Rancho Seco Nuclear Generating Station
License Termination Plan

Meeting with NRC

April 28, 2004

Purpose of the Meeting

- Open lines of communication with the NRC
- Review site features and decommissioning status
- Discuss current decommissioning goals
- Discuss LTP development
- Obtain NRC feedback
- Discuss future interactions

Agenda

• Rancho Seco Features	Steve Redeker
• Decommissioning Approach	Steve Redeker
• Decommissioning Status	Dennis Gardiner
• Project Organization	Dennis Gardiner
• License Termination Approach	Dennis Gardiner
• HSA /Site Characterization	Einar Ronningen
• Dose Modeling	Einar Ronningen
• Final Status Survey	Einar Ronningen
• Projected Schedule	Bob Jones
• Future Meetings	Bob Jones

Rancho Seco Operations

Babcock & Wilcox Reactor	963 MWe
Initial criticality	September 1974
Began commercial operation	April 1975
Numbers of fuel cycles	7
Shut down permanently	June 1989
Effective Full Power Days	2,149 (<6 yrs.)
Received POL	March 1992
Began dismantlement	February 1997
Completed dry fuel transfer	August 2002

Rancho Seco Site Features

- 2,480 acre owner-controlled area
  - Industrial Area - 87 acres
  - ISFSI (site-specific 10 CFR Part 72 license) - 9/10 acre
  - Photovoltaic plant - 50 acres
  - 500 MWe gas-fired plant (under construction) - 30 acres
  - Rancho Seco switchyard is a major intertie with the Western Grid
  - 560 acre park with 160 acre-feet recreational lake
- ~100 acres are impacted
- Dry site (i.e., no major waterways nearby)
- Deep water table (140 – 160 feet; very little recharge from local rainfall)
- SMUD will retain site ownership

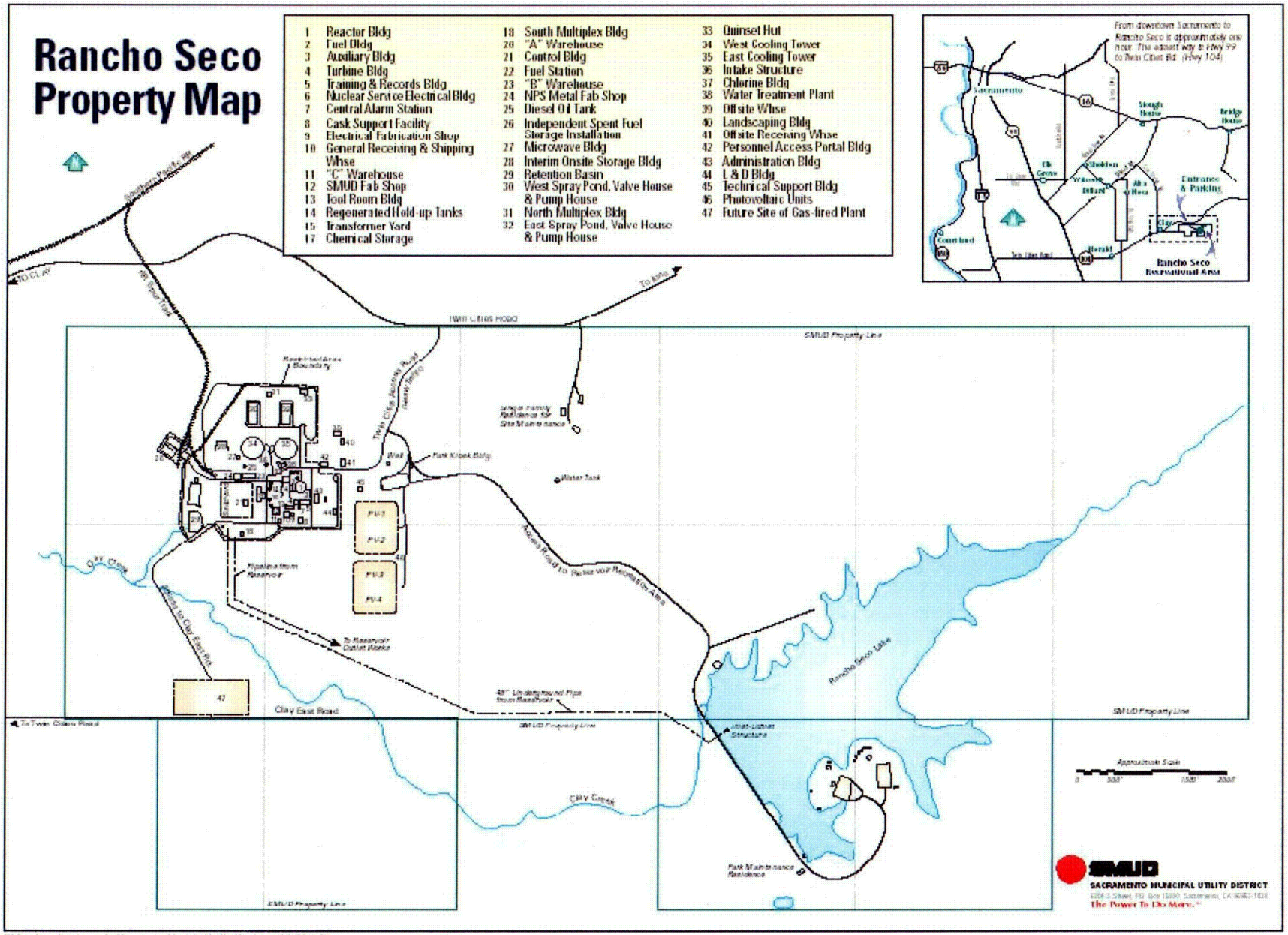

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Figure 4.1

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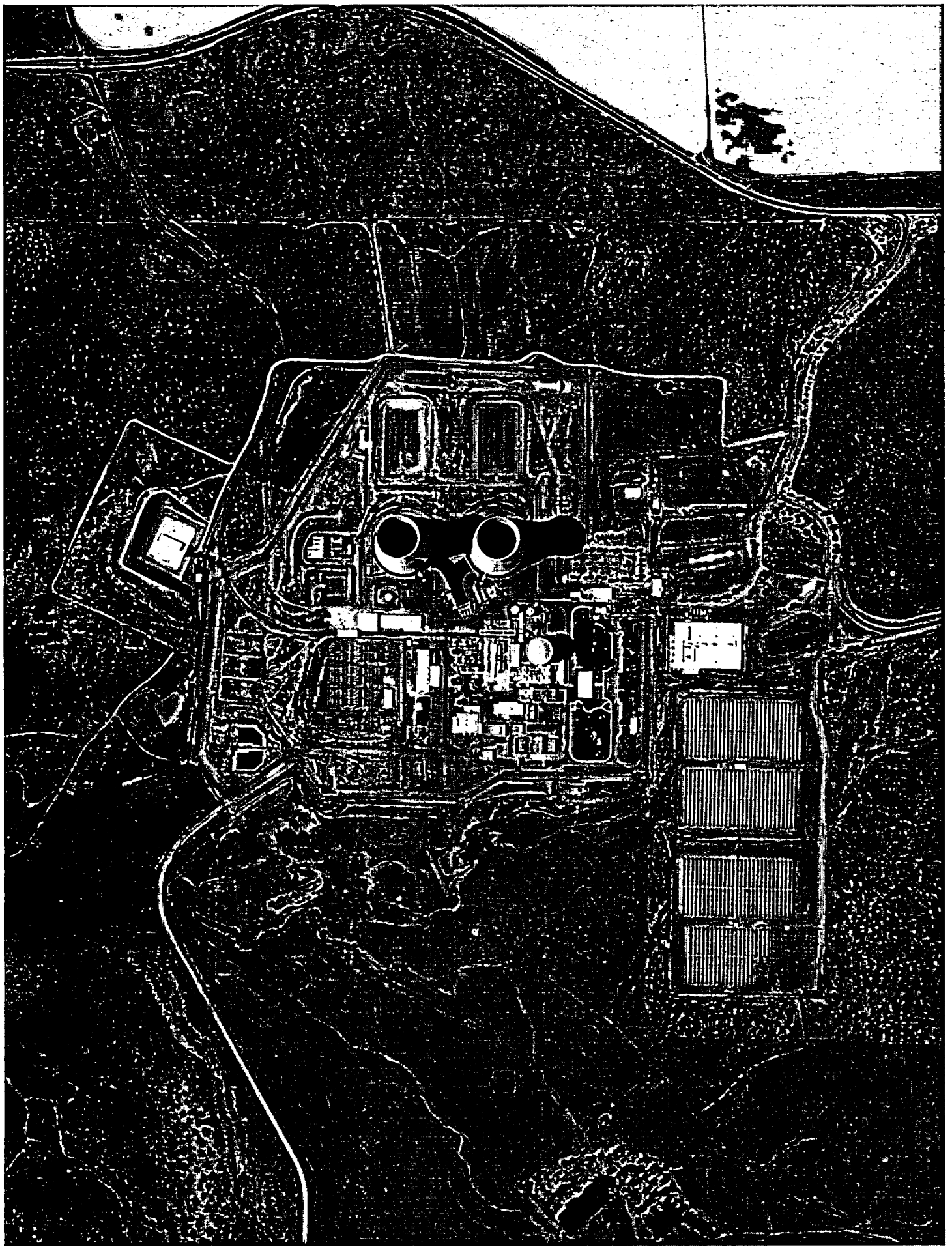
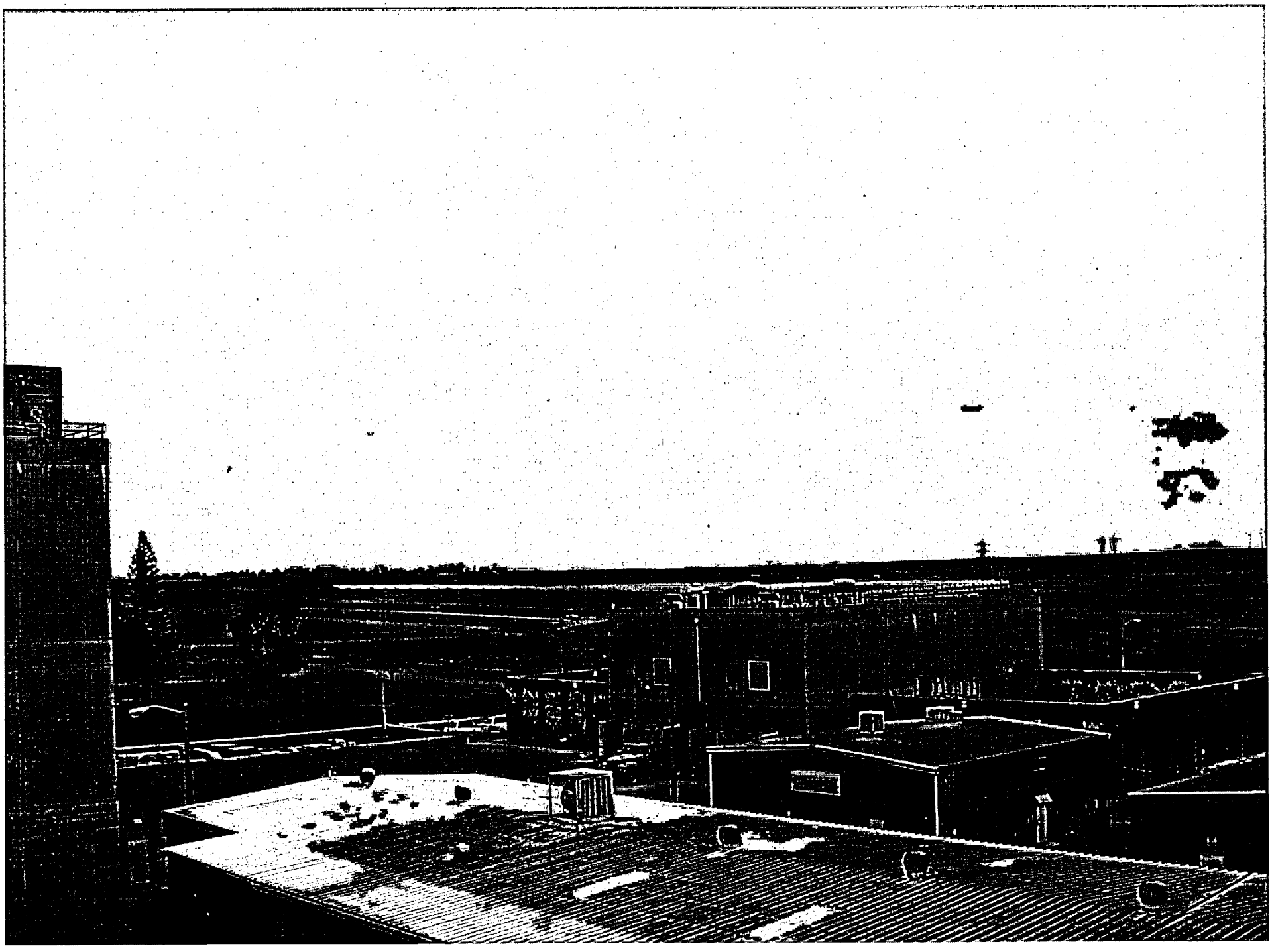
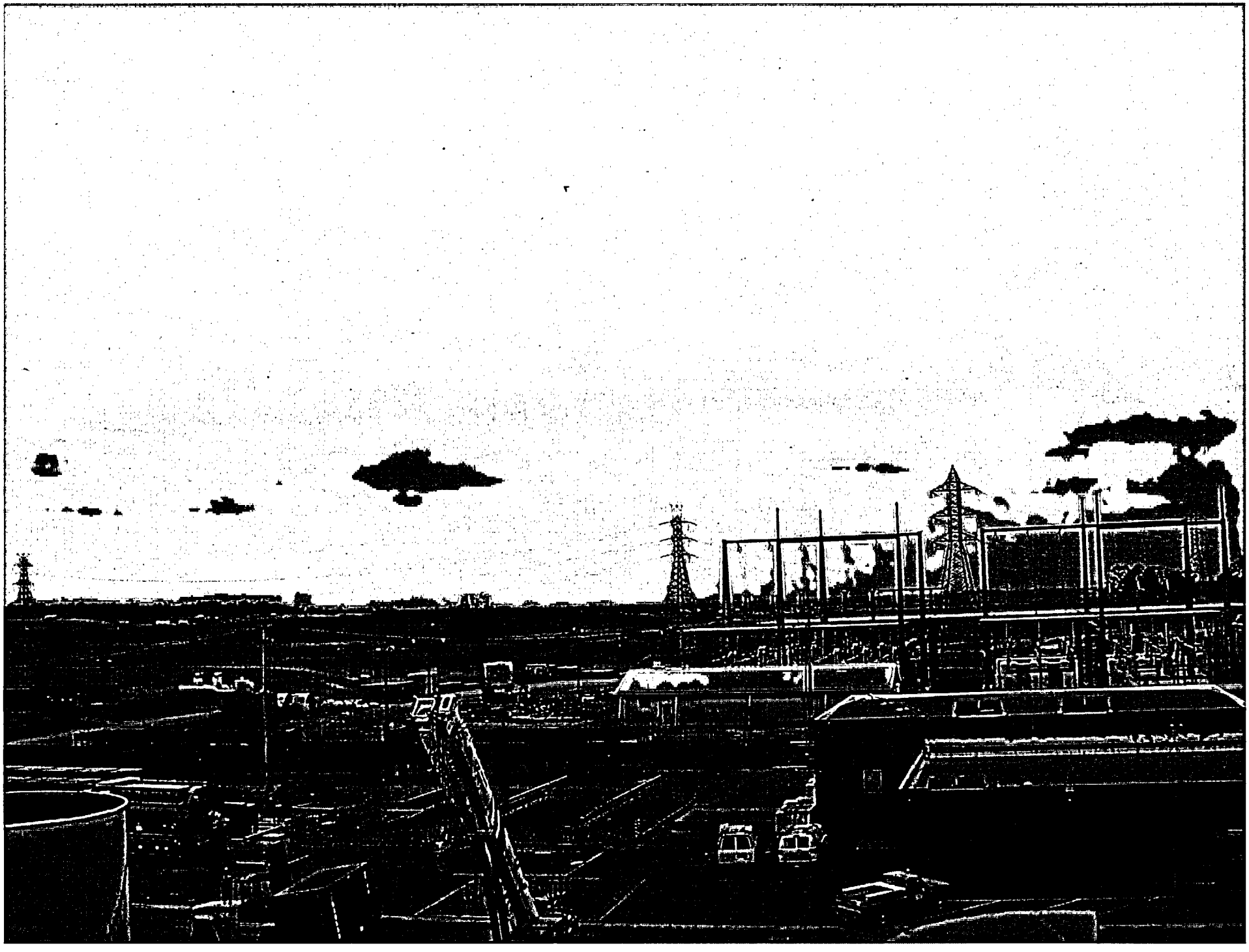
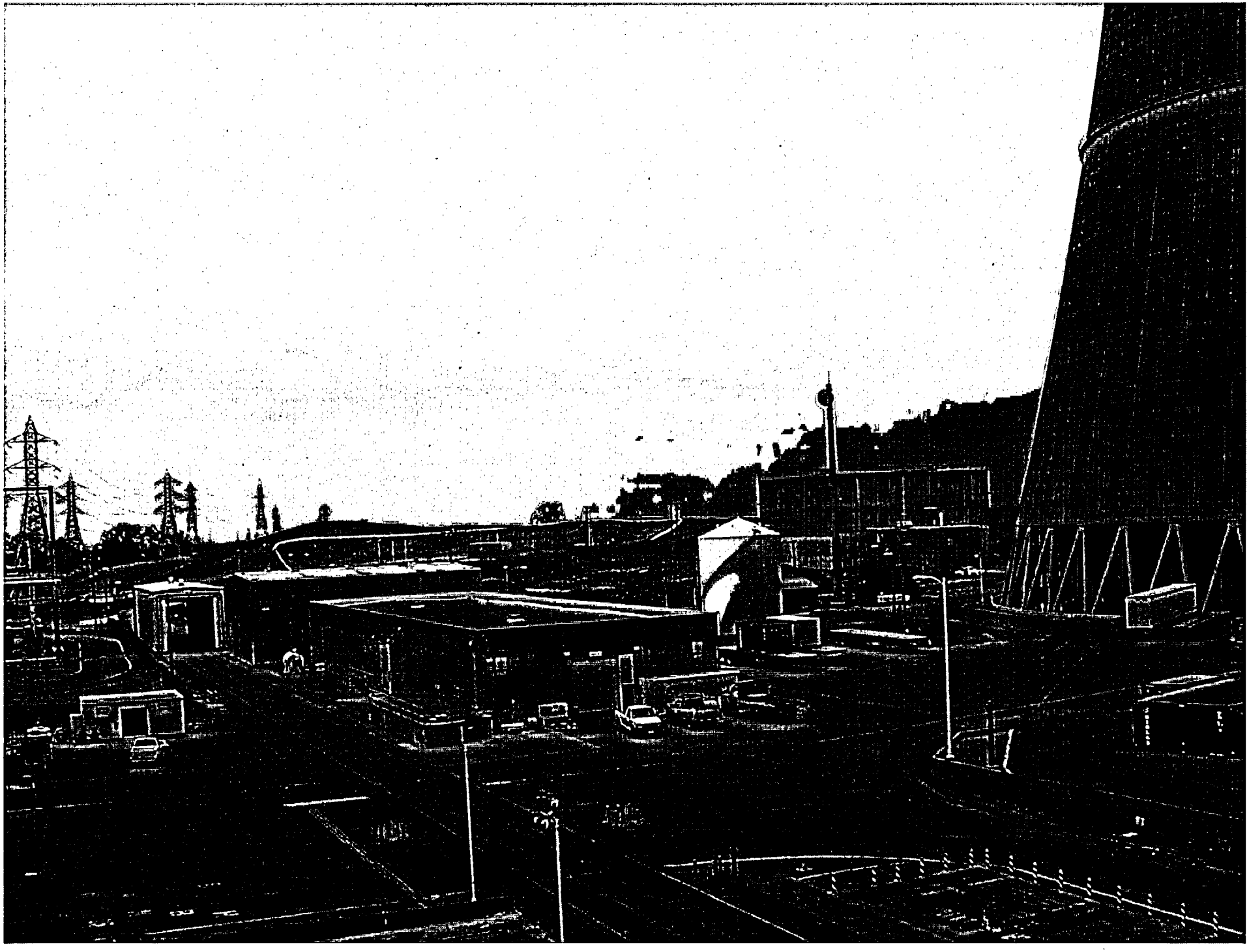
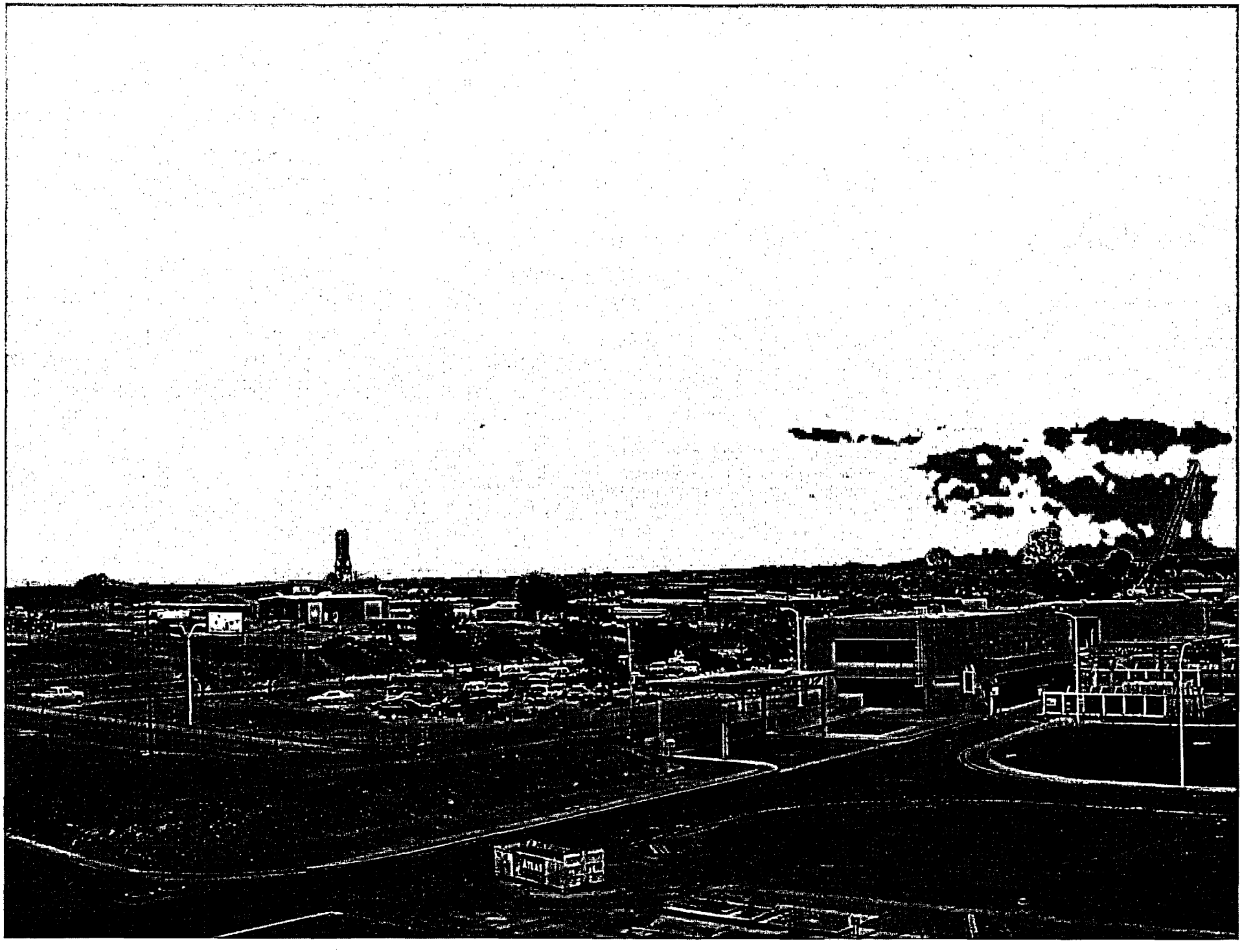
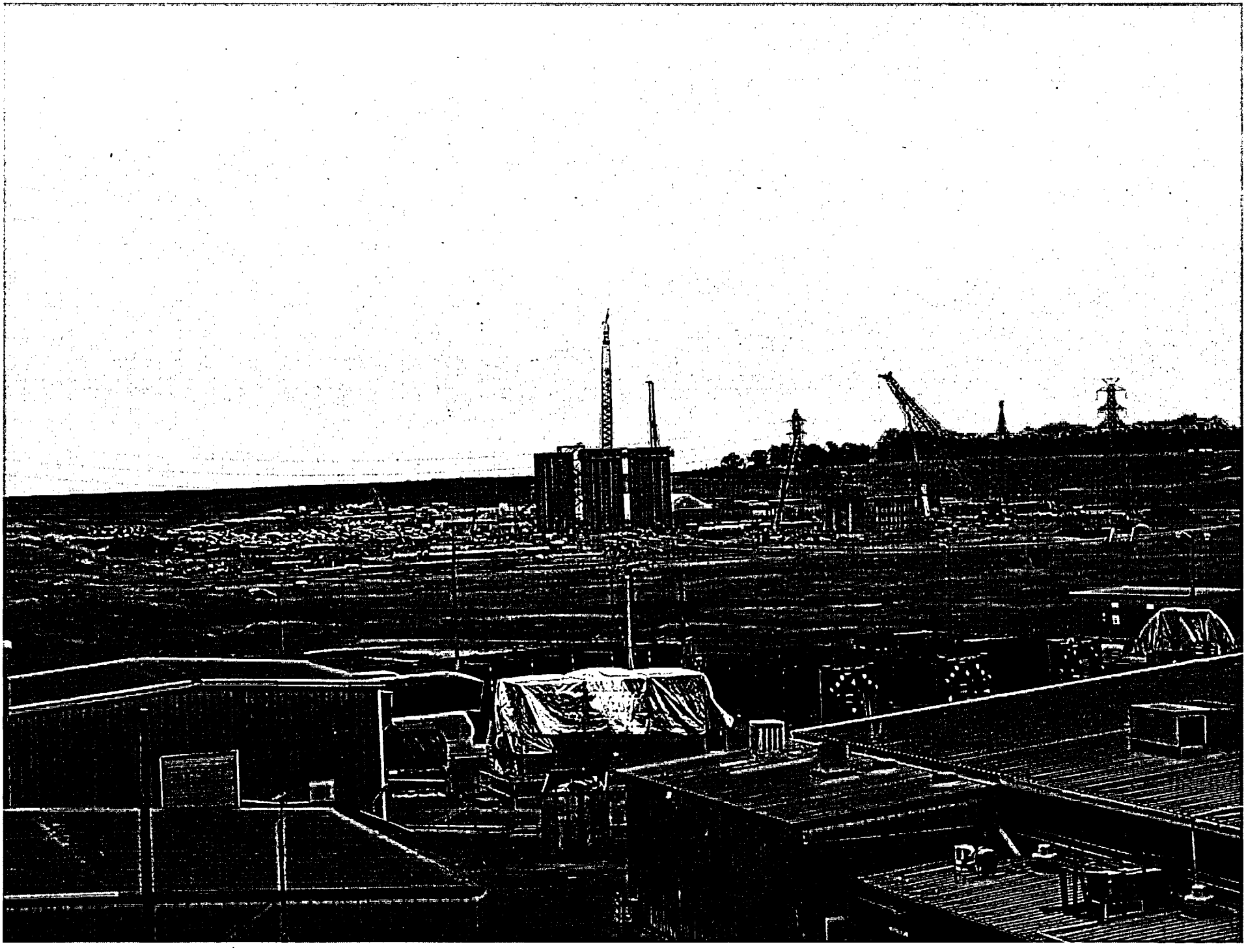


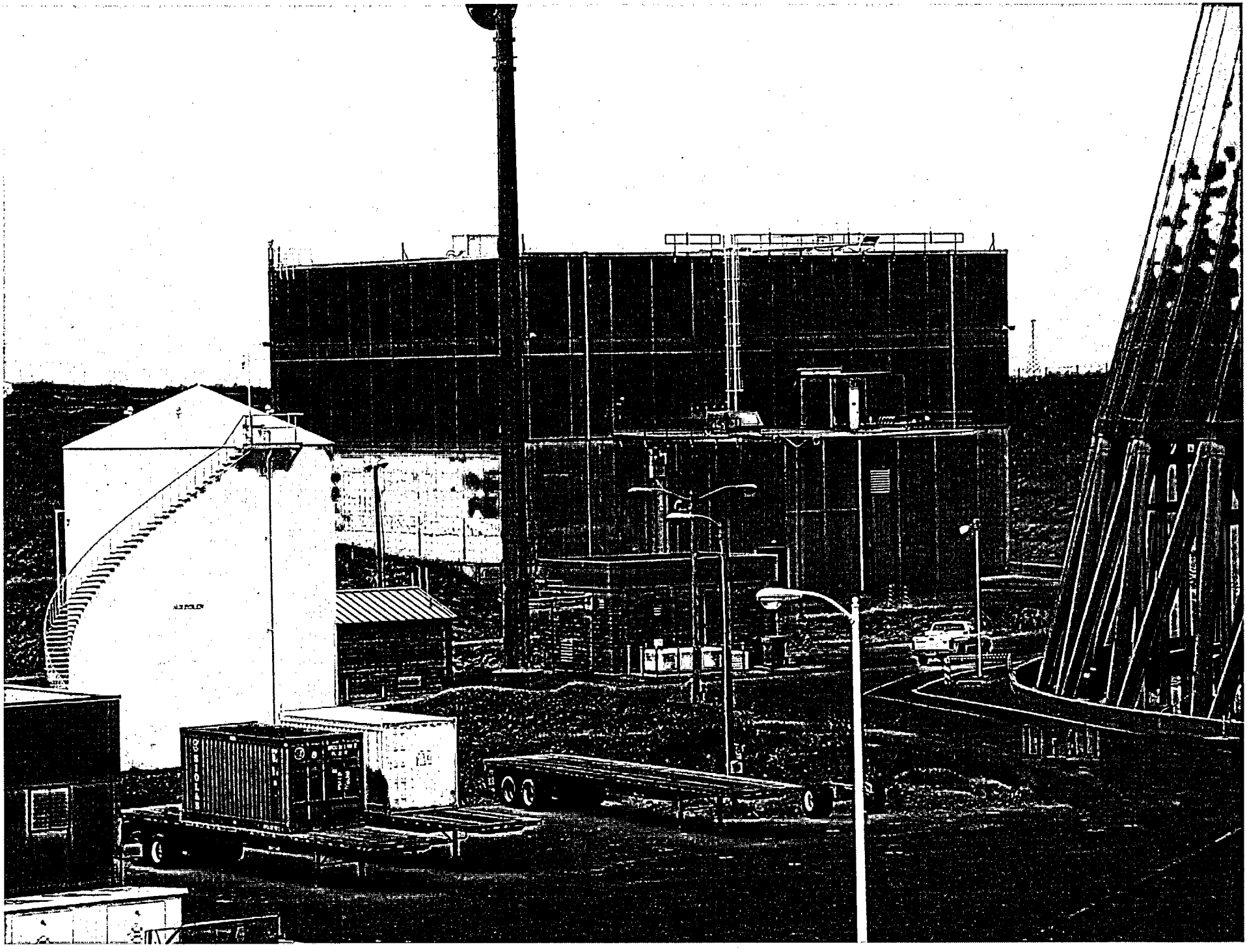












Decommissioning Approach

- Started dismantlement activities in 1997
- Small staff
  - ~100 SMUD (including Security)
  - ~80 Contractors
- No radioactive waste ever sent to Barnwell
- License Termination Plan: phased approach
  - Phase I (2008)
    - Complete major physical activities
    - Store Class B & C radioactive waste onsite
    - Release site except Interim Onsite Storage Building (IOSB)
    - Possibly defer Reactor Building based on characterization
  - Phase II (2030)
    - Release remainder of site
    - license termination

Decommissioning Approach

- Major concrete buildings will remain in place
- SMUD will continue to use the site (office buildings, gas plant, etc.) for other utility-related activities
- Public interest

Major Activities & Status

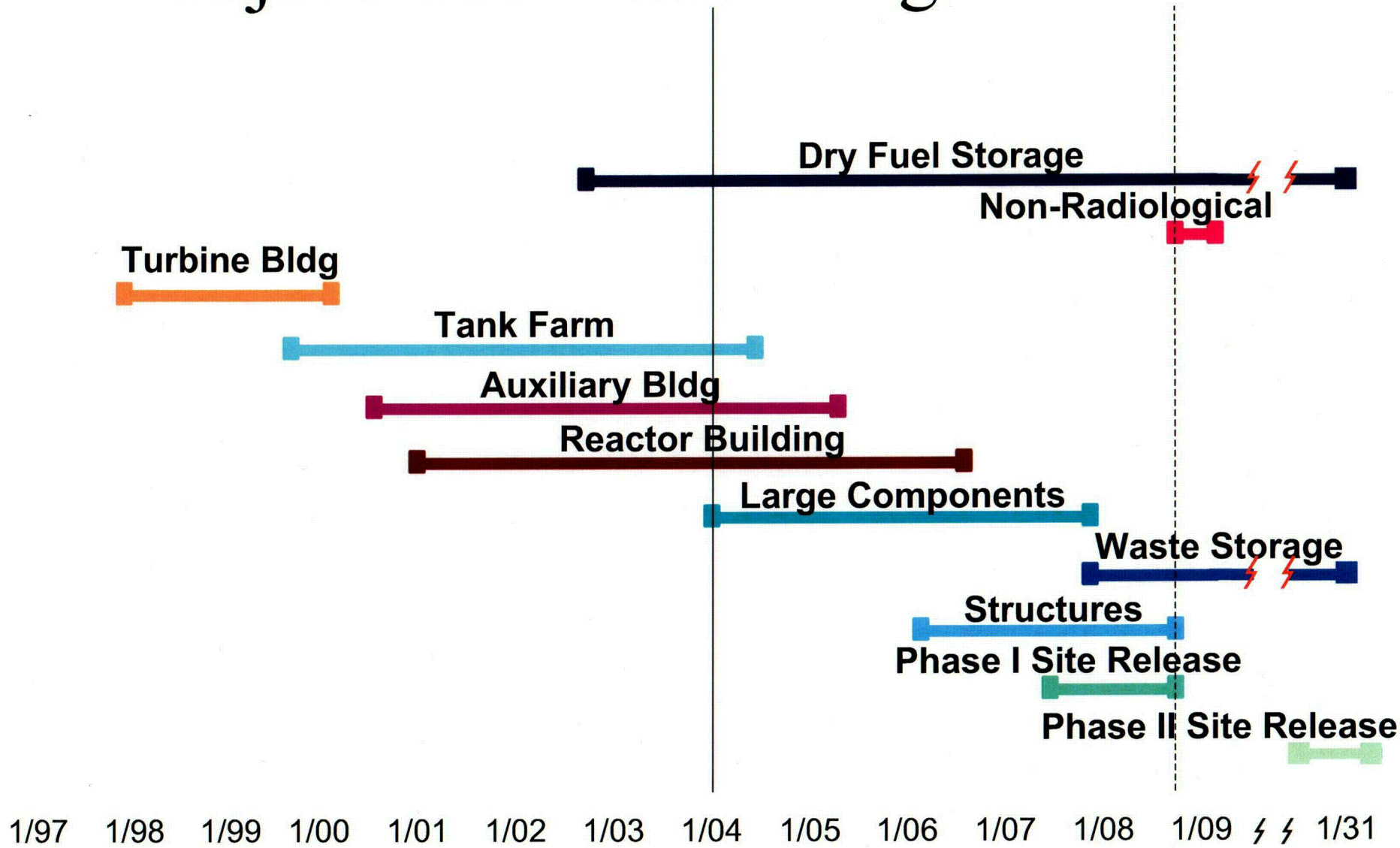
- Turbine Building – system removal completed
- Reactor Building – system removal 91% complete
- Auxiliary Building – equipment removal 88% complete
- Reactor Vessel & Internals
  - Reactor Vessel Head cut into 5 pieces & shipped to Envirocare for disposal
  - Internals segmentation contract to Transnuclear, Inc. is pending

Major Activities & Status

(continued)

- Pressurizer removed for disposal March 2004
- Spent fuel pool water processing completed
- Spent Fuel Pool Liner removal continues
- Radioactive waste shipped to Envirocare for disposal

Major Decommissioning Activities



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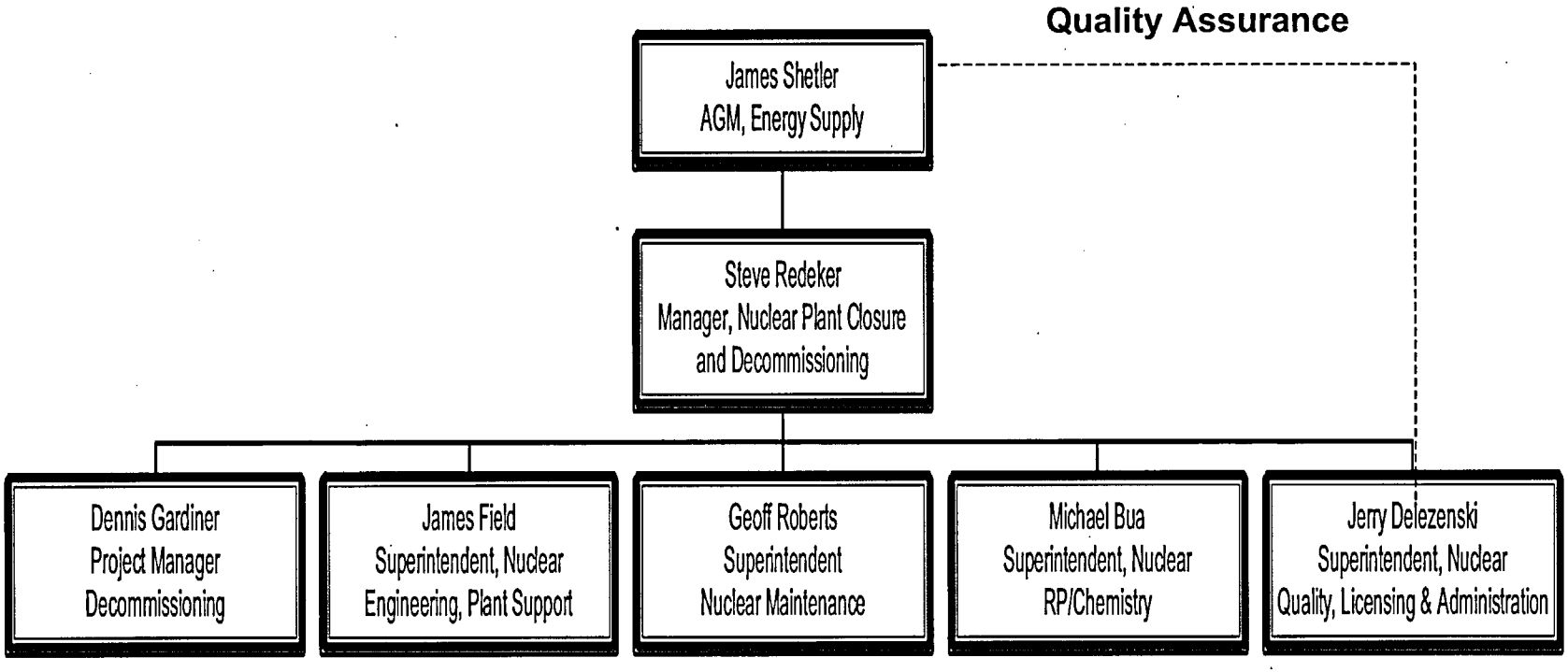
Remaining Major Tasks

- Reactor Vessel Project
  - Internals (2004-2005)
  - Vessel (2005-2006)
- Steam Generators (2005-2006)
- Spent Fuel Building & Pool
- Systems and components
  - Buried & Embedded Piping
  - Ventilation
- Building decontamination
- Final Status Surveys

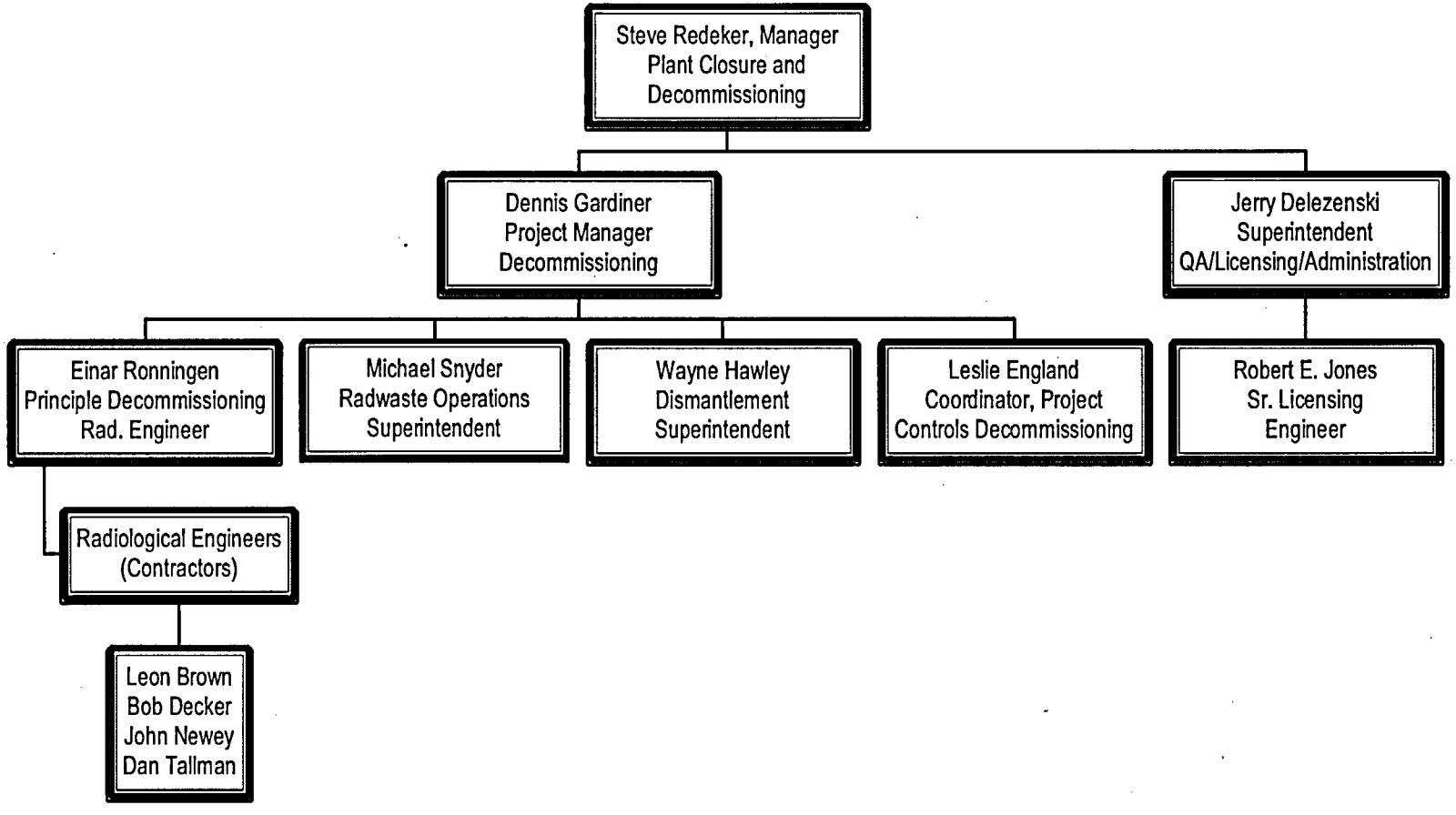
Total Remaining Costs

- Total work remaining: $222.4M
- Trust fund: $91M
- Annual funding rate: $27M
- Last payment in 2008
- SMUD Board of Directors has authority to adjust funding rate (i.e., not PUC regulated)

Rancho Seco Organization



Project Organization



License Termination Approach

- Phase I
  - Complete major decommissioning activities
  - Submit LTP to NRC
  - FSS for site except Interim Onsite Storage Building
- Phase II
  - Store Class B & C radioactive waste in Interim Onsite Storage Building (IOSB)
  - Ship Class B & C waste for disposal
  - FSS for Interim Onsite Storage Building
- Survey to MARSSIM guidance and site-specific DCGLs
  - 25 mrem/yr (for all pathways included in dose model)
  - ALARA

LTP Development

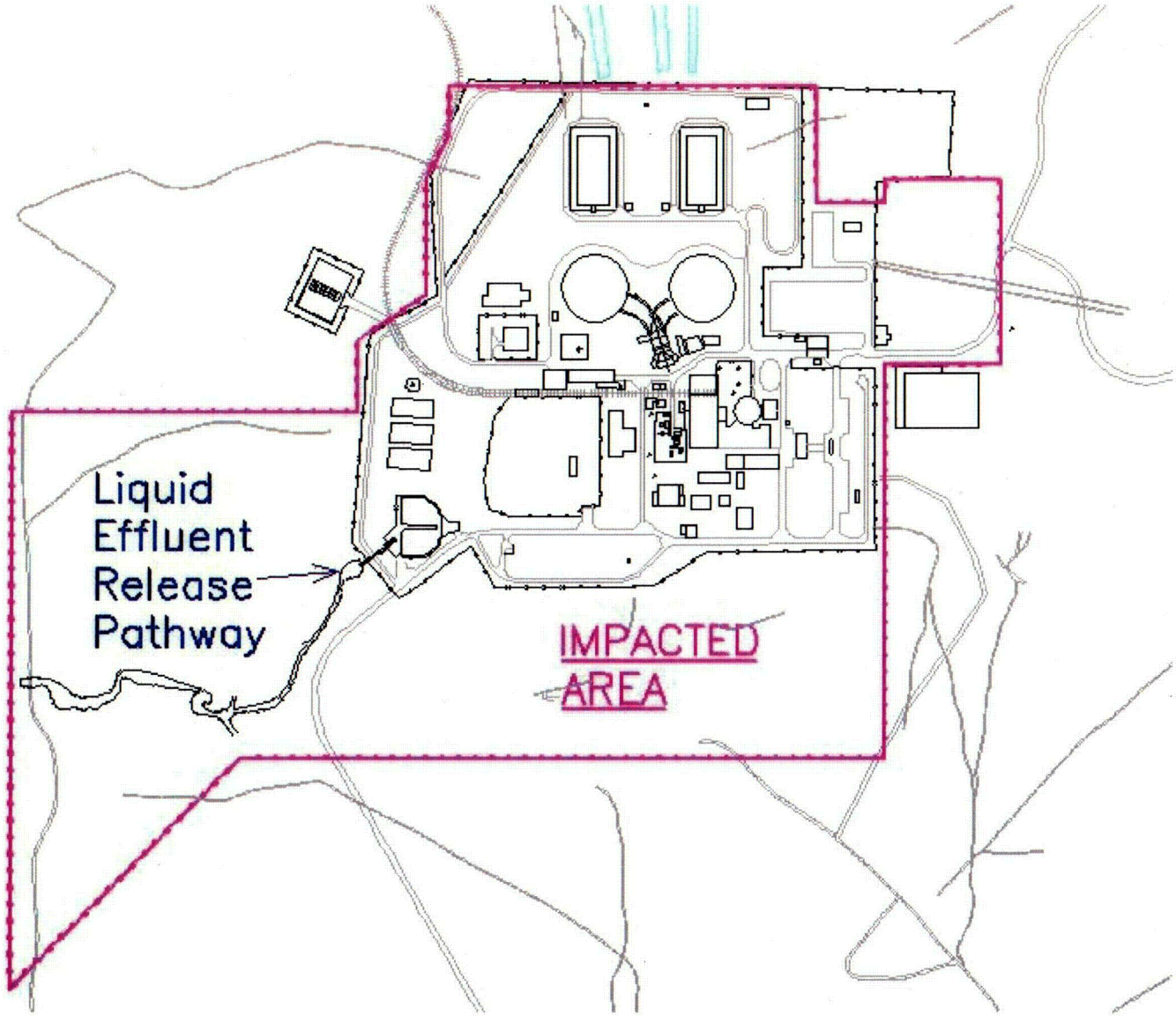
- Consistent with NRC Guidance Documents
  - Regulatory Guide 1.179 – LTP format & content
  - NUREG-1700 – Standard Review Plan for LTPs
  - NUREG-1757 – NMSS Decommissioning Guidance
- Use previous industry experience
- Developed RAI database
- Maintain ongoing communications with NRC
- Incorporate NRC feedback
- Minimize NRC RAIs

HSA and Site Characterization

- HSA considers:
  - Prior site survey data
  - 10 CFR 50.75(g) required records
  - Personnel interviews (150 observations)
- HSA provides input into site characterization
- The HSA report will be summarized in the LTP
- Site Characterization:
  - Identifies ongoing sampling and measurement needs
  - Provides the basis for area and survey unit classification
  - Supports remediation planning

Site Characterization Summary

- No known groundwater contamination
- Reactor Building activated concrete
- Impacted soil
  - Onsite
  - Outside of Industrial Area from liquid effluent releases
- Sub-surface soil contamination



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Dose Modeling

- SMUD will retain site ownership and continue to use site
- Industrial worker scenario
  - structures
  - soils
- Computer Codes
  - RESRAD
  - RESRAD-BUILD
  - DandD
- Probabilistic Mode for sensitivity analysis

Dose Modeling (cont.)

- Basis for site-specific input parameters
  - Radionuclide mix
  - Geology, hydrology, meteorology, etc.
- Hydrogeology
  - Previous studies
    - Original siting
    - Proposed evaporation pond
  - Bring in a hydrogeologist
    - Confirm no groundwater contamination
    - Additional wells based on hydrogeologist recommendations
- NRC guidance
  - NUREG-1757, Volume 2 – Decommissioning guidance
  - NUREG/CR-5512 – computer code comparisons
  - NUREG/CR-6697 – probablistic distributions for RESRAD

Final Status Survey Development

- Based on MARSSIM
  - DQO process
  - Survey unit classification
- Anticipated site conditions at time of FSS
  - Major concrete structures in place
  - Temporary buildings removed
  - Maintain site as an industrial facility
- Monitoring instrumentation
- FSS plan contained in LTP

Projected Schedule

Submit LTP	June 2005
Public meeting	October 2005
NRC issue RAIs	March 2006
RAI response	June 2006
NRC approves LTP	December 2006
Complete Phase I - FSS	December 2008
Complete Phase II - dispose of Class B & C waste; FSS for IOSB	Based on suitable disposal site (2030)

Future Meeting Topics

- Site Characterization
- Dose Modeling
- Hydrogeologic investigations and groundwater monitoring
- Final Status Survey
- Routine conference calls to discuss status and resolve issues
- NRC visit to Rancho Seco site