high for minimal yield
- Contamination Sites were not impacted by pump test
- Pump Test Modeling Required for;
 - Admission to MWRA
 - Permit for use as irrigation well

**Determining the Prevalence
of MS and ALS in
Southeastern
Massachusetts**

**Funded by ATSDR and
MDPH**

May 11, 2006

Community Concerns

- Residents living near hazardous waste sites expressed concern about elevated rates of autoimmune/neurological diseases and possible association with environmental exposures

US Agency for Toxic Substances and Disease Registry (ATSDR) Award

- One of five award recipients
- Three years of funding

Overview of Surveillance

- To estimate the prevalence of MS and ALS in SE Mass
- To evaluate prevalence in relation to exposure to hazardous wastes

Study Population

- Study Communities
 - Plymouth County + Weymouth + Rayhnam

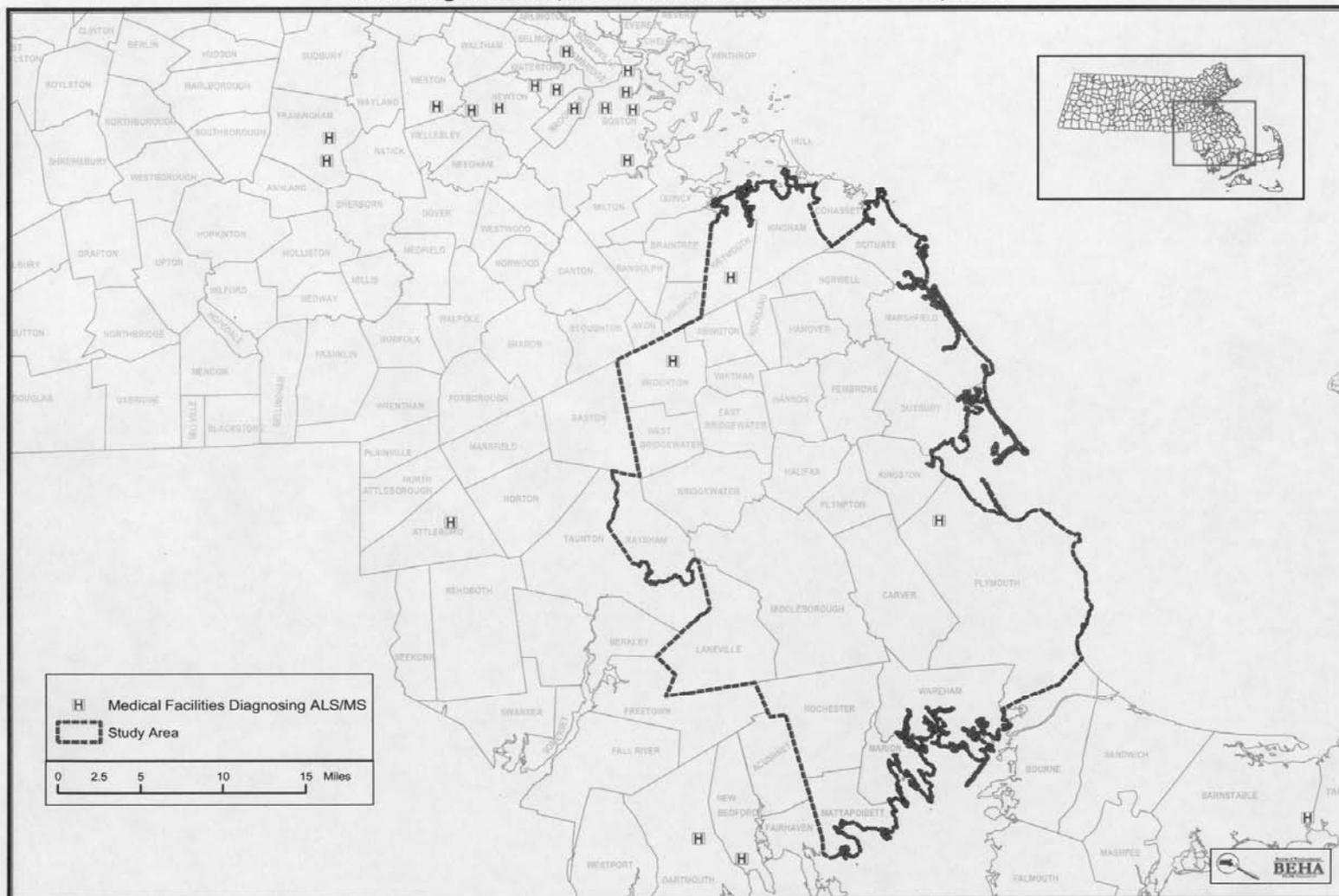
Case Definition

- Resident of the study area between 1/1/98 and 12/31/03
- Medical record shows definite or probable ALS
- Diagnosis before or during study period
- Physician visit during the 5-year period

Sources of Cases

- Primary source
 - Neurologists
- Secondary sources
 - MDPH files
 - Hospital discharge database
 - Patient advocacy groups
 - Death certificates

FIGURE 3: The Location of Principal Practitioners and/or Facilities That Diagnose ALS/MS For Residents Within the Study Area



Data Source: MassGIS, 2002

Environmental Assessment

- Based upon existing environmental data
- Id info on past potential exposure to heavy metals
- Two sites of primary focus
 - South Weymouth Naval Air Station (SWNAS)
 - Middleboro 21E sites

Environmental Assessment

- Apply statistical tests to determine if cases occur more often near these sites
- Apply statistical tests to determine if clustering of cases occurs within the study area

Limitations

- One epidemiological study cannot directly show cause and effect
- Study design consistent with ATSDR desire for 5 states to collect data similarly
- ALS is a rare disease, so numbers will be small

Strengths

- No existing database for these diseases
- Standardized approach will be taken to identify all cases that meet the study definition
- Secondary data sources will be used to determine if cases have been missed
- All information collected is protected by State law and no personal/confidential information can be released by the DPH

Strengths

- Will explore historical concerns about environmental exposures
- Will determine if geographic patterns of occurrence exist
- May provide foundation for future studies, if warranted

Status Of Project

- All data collection has been completed
- Final draft report in preparation
- Report due ATSDR in June, 2006
- Report undergoes independent peer review
- Report released publicly following completion of peer review
- Final report will be released at a public meeting of the ALS/MS Advisory Committee and placed on the MDPH website

For More Information

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Citizen's Photo



North Head Wall: Sample March 30, 2006



North Headwall



March 2006 Sample Result

Only the following Metals were detected:

Chemical	Concentration (ug/L)
• Aluminum	4200
• Barium	42
• Calcium	18000
• Iron	76000
• Magnesium	6800
• Manganese	780
• Zinc	68

Next Steps

- Review Navy Basewide data and EPA data
- Additional evaluation
- Collaborative effort