

NORTH ANNA
COMBINED LICENSE
APPLICATION (COLA) PROJECT

SUBSURFACE INVESTIGATION
PROGRAM
JULY – OCTOBER 2006

NRC BRIEFING

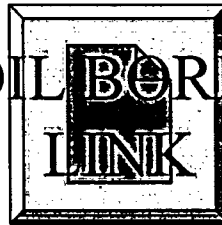
SEPTEMBER 13TH, 2006



NORTH ANNA COLA PROJECT SUBSURFACE INVESTIGATION PROGRAM

- Soil Boring Location Plan

NORTH ANNA SOIL BORING PLAN REV. 03

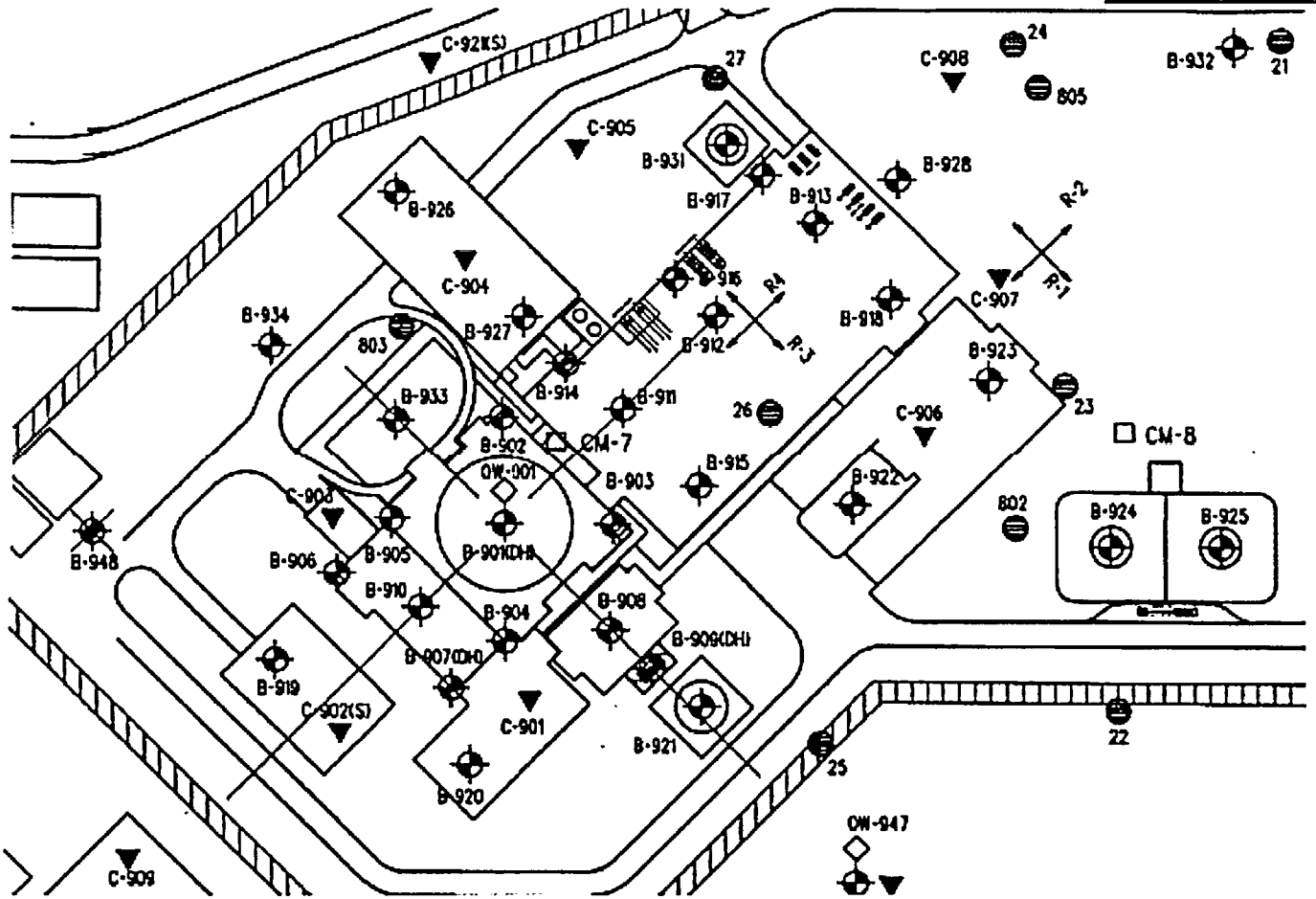


NORTH ANNA COLA PROJECT SUBSURFACE INVESTIGATION PROGRAM

■ Subsurface Investigation Program

Perform a full characterization of the site subsurface conditions to satisfy NRC requirements, and to complement the previously completed ESP subsurface investigation.

NORTH ANNA COLA PROJECT SUBSURFACE INVESTIGATION PROGRAM



NORTH ANNA COLA PROJECT SUBSURFACE INVESTIGATION PROGRAM

■ Subsurface Investigation Program

- 51 Soil sample and rock core borings
- 23 Cone penetrometer tests
- 7 Observation wells
- 3 Sets of downhole geophysical tests
- 4 Field electrical resistivity tests
- 10 Shallow test pits

NORTH ANNA COLA PROJECT

SUBSURFACE INVESTIGATION PROGRAM

- Subsurface Investigation Program (contd.)
 - Boreholes – Soil and Rock Drilling (51 Total)
 - 1 Borehole to 300 ft depth
 - 4 Boreholes to 200 ft depth
 - 12 Boreholes to 150 ft depth
 - 17 Boreholes to 100 ft depth
 - 17 Boreholes to 75 ft depths

SPT and Shelby tube samples in soil
HQ cores in bedrock

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SUBSURFACE INVESTIGATION PROGRAM

- Subsurface Investigation Program (contd.)
 - Cone Penetrometer Tests (23 Total)
 - 6 Locations shall be pushed to designated depths or refusal
 - 17 Locations shall be pushed to refusal
 - 4 Locations shall include seismic CPTs
 - Groundwater Observation Wells (7 Total)
 - 4 Bedrock Wells and 3 Unconsolidated Wells
 - Bedrock Packer tests and Well Slug tests

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SUBSURFACE INVESTIGATION PROGRAM

- Subsurface Investigation Program (contd.)
 - Downhole Geophysical Testing (3 Sets)
 - In B-901 (300 ft), B-907 (200 ft) and B-909 (200 ft)
 - P-S Suspension (Compression & Shear Wave Velocity)
 - Gamma and Resistivity
 - Acoustic Televiwer
 - Caliper and Deviation

 - Electrical Resistivity Measurement (4 Total)
 - Wenner 4-Electrode Array
 - Maximum "A" Spacing of 300 ft

NORTH ANNA COLA PROJECT

SUBSURFACE INVESTIGATION PROGRAM

■ Subsurface Investigation Program (contd.)

- MACTEC selected as vendor to perform subsurface investigation. Bechtel is providing technical and general engineering support
- A Dominion COL Project Engineer will be onsite during project activities
- Duration of activities expected to be about 12 weeks
- Work hours: 10hrs/day, 5 days/week
- Initial project and daily pre-job briefs required
- Underground Utility Detection by NAPS using GPR, EM survey and soil vacuum as needed
- Soil samples stored on-site in a controlled environment warehouse



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SUBSURFACE INVESTIGATION PROGRAM

■ Laboratory Testing – Soil

- Moisture content (100)
- Specific gravity (4)
- Sieve and hydrometer analysis (100)
- Grain size analysis w/no. 200 wash (40)
- Atterberg limits (50)
- Chemical analyses (pH, chloride, sulfate) (20)
- Unconfined compression (10)
- Triaxial UU compression (20)
- Triaxial CU compression (5)
- Torsional shear and resonant column (10)
- One-dimensional consolidation (4)
- Moisture density (6)

NORTH ANNA COLA PROJECT SUBSURFACE INVESTIGATION PROGRAM

■ Laboratory Testing –Rock

- Unconfined compression - rock (70)
- Unconfined compression with stress/strain - rock (35)

Rock quality designation (RQD), compression wave velocity, and shear wave velocity measured in borings.

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SUBSURFACE INVESTIGATION PROGRAM

- **Laboratory Testing – Groundwater Theoretical Contaminant Transport**
 - **Groundwater**
 - Water Quality (TBD)
 - **Soil**
 - Kd Determinations (TBD)
 - pH (TBD)
 - Cation exchange (TBD)
 - Grain size distribution (TBD)
 - Clay content (TBD)
 - **Rock**
 - Kd Determinations (TBD)

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SUBSURFACE INVESTIGATION PROGRAM

- September 12, 2006 Status
 - Completed Boreholes: 19. Started 20 of 51
 - Downhole Geophysics: 3 of 3
 - CPTs: 0 of 23
 - Completed Observation Wells: 0 of 7
 - Packer Tests: 4 of 4
 - Slug Tests: 0 of 3
 - Electric Resistivity Measurements: 0 of 4
 - Shallow Pit Tests: 0 of 10

NORTH ANNA COLA PROJECT

SUBSURFACE INVESTIGATION PROGRAM

■ Subsurface Profile

■ I Residual Clays and Clay Silts

- All structures of parent rock are lost

■ IIA Saprolite

- Core stone less than 10 percent of volume of overall mass

■ IIB Saprolite

- Core stones 10 to 15 percent of volume of overall mass

■ III Weathered Rock

- Core stone more than 50 percent of volume of the overall mass

■ IV Sound Rock

- Slightly weathered to fresh rock below zone of isolated core stones



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**“UNIT 3 BORING LOCATION
PLAN, REV. 03”**

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