N61165.AR.003572
CNC CHARLESTON
5090.3a

RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION REPORT
ZONE I VOLUME VII OF VII APPENDICES F TO I CNC CHARLESTON SC
3/1/1999
ENSAFE

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY
CHARLESTON NAVAL COMPLEX
NORTH CHARLESTON, SOUTH CAROLINA
CTO-029

# ZONE I
# RCRA FACILITY INVESTIGATION REPORT

VOLUME VII OF VII
APPENDICES F to I

SOUTHDIV CONTRACT
NUMBER: N62467-89-D-0318

Prepared for:

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA

Prepared by:

ENSAFE INC.
5724 SUMMER TREES DRIVE
MEMPHIS, TENNESSEE 38134
(901) 372-7962

March 1, 1999
Revision: 0
*Page Changes: July 30, 1999*

**Release of this document requires prior notification of the Commanding Officer of the Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina.**

# Appendix F

# Terrestrial Species List

| Charleston Zone I<br>Terrestrial Species List | |
|---|---|
| **Common Name** | **Scientific Name** |
| Raccoon | *Procyon lotor* |
| Opossum | *Didelphis virginiana* |
| Grey fox | *Urocyon cinereoargenteus* |
| Grey squirrel | *Sciurus carolinensis* |
| Fox squirrel | *S. niger* |
| Eastern cottontail | *Sylvilagus floridanus* |
| Marsh rabbit | *S. palustris* |
| Golden mouse | *Ochrotomys nuttalli* |
| Short-tailed shrew | *Blarina brevicauda* |
| Northern diamond back terrapin | *Malaclemy terrapin terrapin* |
| Green anole | *Anolis carolinensis* |
| Broad-headed skink | *Eumeces laticeps* |
| Eastern garter snake | *Thamnophis sirtalis* |
| Southern leopard frog | *Rana utricularia* |
| American robin | *Turdus migratorius* |
| Northern cardinal | *Cardinalis cardinalis* |
| Purple finch | *Carpadacus prpureus* |
| Fish crow | *Corvus ossifragus* |
| European starling | *Sturnus vulgaris* |
| Gulls | *Larus* spp. |
| Carolina chickadee | *Parus carolinensis* |
| Northern junco | *Junco hyemalis* |
| Eastern kingbird | *Tyrannus tyrannus* |
| Eastern meadowlark | *Sturnella magna* |
| Northern mockingbird | *Mimis polyglottis* |
| Barn swallow | *Hirundo rustica* |
| Red-tailed hawk | *Buteo jamaicensis* |
| American kestrel | *Falco sparverius* |

| Charleston Zone I<br>Terrestrial Species List | |
|---|---|
| **Common Name** | **Scientific Name** |
| Clapper rail | *Rallus longirostis* |
| Boat-tailed grackle | *Quiscalus major* |
| Red-winged blackbird | *Agelaius phoeniceus* |
| Herons, egrets, bitterns | Family Ardeadae |
| Plovers | *Chardrius* spp. |
| Curlews | *Numenium* spp. |
| Sandpipers | *Tringa* spp. and *Calidris* spp. |
| Terns | *Sterna* spp. |
| Brown pelican | *Pelecanus occidentalis* |
| Osprey | *Pandion halieatus* |

# Appendix G

# Wildlife Toxicity Data

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone 1**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| **SVOCs** | | | | | | | |
| Anthracene | Mouse | Oral | NR | Mortality | 17,000 | | RTECS, 1993 |
| Benzo(a)pyrene | Rat | Oral (chronic) | Pregnancy | Sterility in offspring | | 40 | USEPA, 1984 |
| | Rat | Oral (chronic) | 3.5 months | Reproductive | | 50 | USEPA, 1984 |
| | Rodents | Single oral dose | NR | Mortality | 50 | | Eisler, 1987 |
| Bis(2-ethylhexyl)phthalate | Rat | Oral | NR | Mortality | 30,600 | | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 7,140 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 35 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 6,000 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 17,200 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 10,000 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 9,766 | RTECS, 1993 |
| | Mouse | Oral | NR | Mortality | 30,000 | | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 78,880 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 4,200 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 50 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 1,000 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 2,040 | RTECS, 1993 |
| | Rabbit | Oral | NR | Mortality | 34,000 | | RTECS, 1993 |
| | Guinea pig | Oral | NR | Mortality | 26,000 | | RTECS, 1993 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Bis(2-ethylhexyl)phthalate) | Guinea pig | Oral | NR | Reproductive effects | | 20,000 | RTECS, 1993 |
| | Mammal | Oral | NR | Reproductive effects | | 20,000 | RTECS, 1993 |
| | Mammal | Oral | NR | Reproductive effects | | 509,000 | RTECS, 1993 |
| | Mouse | Single oral dose | | Mortality | 800 | | RTECS, 1993 and NIOSH, 1985 |
| | Mouse | Oral (subchronic) | 13 weeks | Renal effects | | 125 | RTECS, 1993 |
| Butylbenzylphthalate | Rat | Oral | NR | Mortality | 2,330 | | RTECS, 1994 |
| | Rat | Oral | NR | Reproductive effects | | 21,000 | RTECS, 1994 |
| | Rat | Oral | NR | Reproductive effects | | 16,400 | RTECS, 1994 |
| | Rat | Oral | NR | Reproductive effects | | 16,400 | RTECS, 1994 |
| | Rat | Oral | NR | Reproductive effects | | 4,900 | RTECS, 1994 |
| | Mouse | Oral | NR | Mortality | 4,170 | | RTECS, 1994 |
| | Guinea Pig | Oral | NR | Mortality | 13,750 | | RTECS, 1994 |
| 1,4-Dichlorobenzene | Rat | Oral | NR | Mortality | 500 | | RTECS, 1994 |
| | Rat | Oral | NR | Reproductive effects | | 7,500 | RTECS, 1994 |
| | Rat | Oral | NR | Reproductive effects | | 10,000 | RTECS, 1994 |
| | Mouse | Oral | NR | Mortality | 2,950 | | RTECS, 1994 |
| | Rabbit | Oral | NR | Mortality | 2,830 | | RTECS, 1994 |
| Di-n-butylphthalate | Rat | Oral (subchronic) | 48 days | Reproductive | | 125 | ATSDR, 1989 |
| | Rat | Oral | 1 year | Mortality | | 600 | IRIS, 1991 |
| Fluoranthene | Rat | Oral | NR | Mortality | 2,000 | | RTECS, 1994 |
| Phenanthrene | Mouse | Oral | NR | Mortality | 700 | | RTECS, 1994 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Pyrene | Rat | Single oral dose | NR | Mortality | 2,700 | | RTECS, 1993 and NIOSH, 1985 |
| | Mouse | Single oral dose | NR | Mortality | 800 | | RTECS, 1993 and NIOSH, 1985 |
| **Pesticides/PCBs** | | | | | | | |
| Aroclor 1248 | Rat | Oral | NR | Mortality | 11,000 | | RTECS, 1993 |
| | Rabbit | Oral | NR | Reproductive effects | | 165 | RTECS, 1993 |
| | Monkey | Oral | NR | Reproductive effects | | 32 | RTECS, 1993 |
| | Monkey | Oral | NR | Reproductive effects | | 55 | RTECS, 1993 |
| | Monkey | Oral | NR | Reproductive effects | | 17 | RTECS, 1993 |
| | Monkey | Oral | NR | Reproductive effects | | 35 | RTECS, 1993 |
| | Monkey | Oral | NR | Reproductive effects | | 24 | RTECS, 1993 |
| | Monkey | Oral | NR | Reproductive effects | | 83 | RTECS, 1993 |
| | Chicken | Oral | 8-9 weeks | Egg hatchability | | 4.88 | USEPA, 1993 |
| | Chicken | Oral | NR | Egg production and hatchability | | 9.8 | USEPA, 1993 |
| | Chicken | Maternal diet | NR | Chick growth | | 0.98 | USEPA, 1993 |
| | Chicken | Oral | 8 weeks | Egg production and hatchability | | 4.9 | USEPA, 1993 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Aroclor-1254 | Mouse | Oral | NR | Reproductive | | 1.53 | USEPA, 1993 |
| | Chicken | Oral (chronic) | NR | Embryonic mortality | | 0.9[a] | USEPA, 1993 |
| | Rock dove | Oral (chronic) | NR | Parental incubation behavior | | 0.9[a] | Peakall and Peakall, 1973 |
| | American kestrel | Oral (chronic) | 69 days | Reduced sperm concentration | | 9 | Eisler, 1986 |
| | Mink | Oral dose of contaminated meat | 160 days | Reproductive | | 0.096 | USEPA, 1993 |
| Aroclor-1260 | Rat | Oral | NR | Mortality | 13,15 | | RTECS, 1993 |
| | Rat | Single oral dose | NR | Mortality | 500 | | Eisler, 1986 |
| | Rat | Single oral dose | NR | Mortality | 1,300 | | Eisler, 1986 |
| | Rat | Oral | NR | Reproductive effects | | 1,674 | RTECS, 1993 |
| | Rat | Oral (chronic) | 2 generations | Reduced littler size | | 7.6 | USEPA, 1985 |
| | Rat | Oral (subchronic) | 9 weeks | Fetal mortality; maternal toxicity | | 6.4 | ATSDR, 1987 |
| | Mouse | Oral | NR | Reproductive effects | | 74 | RTECS, 1993 |
| | Mink | Single oral dose | | Mortality | 4,000 | | Eisler, 1986 |
| | Mink | Single oral dose | | Mortality | 3,000 | | Eisler, 1986 |
| | Mink | Single oral dose | | Mortality | 750 | | Eisler, 1986 |
| | Mink | Oral (subchronic) | 4 months | Impaired reproduction | | 0.0075[b] | Newell et al., 1987 |
| | Chicken | Oral (chronic) | NR | Embryonic mortality | | 0.9[a] | USEPA, 1976 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Chlordane | Rat | Oral | NR | Mortality | 283 | | RTECS, 1993 |
| | Rat | Single oral dose | | Mortality | 430 | | Allen et al., 1979 |
| | Rat | Single oral dose | | Mortality | 335 | | Allen et al., 1979 |
| | Rabbit | Single oral dose | | Mortality | 300 | | Allen et al., 1979 |
| | Rabbit | Single oral dose | | Mortality | 100 | | Allen et al., 1979 |
| | Dog | Single oral dose | | Mortality | 200 | | Allen et al., 1979 |
| | Goat | Single oral dose | | Mortality | 180 | | Allen et al., 1979 |
| | Japanese quail | Oral (acute) | 5 days | Mortality | 35* | | Hill et al., 1975 |
| | Bobwhite | Oral (acute) | 5 days | Mortality | 29* | | Hill et al., 1975 |
| | Mallard | Oral (acute) | 5 days | Mortality | 62* | | Hill et al., 1975 |
| | Pheasant | Single oral dose | | Mortality | 24 | | USFWS, 1984 |
| 4,4'-DDE | Rat | Oral | NR | Mortality | 800 | | RTECS, 1993 |
| | Mouse | Oral | NR | Mortality | 700 | | RTECS, 1993 |
| | Hamster | Oral | NR | Mortality | >5,000 | | RTECS, 1993 |
| | Mallard | Oral | NR | Eggshell thinning | | 2.91 | USEPA, 1993 |
| | Mallard | Oral | 2 years | Reproductive: embryo mortality, cracked eggs | | 0.58 | USEPA, 1993 |
| | Kestrel | Oral | NR | Eggshell thinning | | 0.39 | USEPA, 1993 |
| 4,4'-DDT | Rat | Oral | NR | Mortality | 87 | | RTECS, 1993 |
| | Rat | Single oral dose | | Mortality | 100 | | USEPA, 1985 |

Appendix G
Wildlife Toxicity Data
Baseline Risk Assessment
Zone I
Charleston Naval Complex

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| 4,4'-DDT (Continued) | Rat | Oral | NR | Reproductive | | 112 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive | | 100 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive | | 430 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive | | 1,890 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive | | 250 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive | | 50 | RTECS, 1993 |
| | Rat | Oral (chronic) | 3 generations | Reproductive | | 0.2 | IRIS, 1991 |
| | Rat | Oral | 2 years | Reproductive | | 2.5 | USEPA, 1993 |
| | Mouse | Oral | NR | Mortality | 135 | | RTECS, 1993 |
| | Mouse | Single oral dose | | Mortality | 200 | | USEPA, 1985 |
| | Mouse | Oral | NR | Reproductive | | 504 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive | | 81 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive | | 124 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive | | 148 | RTECS, 1993 |
| | Rabbit | Oral | NR | Mortality | 250 | | RTECS, 1993 |
| | Rabbit | Oral | NR | Reproductive | | 150 | RTECS, 1993 |
| | Guinea pig | Oral | NR | Mortality | 150 | | RTECS, 1993 |
| | Hamster | Oral | NR | Mortality | >5,000 | | RTECS, 1993 |
| | Dog | Oral | NR | Mortality | 150 | | RTECS, 1993 |
| | Dog | Single oral dose | | Mortality | 60 | | USEPA, 1985 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| 4,4'-DDT (Continued) | Dog | Oral | NR | Reproductive | | 3,540 | RTECS, 1993 |
| | Monkey | Oral | NR | Mortality | 200 | | RTECS, 1993 |
| | Chicken | Oral (subchronic) | 10 weeks | Decreased reproductive success; toxic symptoms | | 91.4[a] | USEPA, 1985 |
| | Rock dove | Single oral dose | | Mortality | 4,000 | | USFWS, 1984 |
| | Black duck | Oral (chronic) | 2 years | Reduced eggshell thickness | | 0.14[a] | Longcore and Stendell, 1977 |
| | Mallard | Single oral dose | | Mortality | 2,240 | | USFWS, 1984 |
| | Mallard | Oral (subchronic) | 96 days | Reduced eggshell thickness | | 2.8 | Longcore and Stendell, 1977 |
| | Mallard | Oral | NR | Eggshell thinning | | 1.16 | USEPA, 1993 |
| | Mallard | Oral | NR | Eggshell thinning | | 2.91 | USEPA, 1993 |
| | Mallard | Oral | 2 years | Reproductive | | 1.45 | USEPA, 1993 |
| | California quail | Single oral dose | | Mortality | 595 | | USFWS, 1984 |
| | Japanese quail | Single oral dose | | Mortality | 841 | | USFWS, 1984 |
| | Pheasant | Single oral dose | | Mortality | 1,334 | | USFWS, 1984 |
| | Sandhill crane | Single oral dose | | Mortality | 1,200 | | USFWS, 1984 |
| | Kestrel | Oral (chronic) | 7 wk - 1 yr | Reduced eggshell thickness | | 0.56[a] | USEPA, 1985 |
| | Kestrel | Oral (chronic) | 1 year | Reduced eggshell thickness | | 0.16[a] | Wiemeyer, et al., 1986 |
| | Barn owl | Oral (chronic) | 2 years | Reduced eggshell thickness | | 0.14[a] | Longcore and Stendell, 1977 |

Appendix G
Wildlife Toxicity Data
Baseline Risk Assessment
Zone I
Charleston Naval Complex

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Dieldrin | Mouse | Single oral dose | NR | Mortality | 38 | | Allen et al., 1979 |
| | Mouse | Oral (chronic) | 80 weeks | Body tremors | | 0.33 | ATSDR, 1992 |
| | Rat | Single oral dose | NR | Mortality | 46 | | Allen et al., 1979 |
| | Guinea pig | Single oral dose | NR | Mortality | 25 | | Allen et al., 1979 |
| | Rabbit | Single oral dose | NR | Mortality | 45 | | Allen et al., 1979 |
| | House sparrow | Single oral dose | NR | Mortality | 48 | | USFWS, 1984 |
| | Chicken | Single oral dose | NR | Mortality | 20 | | Allen et al., 1979 |
| | Rock dove | Single oral dose | NR | Mortality | 27 | | USFWS, 1984 |
| | Gray partridge | Single oral dose | NR | Mortality | 9 | | USFWS, 1984 |
| | Chukar | Single oral dose | NR | Mortality | 25 | | USFWS, 1984 |
| | Japanese quail | Oral (acute) | 5 days | Mortality | 6[a] | | Hill et al., 1975 |
| | Japanese quail | Single oral dose | NR | Mortality | 70 | | USFWS, 1984 |
| | California quail | Single oral dose | NR | Mortality | 9 | | USFWS, 1984 |
| | Bobwhite | Oral (acute) | 5 days | Mortality | 3[a] | | Hill et al., 1975 |
| | Pheasant | Single oral dose | NR | Mortality | 79 | | USFWS, 1984 |
| | Mallard | Oral (acute | 5 days | Mortality | 12[a] | | Hill et al., 1975 |
| | Mallard | Oral (acute) | 5 days | Mortality | 11[a] | | Hill et al., 1975 |
| | Mallard | Single oral dose | NR | Mortality | 381 | | USFWS, 1984 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Dieldrin | Whistling duck | Single oral dose | NR | Mortality | 100 | | USFWS, 1984 |
| | Canada goose | Single oral dose | NR | Mortality | 141 | | USFWS, 1984 |
| | Goat | Single oral dose | NR | Mortality | 100 | | Allen et al., 1979 |
| | Sheep | Single oral dose | NR | Mortality | 50 | | Allen et al., 1979 |
| | Cattle | Single oral dose | NR | Mortality | 60 | | Allen et al., 1979 |
| | Mule deer | Single oral dose | NR | Mortality | 75 | | Allen et al., 1979 |
| | Cat | Single oral dose | NR | Mortality | 300 | | Allen et al., 1979 |
| | Dog | Single oral dose | NR | Mortality | 65 | | Allen et al., 1979 |
| Endosulfan | Mouse | Oral (chronic) | 78 weeks | Mortality | | 0.9 | ATSDR, 1991 |
| | Mouse | Oral (chronic) | 78 weeks | Ovarian cyst development | | 0.26 | ATSDR, 1991 |
| | Rat | Single oral dose | NR | Mortality | 24 | | ATSDR, 1991 |
| | Rat | Oral (chronic) | 2 years | Reduced testes weight | | 10 | USEPA, 1980 |
| | Mallard | Single oral dose | NR | Mortality | 33 | | USFWS, 1984 |
| | Mallard | Single oral dose | NR | Mortality | 31.2 | | USFWS, 1984 |
| | Pheasant | Single oral dose | NR | Mortality | 80 | | USFWS, 1984 |
| Endrin | Mouse | Oral (chronic) | 80 weeks | Mortality | | 0.53 | ATSDR, 1990 |
| | Dog | Oral (chronic) | 19 months | Decreased weight gain | | 0.1 | USEPA, 1985 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | Northern Bobwhite | Single oral dose | NR | Mortality | 0.015 | | Hudson et al., 1984 |
| | Ringed Turtle Dove | Single oral dose | NR | Mortality | 0.810 | | Hudson et al., 1984 |
| | Mallards | Single oral dose | NR | Mortality | 0.108 | | Hudson et al., 1984 |
| | Chicken | Single oral dose | NR | Mortality | 0.037 | | Kociba & Schwetz, 1982 |
| | Guinea pig | Oral | NR | Mortality | 0.002 | | Kociba & Schwetz, 1982 |
| | Mouse | Oral | NR | Mortality | 0.284 | | Kociba & Schwetz, 1982 |
| | Guinea Pig | Single oral dose | NR | Mortality | 0.0006 | | Harless et al., 1982 |
| | Rat | Single oral dose | NR | Mortality | 0.022 | | Kociba & Schwetz, 1982 |
| | Monkey | Single oral dose | NR | Mortality | 0.070 | | Olson et al., 1980 |
| | Dog | Single oral dose | NR | Mortality | 0.1 | | Kociba & Schwetz, 1982 |
| | Mouse | Single oral dose | NR | Mortality | 0.114 | | Kociba & Schwetz, 1982 |
| | Rabbit | Single oral dose | NR | Mortality | 0.115 | | Olson et al., 1980 |
| | Hamster | Single oral dose | NR | Mortality | 1.157 | | Kociba & Schwetz, 1982 |
| | Rat | Oral (chronic) | NR | Reproductive effects | | 1.0E-05 | McNulty, 1977 |
| | Monkey | Oral (chronic) | NR | Reproductive effects | | 1.7E-06 | Ramel, 1978 |
| | Chicken | Oral (chronic) | 21 days | Chick liver disease | | 0.001 | NRCC 1981 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| **Inorganics** | | | | | | | |
| Aluminum | Mouse | Oral | 2-3 genrtns | Reduced bodyweight gain of newborns | | 425 | NIOSH, 1985 |
| | Rat | Oral | 15 days | Reduced growth | | 100 | Bernuzzi, et al., 1989 |
| Arsenic | Rat | Oral | NR | Reproductive effects | | 0.61 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 0.58 | RTECS, 1993 |
| | Rat | Oral | NR | Mortality | 763 | | RTECS, 1993 |
| | Mouse | Oral | NR | Mortality | 145 | | RTECS, 1993 |
| Beryllium | Rat | Single oral dose | NR | Mortality | 10 | | USEPA, 1985 |
| Cadmium | Rat | Oral | NR | Reproductive effects | | 155 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 220 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 21.5 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 23 | RTECS, 1993 |
| | Rat | Single oral dose | | Mortality | 250 | | Eisler, 1985 |
| | Rat | Oral | NR | Mortality | 225 | | RTECS, 1993 |
| | Mouse | Oral | NR | Mortality | 890 | | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 448 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 1,700 | RTECS, 1993 |
| | Guinea pig | Single oral dose | | Mortality | 150 | | Eisler, 1985 |
| | Mallard | Oral (subchronic) | 90 days | Egg production suppressed | | 10 | Eisler, 1985 |
| Chromium (Potassium dichromate) | Japanese quail | Oral (acute) | 5 days | Mortality | 126 | | Hill and Camardese, 1986 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Copper | Rat | Single oral dose | | Reproductive effects | | 152 | NIOSH, 1985 and RTECS, 1993 |
| | Mallard | Oral (subchronic) | 29 days | NOAEL for survivorship | | 10.5[b] | Demayo et al., 1982 |
| Iron | Rat | Single oral dose | NR | Mortality | 319 | | Sax, 1984 |
| | Mouse | Single oral dose | NR | Mortality | 979 | | Sax, 1984 |
| | Guinea pig | Single oral dose | NR | Mortality | 1,200 | | Sax, 1984 |
| Lead | Rat | Oral | NR | Reproductive effects | | 790 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 1,140 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 520 | RTECS, 1993 |
| | Rat | Oral | NR | Reproductive effects | | 1,100 | RTECS, 1993 |
| | Calf | Single oral dose | NR | Mortality | 220 | | Eisler, 1988 |
| | Mouse | Oral | NR | Reproductive effects | | 1,120 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 6,300 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 300 | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 4,800 | RTECS, 1993 |
| | Domestic animal | Oral | NR | Reproductive effects | | 662 | RTECS, 1993 |
| | Mammal | Oral | NR | Reproductive effects | | 2,118 | RTECS, 1993 |
| | Kestrel | Diet | NR | Decreased egg laying fertility; decreased egg shell thickness | | 250[b] | Eisler, 1988 |
| Lead | Nestlings | Oral | NR | Reduced growth and brain weight; abnormal development | | 125 | Eisler, 1988 |
| | Japanese quail | Diet | 5 days | Mortality | 24,752 | | Hill and Camardese, 1986 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Manganese | Mouse | Oral (subchronic) | 90 days | Delayed growth of testes | | 140 | ATSDR, 1990 |
| | Mouse | Oral (chronic) | 103 weeks | Mortality | | 4,050 | ATSDR, 1990 |
| | Rat | Single oral dose | NR | Mortality | 410 | | ATSDR, 1990 |
| | Rat | Oral (acute) | 20 days | Mortality | 225 | | ATSDR, 1990 |
| | Rat | Oral (subchronic) | 20 days | Decreased littler weight during gestation | | 3,100[b] | ATSDR, 1990 |
| | Rat | Oral (chronic) | 103 weeks | Mortality | | 930 | ATSDR, 1990 |
| | Guinea pig | Single oral dose | NR | Mortality | 400 | | USEPA, 1984 |
| | Monkey | Oral (chronic) | 18 months | Weakness, rigidity | | 25 | ATSDR, 1990 |
| Mercury | Mouse | Single oral dose | | Mortality | 22 | | NIOSH, 1985 |
| | Rat | Oral (chronic) | NR | Reduced fertility | | 0.5 | Eisler, 1987 |
| | Rat | Single oral dose | | Mortality | 18 | | NIOSH, 1985 |
| | Pig | Oral (subchronic) | Pregnancy | High incidence of stillbirths | | 0.5 | Eisler, 1987 |
| | Mule deer | Single oral dose | | Mortality | 17.9 | | Eisler, 1987 |
| | River otter | Single oral dose | | Mortality | 2 | | Eisler, 1987 |
| | Mink | Single oral dose | | Mortality | 1 | | Eisler, 1987 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Mercury (Continued) | Dog | Oral (subchronic) | Pregnancy | High incidence of stillbirths | | 0.1 | Eisler, 1987 |
| | House sparrow | Single oral dose | | Mortality | 12.6 | | Eisler, 1987 |
| | Rock dove | Single oral dose | | Mortality | 22.8 | | Eisler, 1987 |
| | Chicken | Single oral dose | | Mortality | 20 | | Fimreite, 1979 |
| | Bantam chicken | Single oral dose | | Mortality | 190 | | Fimreite, 1979 |
| | Prairie chicken | Single oral dose | | Mortality | 11.5 | | Eisler, 1987 |
| | Chukar | Single oral dose | | Mortality | 26.9 | | Eisler, 1987 |
| | Corturnix | Single oral dose | | Mortality | 11 | | Eisler, 1987 |
| | Mallard | Oral | NR | Reproduction, behavior | | 0.064 | USEPA, 1993 |
| | Black duck | Oral (subchronic) | 28 weeks | Reproduction inhibited | | 0.22[a] | Eisler, 1987 |
| | Fulvous whistling duck | Single oral dose | | Mortality | 37.8 | | Eisler, 1987 |
| | Northern bobwhite | Single oral dose | | Mortality | 23.8 | | Eisler, 1987 |
| | Bobwhite quail | Oral (acute) | 5 days | Mortality | 523 | | Hill et al., 1975 |
| | Japanese quail | Single oral dose | | Mortality | 14.4 | | Eisler, 1987 |
| | Gray partridge | Single oral dose | | Mortality | 17.6 | | Eisler, 1987 |
| | Gray pheasant | Oral (subchronic) | 30 days | Reduced reproductive ability | | 0.64 | Eisler, 1987 |
| | Ring-necked pheasant | Single oral dose | | Mortality | 11.5 | | Eisler, 1987 |
| Nickel | Rat | Oral | NR | Reproductive effects | | 158 | RTECS, 1994 |
| | Rat | Single oral dose | NR | Mortality | 67 | | ATSDR, 1987 |

**Appendix G**
**Wildlife Toxicity Data**
**Baseline Risk Assessment**
**Zone I**
**Charleston Naval Complex**

| Chemical | Test Species | Test Type | Duration | Effect | Oral $LD_{50}$ (mg/kg/BW) | LOAEL (mg/kgBW/day) | Reference |
|---|---|---|---|---|---|---|---|
| Selenium | Rat | Oral | NR | Mortality | 6,700 | | RTECS, 1993 |
| | Mouse | Oral | NR | Reproductive effects | | 134 | RTECS, 1993 |
| | Mallard | Oral (subchronic) | 3 months | Reduced hatchability | | 1.75 | Eisler, 1985 |
| Vanadium | Japanese quail | Oral (acute) | 5 days | Mortality | 96 | | Hill and Camardese, 1986 |
| Zinc | Rat | Single oral dose | | Mortality | 2,510 | | RTECS, 1993 |
| | Rat | Oral (subchronic) | NR | Kidney toxicity | | 160 | Llobet, et al., 1988 |

**Notes:**

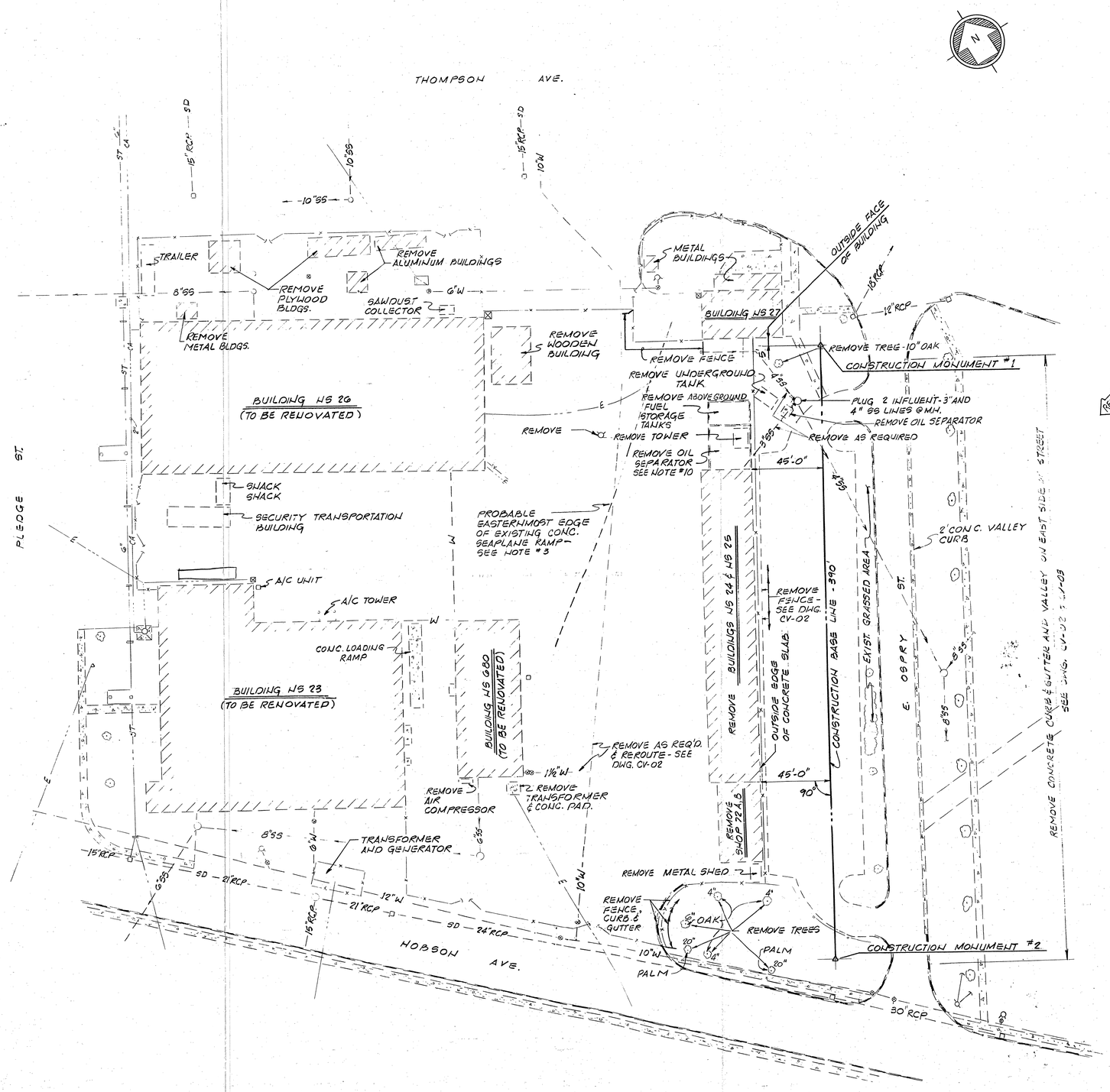
LD50 = Dose resulting in 50% mortality in test population.
BW = Body weight.
LOAEL = Lowest Observed Adverse Effect Level.
NR = Not reported.
a = Converted to dose per kilogram body weight by multiplying by ingestion and dividing by body weight.
b = Estimated by applying a LOAEL-NOAEL ratio of 5 (Newell et al., 1987).

# Appendix H

# Historical Drawings

AF 8207

| REVISIONS | | | | |
|---|---|---|---|---|
| LET | DESCRIPTION | PREP'D BY | DATE | APPROVED |
| A | ADDED TOPO & NOTE<br>DRWG. CORRECTED TO AS-BUILT | SD<br>CMC | 4.11.85<br>7/85 | |




1" = 30' 30' 0 30' 60'
GRAPHIC SCALE

## LEGEND

| | |
|---|---|
| EXIST. 777777 | BUILDING |
| □ | CATCH BASIN |
| ○ | SEWER MANHOLE |
| ⊠ | ELECTRICAL JUNCTION BOX |
| | FIRE HYDRANT |
| ⊗ | WATER VALVE |
| —— - - —ST— | OVERHEAD STEAM LINE |
| - - - - -ST- | UNDERGROUND STEAM LINE |
| —— - - - -CA— | COMPRESSED AIR LINE |
| —— - - - -E— | UNDERGROUND ELECTRICAL LINE |
| —W— | WATER LINE |
| | CONCRETE |
| —x——x— | FENCE |
| | TREE |
| - -R.C.P.- -SD- | REINFORCED CONCRETE PIPE - STORM DRAIN |
| - -SS- - - | SANITARY SEWER |
| | CURB & GUTTER |
| | ASPH. PAVEMENT |

## GENERAL NOTES

1. SURVEY BY HEANER ENGINEER CO. INC. GREENWOOD, S.C.
2. ELEVATIONS ARE BASED ON B.M. #29 @ ELEV. 12.790C "x" MARK ON TOP OF CONCRETE COPING INTERSECTION SOUTHSIDE OF PIER U-NS10 & BULKHEAD). DATUM IS MEAN LOW WATER.
3. SEAPLANE RAMP IS GENERALLY 1.5 FEET BELOW EXISTING GRADE AND IS APPROXIMATELY 12 INCHES THICK CONCRETE. REMOVE AS REQ'D FOR BUILDING FOUNDATIONS AND UNDERGROUND UTILITIES INSTALLATIONS.
4. SEE DWG. CV-02 FOR RELOCATED OUTSIDE UTILITIES.
5. CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING BASE LINE AND CONSTRUCTION MONUMENTS AS INDICATED PARALLEL TO EXISTING BUILDING NS 24 & NS 25 PRIOR TO REMOVING STRUCTURE. MONUMENTS SHALL BE CONCRETE 4"x4"x36" WITH BRASS DISC IN TOP. SET TOP 6 INCHES ABOVE GRADE.
6. EXISTING UNDERGROUND UTILITIES SHOWN ARE FROM FIELD SURVEY AND MAP INFORMATION SUPPLIED BY NAVAL STATION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING OR REESTABISHING CONTINUITY OF ALL SYSTEMS.
7. CONTRACTOR SHALL REMOVE & DISPOSE OF ALL CONCRETE FOUNDATIONS OF STRUCTURES & EQUIPMENT SUPPORTS WHICH WILL INTERFERE WITH THE WORK. THIS WILL INCLUDE REMOVAL OF EXISTING PILE CAPS AND PILES WHICH INTERFERE WITH NEW PILES & WORK.
8. CONTRACTOR IS RESPONSIBLE FOR ALL DEMOLITION INDICATED.
9. SEE DWG. E-004 FOR ELECTRICAL DEMOLITION.
10. REMOVE ALL EQUIPMENT, PITS, FOUNDATIONS, CURBS, SLABS, AND TANKS IN THE FUEL AND OIL STORAGE AREA AND COOLING TOWER AREA.
11. REMOVE PAVEMENT AS REQUIRED FOR NEW WORK.

FOR OFFICIAL USE ONLY

As-built 11-5-85

LOCKWOOD GREENE ENGINEERS, INC.
ARCHITECTS-ENGINEERS
SPARTANBURG, S. C.

DSGN R.L.B. DR Sweat CHK Cox
SUPV Johnston CH ENGR Cox
SUBMITTED BY J.C. Cox VP DATE 11/10/81
FIRM MEMBER (TITLE)
SOUTHERN DIV—DESIGN DIVISION
PDE J.T. Kenny DIR C.T. Hill
APPROVED / DATE
OFFICER IN CHARGE
APPROVED DATE
EFD FOR COMMANDER, NAVFAC

ARCH. & ENGR. SEAL

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
SOUTHERN DIVISION
CHARLESTON, S. C.

NAVAL STATION CHARLESTON, S. C.

S I M A
DEMOLITION PLAN - CIVIL

| SIZE | CODE IDENT NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 5077119 |
| SCALE AS NOTED | SPEC 06-79-0028 | CONSTR CONTR NO. N62467-79-C-0028 SHEET 3 OF |

CV-01

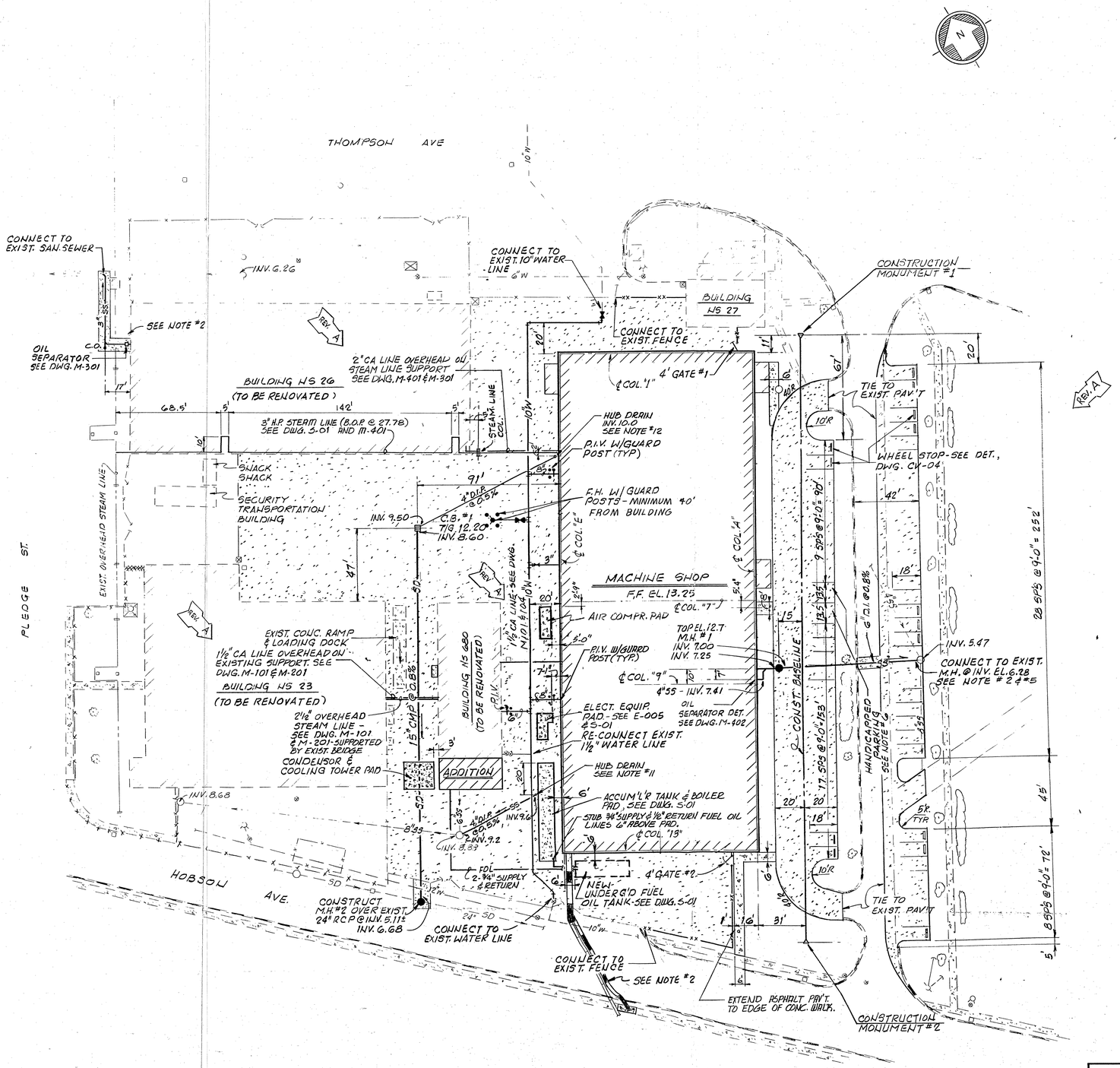
NS681-6

79390-3

681

JAMES RIVER GRAPHICS

| REVISIONS | | | | |
|---|---|---|---|---|
| LET | DESCRIPTION | PREP'D BY | DATE | APPROVED |
| A | ADDED 1½" & 2" AIR LINES, PARKING, & COMPRESS OIR PAD | SD | 4-19-83 | [illegible] |
| | AS-BUILT DRWG. NO CORRECTIONS | CMC | 8/85 | CLL |
| B | ADDED NEW FENCE | SIMA | 228-36 | P.C.S |




1" = 30' 30' 0 30' 60'
GRAPHIC SCALE

## LEGEND

| EXIST. | | NEW |
|---|---|---|
| | SOIL BORINGS. | |
| 12 | CONTOUR | (12) |
| | BUILDING | |
| | CATCH BASIN | |
| | SEWER MANHOLE | |
| | ELECTRICAL JUNCTION BOX | |
| | FIRE HYDRANT (F.H.) | |
| | WATER VALVE | |
| | UNDERGROUND ELECTRICAL LINE | |
| W | WATER LINE | W |
| | CONCRETE | |
| X | FENCE | XX |
| | TREE | |
| SS | SANITARY SEWER | SS |
| | CURB & GUTTER | |
| | CLEAN OUT | C.O. |
| | ASPHALT PAVING | |
| | SOIL BORING | |
| + 13.0 | SPOT GRADE | (13.0) |
| | POST INDICATOR VALVE (P.I.V.) | |
| SD | STORM DRAIN | SD |
| | FUEL OIL LINE | FOL |
| | ELECTRIC DUCT BANK | |

## GENERAL NOTES

1. CONTRACTOR SHALL REFER TO NOTE 5 ON DRAWING CV-01 FOR BASELINE INFORMATION.
2. CONTRACTOR IS RESPONSIBLE FOR REPLACING CURB AND GUTTER, PAVEMENT & WALKWAYS DISTURBED WHEN INSTALLING UNDERGROUND UTILITIES - SEE DETAIL ON DWG. CV-04.
3. CORRUGATED METAL PIPE (CMP) FOR DRAINAGE - FEDERAL SPEC. WW-P-405, CLASS II, SERIES A, COATING TYPE C, GAGE 14.
4. SEE DRAWING CV-01 FOR DEMOLITION.
5. FOR PILE SUPPORTED SEWER LINE & MANHOLE SEE DETAILS ON DWG. S-01.
6. PROVIDE STANDARD SIGNS FOR HANDICAPPED RESERVED SPACES, AS APPROVED BY SOUTH CAROLINA BARRIER FREE DESIGN MANUAL.
7. SEE ARCHITECTURAL DRAWINGS FOR RENOVATION OF BUILDINGS NS-23, NS-26 AND NS-680.
8. SEE MECHANICAL DRAWINGS FOR CONTINUATION OF PIPES INTO BLDGS.
9. SEE ELECTRICAL DRAWINGS FOR LOCATIONS AND DETAILS OF ELECTRICAL DUCT BANKS.
10. SEE DRAWING CV-03 FOR GRADING.
11. PROVIDE 3" HUB DRAIN FOR CONDENSATE DRAINS. SET TOP OF HUB DRAIN AT 13.0. PIPE BOILER AND ACCUMULATOR BLOW-DOWN TO HUB DRAIN.
12. PROVIDE 3" HUB DRAIN FOR CONDENSATE DRAIN. SET TOP OF HUB DRAIN AT 13.0.
13. FOR DETAILS OF PROJECT CONSTRUCTION SIGN SEE DETAILS ON DWG. CV-05.

FOR OFFICIAL USE ONLY

As-built 11-5-85

LOCKWOOD GREENE ENGINEERS, INC. ARCHITECTS-ENGINEERS SPARTANBURG, S. C.

DSGN [illegible] DR [illegible] CHK [illegible]
SUPV JOHNSTON CH ENGR COX
SUBMITTED BY [illegible] DATE 1/20/84
FIRM MEMBER (TITLE)
SOUTHERN DIV — DESIGN DIVISION
PDE [illegible] DIR
APPROVED DATE
OFFICER IN CHARGE
APPROVED [illegible] DATE 2-27-84
EFD FOR COMMANDER, NAVFAC

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND
SOUTHERN DIVISION
CHARLESTON, S. C.

NAVAL STATION — CHARLESTON, S. C.

S I M A
SITE LAYOUT & OUTSIDE PIPING PLAN - CIVIL

| SIZE | CODE IDENT NO. | NAVFAC DRAWING NO. |
|---|---|---|
| F | 80091 | 5077120 |
| | | CONSTR CONTR NO. N62467-79-C-0028 |
| SCALE AS NOTED | | SPEC 06-79-0028 SHEET 4 OF |

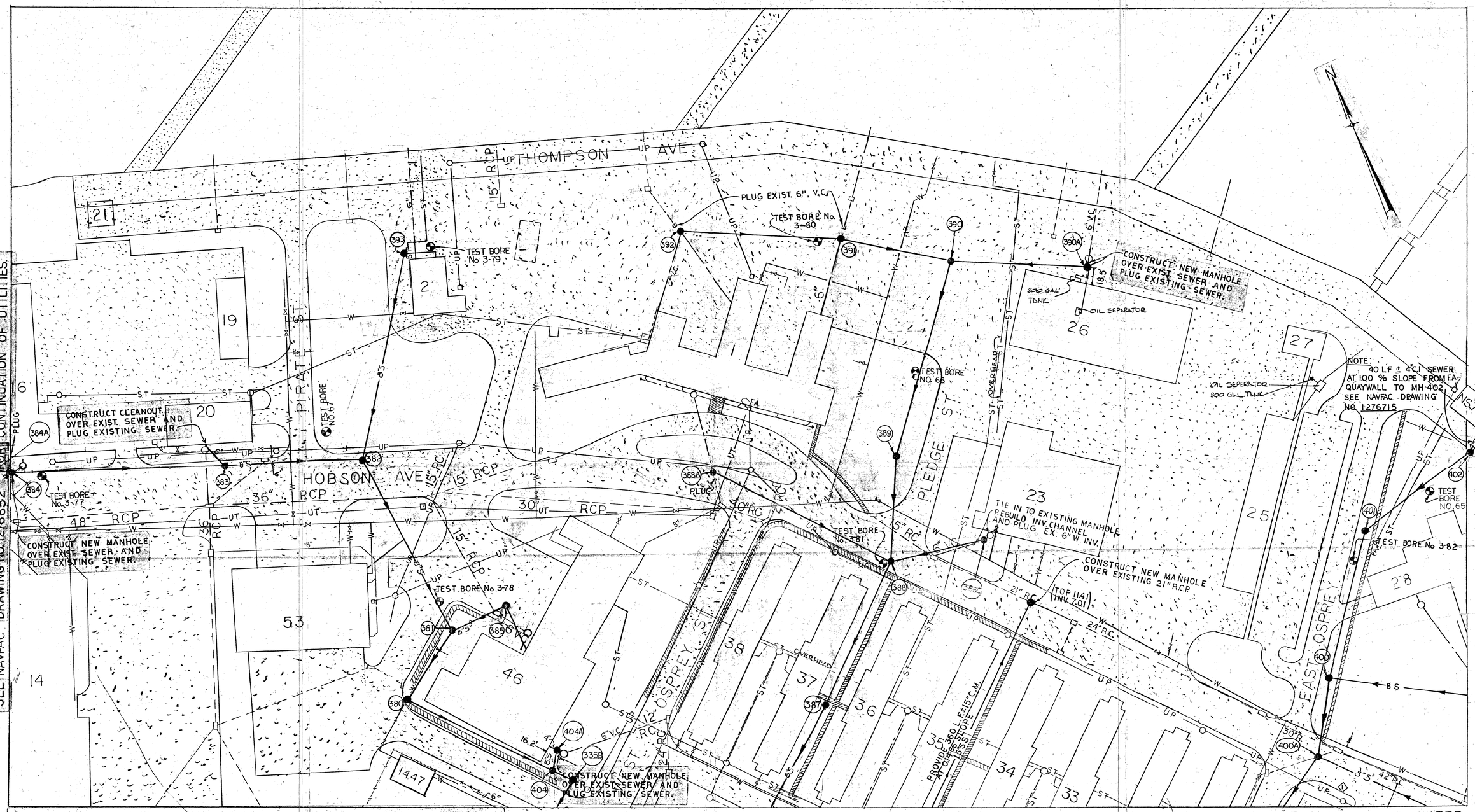
CV-02

ARCH. & ENGR. SEAL

NS681-7

JAMES RIVER GRAPHICS

| REVISIONS | | | | |
|---|---|---|---|---|
| LET | DESCRIPTION | PREP'D BY | DATE | APPROVED |
| | CORRECTED TO AS-BUILT | BUNDING & | 10/17/72 | GETTER |




## LEGEND

| | EXISTING | NEW |
|---|---|---|
| CONTOURS | | |
| BITUMINOUS PAVING | | |
| CONCRETE PAVING | | |
| BUILDING | | |
| UNDERGROUND POWER | —UP— | |
| GUY AND ANCHOR | | |
| POLE, HEIGHT & CLASS | | |
| STORM SEWER | —12"SS— | |
| STEAM | —ST— | |

| | EXISTING | NEW |
|---|---|---|
| COMBINED SEWERS | | |
| SANITARY SEWERS | | —8"S— |
| SEWER MANHOLE | | (381) |
| DROP INLET | | |
| VALVE | | |
| WATER LINE | —W— | |
| FENCE | —X— | |
| ELECTRIC MANHOLE | | |
| UNDERGROUND TELEPHONE | —UT— | |

SEE NAVFAC DRAWING NO. 1276650 FOR CONTINUATION OF UTILITIES.

AREA INDEX

NOTE:
INFORMATION ON BUILDING CONNECTIONS TAKEN FROM EXISTING MAPS AND PHYSICAL EVIDENCE ABOVE GROUND. CONTRACTOR SHALL VERIFY LOCATION AND GRADE OF ALL BUILDING CONNECTIONS PRIOR TO CONSTRUCTION OF ADJACENT SEWERS.

GRAPHIC SCALE
SCALE IN FEET
50 0 50 100

NOTE: ALL SERVICES TO BE 4" UNLESS OTHERWISE NOTED
CLASS I BEDDING.

RECORD DRAWING
DATE 20 APR 1974

H410—9

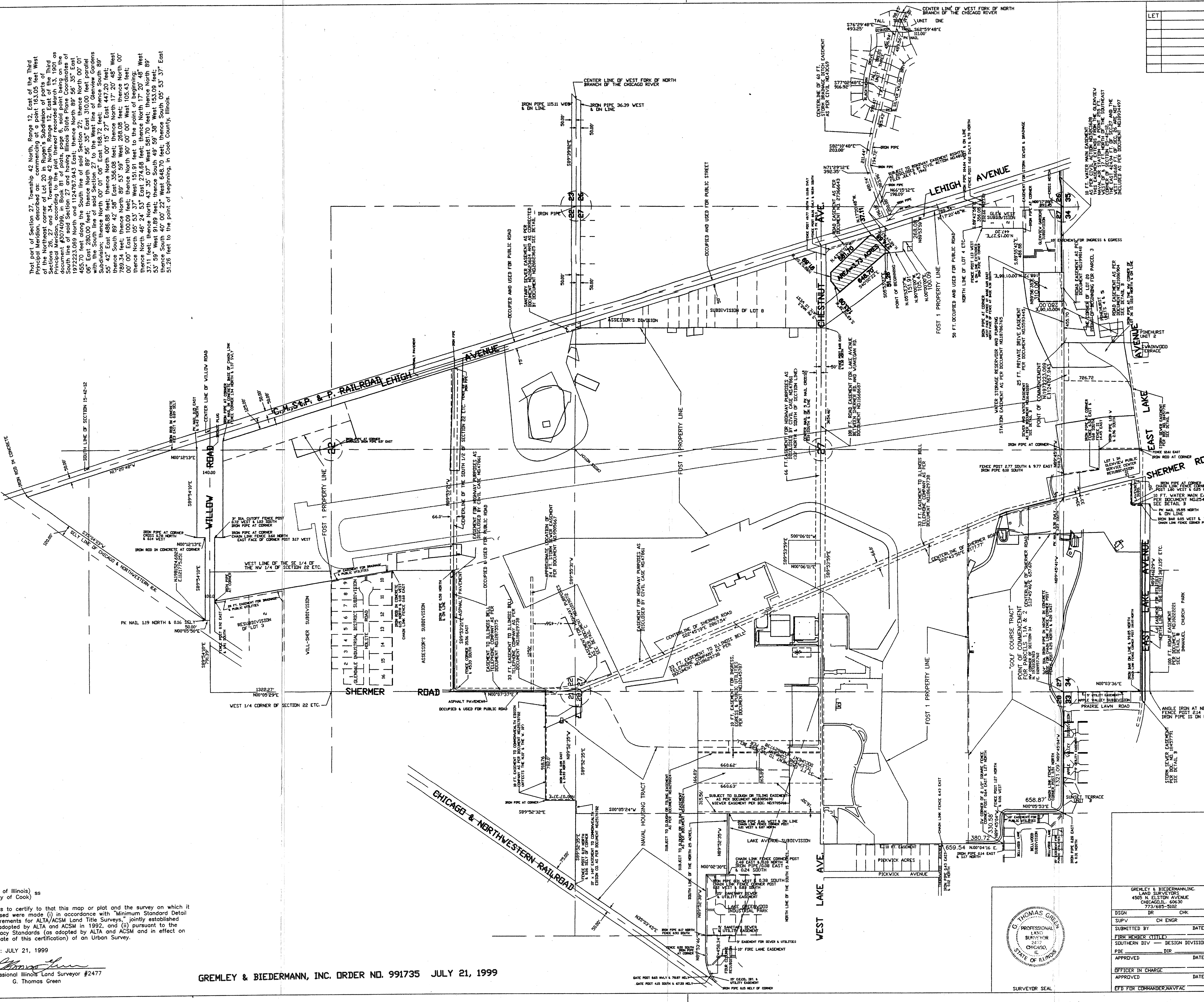
SHEET 8 OF 89

| | |
|---|---|
| B.P. BARBER & ASSOC., INC. COLUMBIA, S.C. ENGINEERS | DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST DIVISION CHARLESTON, S.C. |
| DES. Broome DR. Garcia CHK. Williamson | NAVAL BASE CHARLESTON, S.C. |
| SUPV. Williamson CH. ENGR. Wrenn | SANITARY & INDUSTRIAL SEWER SYSTEM SITE PLAN AREA 3 |
| SUBMITTED BY 4-12-68 DATE | |
| FIRM MEMBER (TITLE) | |
| SOEAST DIV. NFEC-DESIGN DIVISION | |
| POE BIGBLEY DIR. | |
| APPROVED DATE | SIZE F · CODE IDENT. NO. 80091 · NAVFAC DRAWING NO. 1276649 |
| OFFICER IN CHARGE | |
| APPROVED FOR COMMAND DATE | CONSTR. CONTR. NO. N62467-67 C-0344 |
| EFD FOR COMMANDER, NAVFAC | SCALE 1" = 50' · SPEC 5410/167 Sp-2 · SHEET 8 OF 89 |

STANFAST PRODUCTS INC. FORT WASHINGTON, N.Y.

| REVISIONS | | | | |
|---|---|---|---|---|
| LET | DESCRIPTION | PREP'D BY | DATE | APPROVED |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

That part of Section 27, Township 42 North, Range 12, East of the Third Principal Meridian, described as: commencing at a point 163.05 feet West of the Northeast corner of Lot 20 in Rugen's Subdivision of parts of Sections 26, 27 and 34, Township 42 North, Range 12, East of the Third Principal Meridian, according to the plat thereof recorded March 13, 1901 as document #3074099, in Book 81 of plats, page 6, said point being on the South line of said Section 27 and having Illinois State Plane Coordinates of 1972223.069 North and 1124767.943 East; thence North 89° 56' 35" East 455.70 feet along the South line of said Section 27; thence North 00° 01' 06" East 280.00 feet; thence North 89° 56' 35" East 310.00 feet parallel with the South line of said Section 27 to the West line of Glenview Gardens Subdivision; thence North 00° 01' 06" East 168.72 feet; thence South 89° 55' 42" East 486.88 feet; thence North 00° 15' 27" East 447.20 feet; thence South 89° 42' 58" East 356.08 feet; thence North 17° 20' 48" West 789.34 feet; thence North 89° 53' 59" West 268.08 feet; thence North 00° 00' 00" East 100.09 feet; thence North 90° 00' 00" West 105.43 feet; thence North 05° 53' 37" West 151.91 feet to the point of beginning; thence North 46° 24' 53" East 274.68 feet; thence North 17° 20' 48" West 37.11 feet; thence North 43° 35' 07" West 581.70 feet; thence North 89° 53' 59" West 91.89 feet; thence South 49° 59' 38" West 153.09 feet; thence South 40° 00' 22" West 648.70 feet; thence South 05° 53' 37" East 51.26 feet to the point of beginning, in Cook County, Illinois.




NOTES:

SUBJECT TO SEWER EASEMENT AS PER DOC.# 19320602

STATE PLANE COORDINATES SHOWN HEREON ARE ILLINOIS EAST ZONE NAD 1983.NGS MONUMENT GLENVIEW 2 AND THE VILLAGE OF GLENVIEW MONUMENTS 18, 19 & 34 WERE USED AS CONTROLLING MONUMENTS.

THE SCALE FACTOR USED TO DEVELOP THE COORDINATES IS 0.99999906

THE COMBINED FACTOR USED IS 0.99996749

REGARDING MATTERS OF PUBLIC RECORD WE HAVE RELIED UPON CHICAGO TITLE INSURANCE COMMITMENT ORDER NO.: 1401 007537862 D2 EFFECTIVE DATE: JANUARY 25, 1995

400 200 0 400 800 1200

GRAPHIC SCALE - 1" = 400'

State of Illinois) ss
County of Cook)

This is to certify to that this map or plat and the survey on which it is based were made (i) in accordance with "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys," jointly established and adopted by ALTA and ACSM in 1992, and (ii) pursuant to the Accuracy Standards (as adopted by ALTA and ACSM and in effect on the date of this certification) of an Urban Survey.

Dated: JULY 21, 1999

Professional Illinois Land Surveyor #2477
G. Thomas Green

GREMLEY & BIEDERMANN, INC. ORDER NO. 991735 JULY 21, 1999

G. THOMAS GREEN PROFESSIONAL LAND SURVEYOR 2477 CHICAGO, IL STATE OF ILLINOIS

SURVEYOR SEAL

GREMLEY & BIEDERMANN, INC.
LAND SURVEYORS
4505 N. ELSTON AVENUE
CHICAGO, IL. 60630
773/685-5102

| | |
|---|---|
| DSGN DR CHK | |
| SUPV CH ENGR | |
| SUBMITTED BY | DATE |
| FIRM MEMBER (TITLE) | |
| SOUTHERN DIV — DESIGN DIVISION | |
| PDE ____ DIR ____ | |
| APPROVED | DATE |
| OFFICER IN CHARGE | |
| APPROVED | DATE |
| EFD FOR COMMANDER, NAVFAC | |

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND

SOUTHERN DIVISION

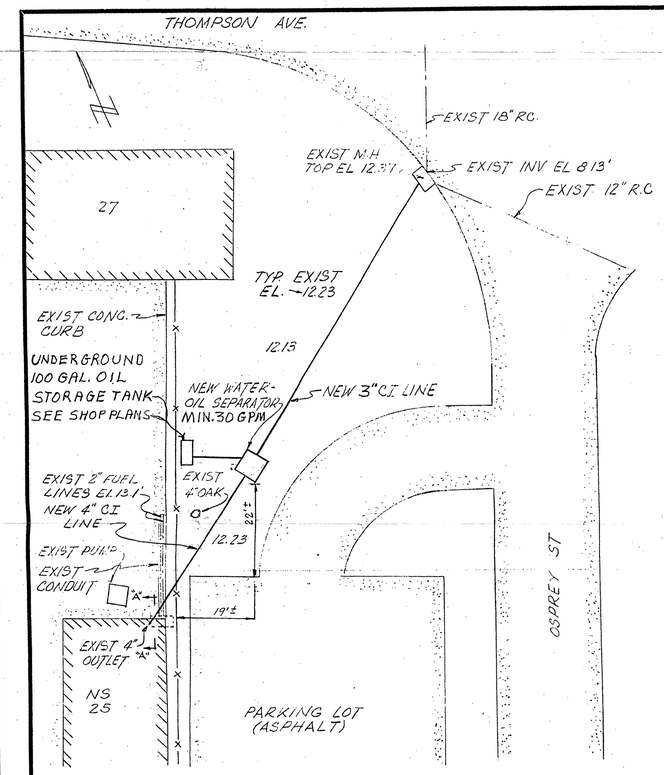
CHARLESTON, S.C.

# PLAT OF SURVEY
## NAVAL AIR STATION GLENVIEW, ILLINOIS

| SIZE | CODE IDENT NO. | NAVFAC DRAWING NO. | |
|---|---|---|---|
| | | CONSTR CONTR NO. | |
| SCALE AS SHOWN | | SPEC | SHEET 1 OF 1 |

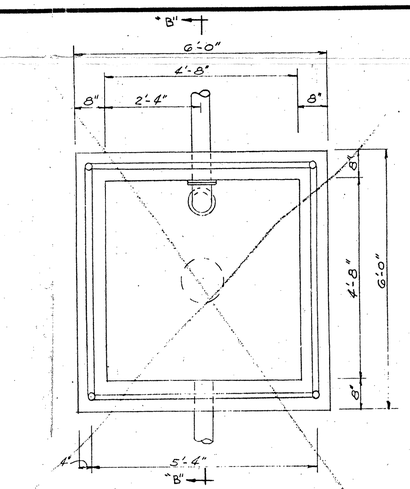
16

453-9497



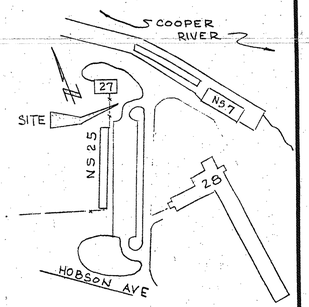

SITE PLAN

Scale ~ 1" = 20'-0"




SEPARATOR PLAN

Scale ~ 1/2" = 1'-0"

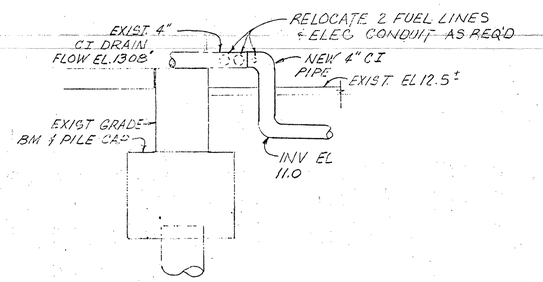



LOCATION PLAN

Scale ~ 1" = 200'

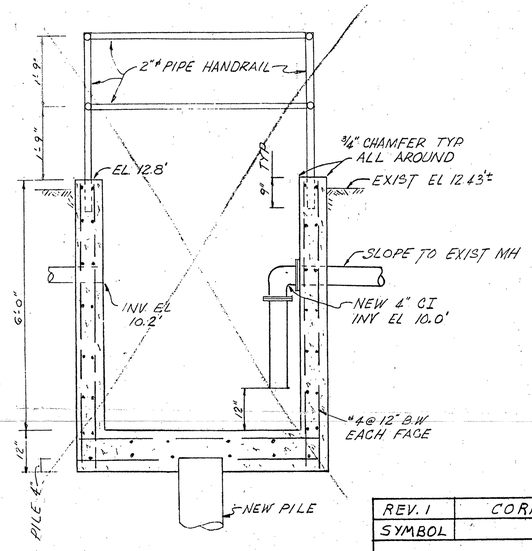
NOTES:

1. CONC SHALL BE CL. E-0.75
2. NEW PIPE SHALL BE 4" CAST IRON BELL & SPIGOT OR FLANGE
3. PAINT NEW HANDRAIL 1 COAT RED LEAD & 2 COATS YELLOW WITH 4" WIDE 45° DIAGONAL BLACK STRIPES
4. PATCH EXIST ASPHALT PAVEMENT AS REQ'D. WITH LIKE MATERIAL OF SAME THICKNESS
5. PILE SHALL BE TREATED WOOD WITH 20 TON CAPACITY
6. MODIFY EXIST 4" CI OUTLET AS REQ'D FOR INSTALLATION OF ELBOW ALSO RELOCATE ELEC CONDUIT & FUEL LINES AS REQ'D.
7. WATER-OIL SEPARATOR ACCOMPLISHED UNDER SEWER CONTRACT CONSTR. CONTR. NO. N62467-67-C-0344 SPEC. 84119/67/REV. 2




SECTION "A-A"

Scale ~ 1/2" = 1'-0"




SECTION "B-B"

Scale ~ 1/2" = 1'-0"

| SYMBOL | DESCRIPTION | DATE | APPROVAL |
|---|---|---|---|
| REV. 1 | CORRECTED TO "AS BUILT" | 4/19/72 | W. B. |

REVISIONS

DESIGNED: K.F. PALKA
DRAWN: K.F. PALKA
CHECKED: DUNCAN
BR. MGR.: DUNCAN
APPROVED: 4/27/72 — DIRECTOR DESIGN DIVISION / DATE
APPROVED: 4/27/72 — PUBLIC WORKS OFFICER / DATE
SATISFACTORY TO: 23 July 1969 — DATE

DEPARTMENT OF THE NAVY — NAVAL FACILITIES ENGINEERING COMMAND

U. S. NAVAL STATION, CHARLESTON, S. C.

# BUILDING NS-25
# WATER-OIL SEPARATOR

NAV FAC DWG NO. 1346558 — SPEC. 06-70-0449
CONST CONTR. NO. N62467-70-C-0449

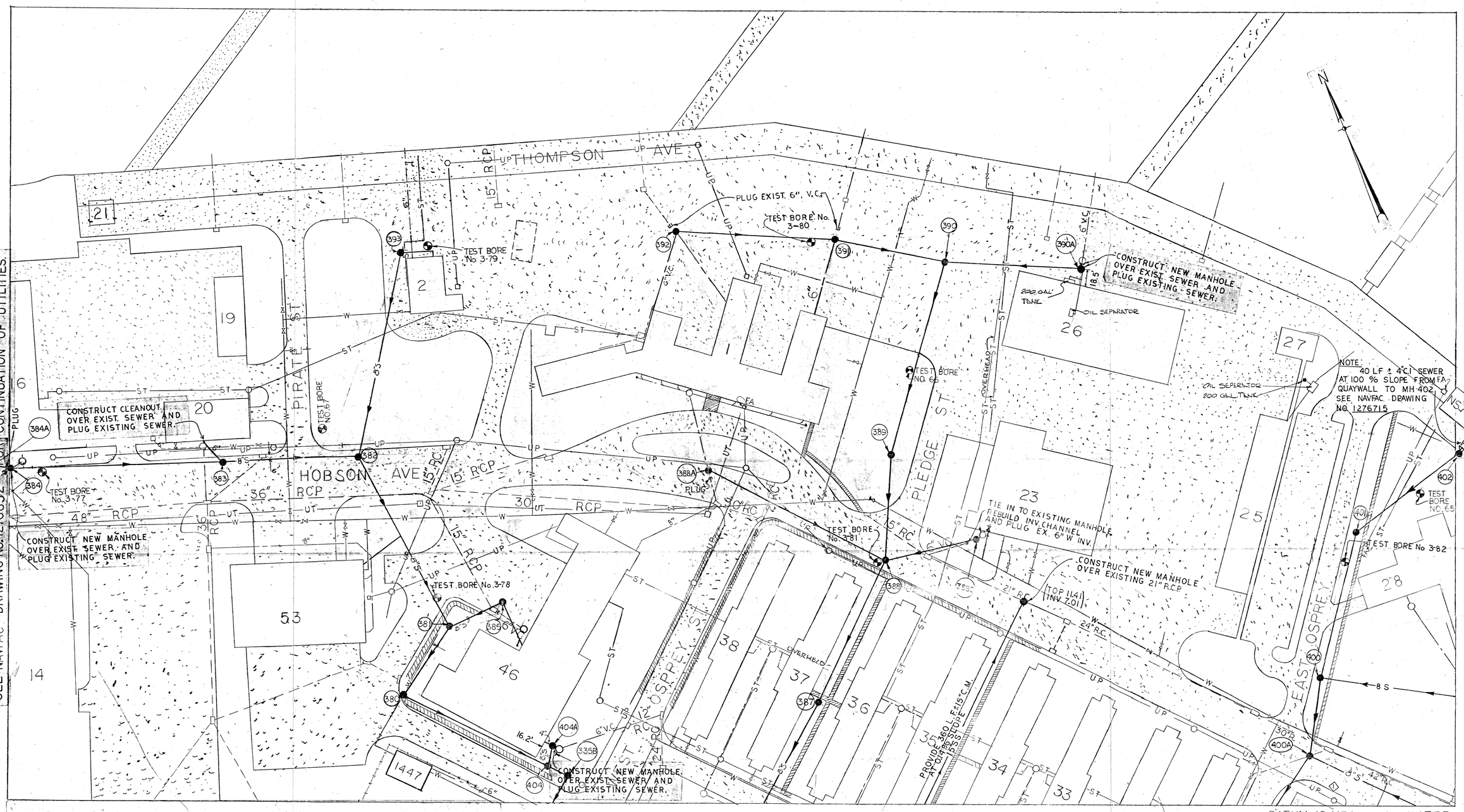
| SIZE | CODE IDENT NO. | P. W. DRAWING NO. |
|---|---|---|
| C | | NS 25-8 |

SCALE NOTED — WORK REQUEST NO. 9-1918 — SHEET 3 OF 3

W/R 0-1514

W&E ALBANENE® 79627 6ND-CNSYD 1012-3

| REVISIONS | | | | |
|---|---|---|---|---|
| LET | DESCRIPTION | PREP'D BY | DATE | APPROVED |
| | CORRECTED TO AS-BUILT | BUNDIN | 10/17/72 | GETTER |

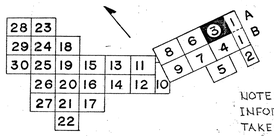



DATUM IS MEAN LOW WATER

## LEGEND

| | EXISTING | NEW | | EXISTING | NEW |
|---|---|---|---|---|---|
| CONTOURS | | | COMBINED SEWERS | | |
| BITUMINOUS PAVING | | | SANITARY SEWERS | | 8"S |
| CONCRETE PAVING | | | SEWER MANHOLE | | 381 |
| BUILDING | | | DROP INLET | | |
| UNDERGROUND POWER | UP | | VALVE | | |
| GUY AND ANCHOR | | | WATER LINE | W | |
| POLE, HEIGHT & CLASS | | | FENCE | X | |
| STORM SEWER | | 12"SS | ELECTRIC MANHOLE | | |
| STEAM | ST | | UNDERGROUND TELEPHONE | UT | |

SEE NAVFAC DRAWING NO. 1276650 FOR CONTINUATION OF UTILITIES.




AREA INDEX

NOTE: INFORMATION ON BUILDING CONNECTIONS TAKEN FROM EXISTING MAPS AND PHYSICAL EVIDENCE ABOVE GROUND. CONTRACTOR SHALL VERIFY LOCATION AND GRADE OF ALL BUILDING CONNECTIONS PRIOR TO CONSTRUCTION OF ADJACENT SEWERS.

GRAPHIC SCALE

SCALE IN FEET

50 0 50 100

NOTE: ALL SERVICES TO BE 4" UNLESS OTHERWISE NOTED. CLASS I BEDDING.

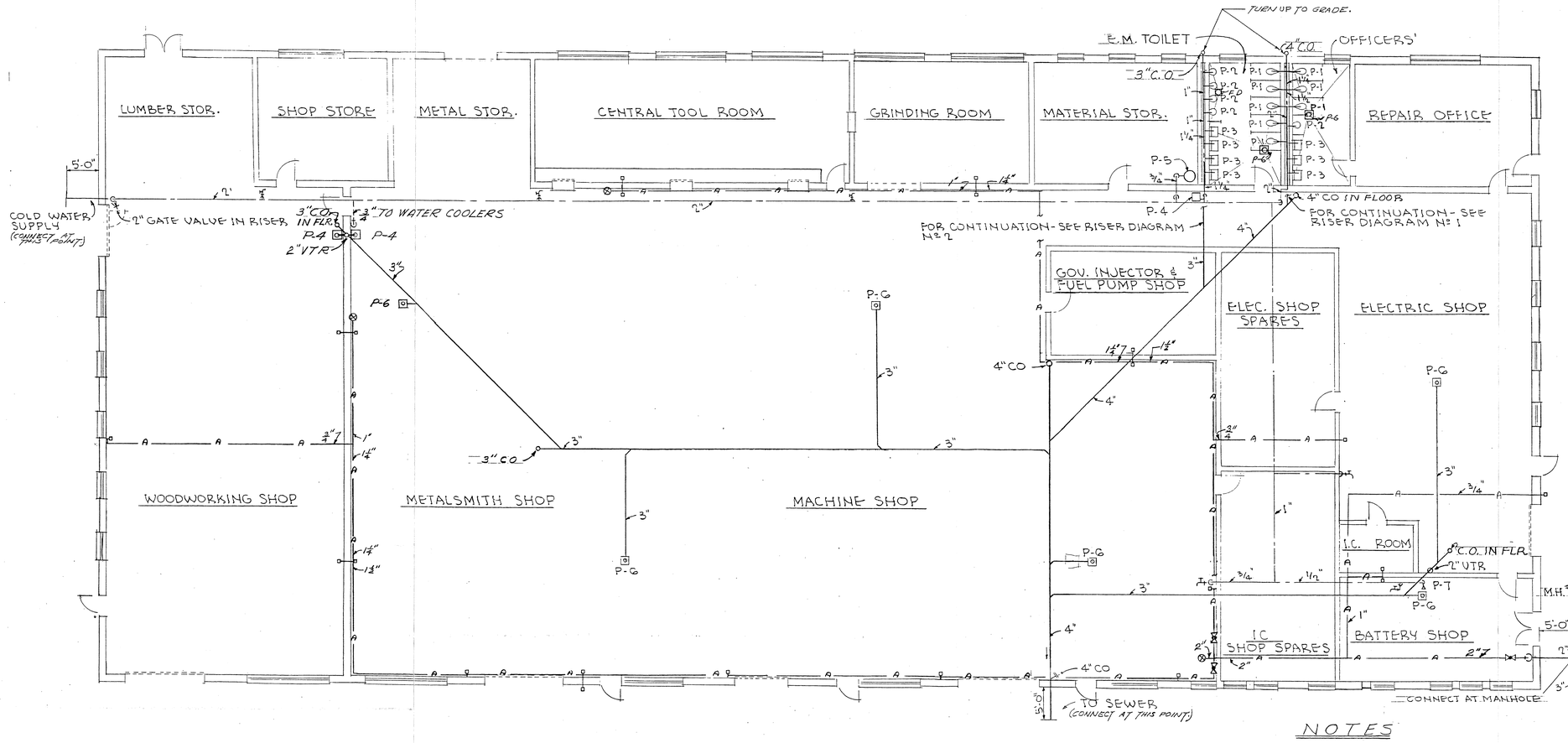
RECORD DRAWING DATE 10 APR 1974

SHEET 8 OF 89

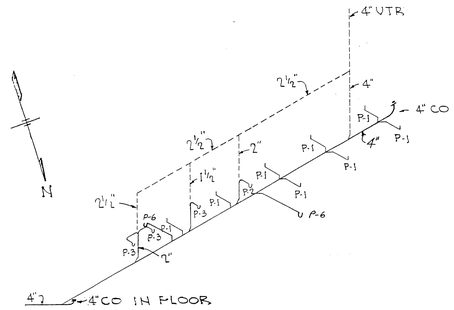
H410—9

| | |
|---|---|
| B.P. BARBER & ASSOC., INC. COLUMBIA, S.C. ENGINEERS | DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND SOUTHEAST DIVISION CHARLESTON, S. C. |
| DES. Broome DR. Barrio CHK. Williamson | NAVAL BASE CHARLESTON, S.C. |
| SUPV. Williamson CH. ENGR. Wrenn | SANITARY & INDUSTRIAL SEWER SYSTEM |
| SUBMITTED BY 4-12-08 DATE | SITE PLAN AREA 3 |
| FIRM MEMBER (TITLE) | |
| SOEAST DIV. NFEC-DESIGN DIVISION | |
| P.D.E. BRADLEY DIR. | |
| APPROVED DATE | SIZE F CODE IDENT. NO. 80091 NAVFAC DRAWING NO. 1276649 |
| OFFICER IN CHARGE | CONSTR. CONTR. NO. N62467-67 C-0344 |
| APPROVED FOR COMMAND DATE | |
| F.F.D. FOR COMMANDER, NAVFAC | SCALE 1" = 50' SPEC. SHEET 8 OF 89 |

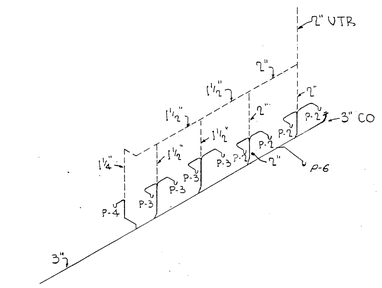
COOPER RIVER
NAVAL STATION
SHIPYARD CREEK
LOCATION MAP
SCALE IN FEET
GRAPHIC SCALE
ABBREVIATIONS
DEGAUSSING STATION DEGN STA
FLEET TRAINING CENTER FTC
NAVAL STATION NS
MINE FORCE COMMANDER, U.S. ATLANTIC FLEET COMINLANT
NAVAL RESERVE TRAINING CENTER NRTC
FLEET BALLISTIC MISSILE SUBMARINE TRAINING CENTER FBMSTC
NAVAL SUPPLY CENTER NSC
NAVAL SCHOOLS MINE WARFARE NSMW
ANNUAL WINDROSE (FIVE YEAR PERIOD)
TWO AN MARK 47 TORPEX LOADED DEPTH BOMBS DROPPED 28 JANUARY 1945 (APPROX LOCATION)
TWO AN MARK 47 TORPEX LOADED DEPTH BOMBS DROPPED IN THIS AREA 20 NOVEMBER 1943
2 MARK-17 DEPTH BOMBS JETTISONED 8 OCTOBER 1943
PERMIT ISSUED TO CORPS OF ENGINEERS, US ARMY, TO CUT AWAY LAND FOR NAVIGATIONAL IMPROVEMENT
SLUDGE OIL PIT
NAVAL DEGAUSSING STATION
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND
CHARLESTON NAVAL SHIPYARD CHARLESTON, S. C.
MAP OF CHARLESTON NAVAL SHIPYARD NAVAL STATION AND CONTIGUOUS ACTIVITIES EXISTING AND PLANNED AS OF 1 JULY 1970
DRAWN DUKE
CHECKED DUNCAN
BR. MGR DUNCAN
SCALE 1" = 200
SHEET 2 OF 2
P.W. DRAWING NO H606-208




FLOOR PLAN
SCALE: 1/8" = 1'-0"




RISER DIAGRAM Nº 1
NO SCALE




RISER DIAGRAM Nº 2
NO SCALE

| FIXTURE SCHEDULE | | | | | |
|---|---|---|---|---|---|
| FIXTURE Nº | DESCRIPTION | SUPPLY C.W. | SUPPLY H.W. | WASTE | VENT |
| P-1 | WATER CLOSET | 1" | – | 4" | 2"-4" |
| P-2 | URINAL | 3/4" | – | 2" | 2" |
| P-3 | LAVATORY | 1/2" | 1/2" | 1 1/2" | 1 1/2" |
| P-4 | ELEC. WATER COOLER | 1/2" | – | 1 1/4" | 1 1/4" |
| P-5 | ELEC. WATER HEATER | 3/4" | 3/4" | – | – |
| P-6 | FLOOR DRAIN | – | – | 3" | – |
| P-7 * | SHOWER | 1/2" | – | – | – |

* SHOWER TO BE EMERGENCY TYPE.

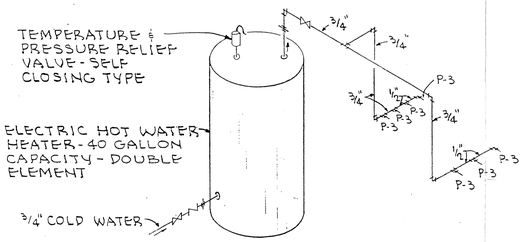
## NOTES

1- ALL HORIZONTAL PIPING IN METALSMITH SHOP AND MACHINE SHOP TO BE RUN THROUGH TRUSSES ABOVE MONORAIL SYSTEM

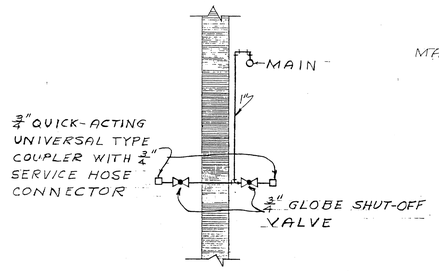
2- FOR TYPICAL DETAIL OF URINAL AND LAVATORY INSTALLATION, SEE Y.&D. DWG. NO. 755159

## LEGEND

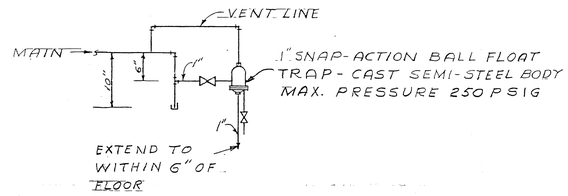
- COLD WATER
- HOT WATER
- SOIL, WASTE
- VENT
- CLEANOUT (SEE PLAN)
- FLOOR DRAIN
- GATE VALVE
- CHECK VALVE
- UNION
- 3/4" HOSE BIBB
- SHOWER HEAD
- VTR VENT THROUGH ROOF
- CO CLEANOUT
- A COMPRESSED AIR - 100 P.S.I.
- SERVICE AIR OUTLET
- DRIP POINT
- GLOBE VALVE




PIPING - ELECTRIC WATER HEATER
NO SCALE




DETAIL - SERVICE AIR OUTLET
NO SCALE




DRIP DETAIL
NO SCALE

GRAPHIC SCALE
0 5' 10' 15' 20' 25' 30' 35' 40
1/8" = 1'-0"

| SYMBOL | DESCRIPTION | DATE | APPROVAL |
|---|---|---|---|
| REV. 1 | "AS BUILT" NO CORRECTIONS | 8-4-69 | DUKE |

REVISIONS

DEPARTMENT OF THE NAVY — DISTRICT PUBLIC WORKS OFFICE — BUREAU OF YARDS & DOCKS
6TH ND CHARLESTON, S. C.
LYLES, BISSETT, CARLISLE & WOLFF ARCH. - ENGR.
COLUMBIA, SOUTH CAROLINA

ARCH'S. JOB NO. W 48
DRAWN BY
CHECKED BY
DIRECTOR DES. DIV.
ASS'T. OPWO PLANNING & DESIGN

U.S. NAVAL MINECRAFT BASE
CHARLESTON, S. C.

SHIP MAINTENANCE SHOP BUILDING
NS-26 AOC 680
PLUMBING LAYOUT

APPROVED
RES. OFFICER IN CHARGE — DATE

NS 26=15

SATISFACTORY TO
DATE

SUBMITTED BY: LYLES, BISSETT, CARLISLE & WOLFF ARCHITECTS-ENGINEERS
1-11-57 — ARCHITECT

APPROVED FOR BUREAU OF YARDS & DOCKS
1-14-57 — DPWO FOR CHIEF OF BUREAU

SCALE AS NOTED — SPEC. 4960/57
SHEET 6.0 OF 123 — NBy 4960
Y & D DRAWING NO. 755212

ARM-A-TEX WHITE PENCIL CLOTH™ B. K. ELLIOTT CO., PGH., PA.

## BUILDINGS – NAVAL SHIPYARD

| NO. | LOC'N | DEPT | USE |
|---|---|---|---|
| 1 | *G-24 | | VACANT |
| 2-P | *H-21 | NRAO | STOREHOUSE |
| 2-S | *J-21 | ATL R F | BUS SHELTER |
| 4-B | *L-19 | A | YARD CRAFT OPERATIONS MAINT SHOP |
| 8 | *J-22 | ATL R F | OFFICE |
| 9 | *J-21 | ATL R F | BOILER HOUSE |
| 10 | *H-23 | DPW-S | STOREHOUSE |
| 11 | *H-22 | PLAN. | STOREHOUSE |
| 12 | *H-23 | GND | STOREHOUSE |
| 13 | *H-24 | A | SENTRY HOUSE |
| 14 | *M-13 | PW | STANDBY GENERATOR |
| 18 | *H-21 | | BOILER HOUSE (VACANT) |
| 20 | *J-21 | ATL R F | COMMANDING OFFICER, SUB GROUP TWO |
| 22 | *H-21 | | VACANT |
| 23 | *H-21 | NRAO | DISBURSING OFFICE |
| 24 | *J-20 | ATL R F | STOREHOUSE |
| 25 | *J-20 | ATL R F | STOREHOUSE |
| 30-A | *L-19 | PW | TRANSFORMER VAULT |
| 31 | *L-17 | MED | MOSQUITO CONTROL |
| 32 | *L-17 | S | STOREHOUSE |
| 33 | *L-16 | GND-S | OFFICE & STOREHOUSE |
| 33-A | *L-16 | PW | TRANSFORMER VAULT |
| 39-K | H-24 | S | STRIPPER PUMPHOUSE |
| 40-A | N-15 | PW | TRANSFORMER VAULT |
| 43 | *M-14 | S | STOREHOUSE |
| 43-A | *M-14 | PW | TRANSFORMER VAULT |
| 44 | *N-15 | | SEAPLANE RAMP & PLATFOR (VACANT) |
| 50 | *M-12 | | STOREHOUSE (VACANT) |
| 51-A | *M-12 | PW | TRANSFORMER VAULT |
| 52 | *L-11 | COMINLANT | STOREHOUSE |
| 57 | *E-2 | DEGN STA | DEPERMING STATION |
| 123 | H-23 | PW | BOILER HOUSE |
| 124 | H-28 | PW | SUBSTATION & PRESSURE REDUCING STA |
| 125 | H-23 | PW | SUBSTATION |
| 126 | J-20 | PW | SUBSTATION |
| 127 | J-28 | PW | PUMPHOUSE (SALT WATER) |
| 128 | J-23 | PW | PRESSURE REDUCING STATION |
| 129 | K-20 | PW | PRESSURE REDUCING STATION |
| 131 | D-28 | P | ACETYLENE PLANT |
| 132 | G-26 | P | TORPEDO SHOP (INSIDE MACHINE SHOP) |
| 149 | D-28 | P | PUMPHOUSE (PRESSURE SEWER) |
| 160 | G-25 | S | TORPEDO MAGAZINE |
| 161 | F-25 | S | TORPEDO MAGAZINE |
| 162 | F-25 | S | TORPEDO MAGAZINE |
| 169 | K-21 | ATL R F | PAINT & OIL STOREHOUSE |
| 171 | H-27 | ATL R F | TOOL HOUSE |
| 320 | E-2 | DEGN STA | DEPERMING PIER |
| 322 | J-25 | S | FUEL OIL PIER |
| 322-A | J-25 | S | FIELD OFFICE, PIER 322 |
| 323 | N-16 | A | BOAT SLIP |
| 325 | K-28 | ATL R F | CONCRETE PIER |
| 326 | K-27 | ATL R F | CONCRETE PIER |
| 327 | K-23 | ATL R F | CONCRETE PIER |
| 328 | K-22 | ATL R F | CONCRETE PIER |
| 329 | M-20 | ATL R F | CONCRETE PIER |
| 330 | L-19 | A | CONCRETE PIER |
| 1254 | J-21 | A | BUS SHELTER |
| 1268 | D-2 | DEGN STA | INSTRUMENT HOUSE |
| 3902 | G-27 | PW | PAINT & OIL STOREHOUSE |
| 3905-A | N-15 | S | AVIATION GAS (AQUA) TANK (UG) |
| 3905-B | N-15 | S | AVIATION GAS (AQUA) TANK (UG) |
| 3905-C | K-20 | S | AVIATION GAS TANK 25,000 GALS (UG) |
| 3905-D | K-20 | S | AVIATION GAS TANK 25,000 GALS (UG) |
| 3905-G | K-20 | PW | METER HOUSE (GASOLINE) |

## U S FLEET TRAINING CENTER

| NO. | LOC'N | USE |
|---|---|---|
| 36 | *M-16 | RADIO SCHOOL |
| 40 | *M-16 | DAMAGE CONTROL SCHOOL |
| 41 | *M-16 | FIRE FIGHTING SCHOOL |
| 60 | *L-18 | GUNNERY TRAINER |
| 176 | L-15 | FRESH WATER BOOSTER PUMPHOUSE |
| 200 | L-18 | FLEET TRAINING CENTER BUILDING |
| 201 | M-15 | COBALT STORAGE |
| 1303 | M-16 | DAMAGE CONTROL MOCK-UP |
| 1304 | M-15 | ENGINE ROOM MOCK-UP |
| 1305 | M-15 | CARRIER COMPARTMENT MOCK-UP |
| 1306 | M-15 | FIRE FIGHTING TANK |
| 1307 | M-15 | FIRE FIGHTING TANK |
| 3905-E | N-15 | NO. 2 FUEL OIL TANK 5,000 GAL (UG) |
| 3905-F | N-15 | AVIATION GAS AQUA TANK 10,000 GAL (UG) |

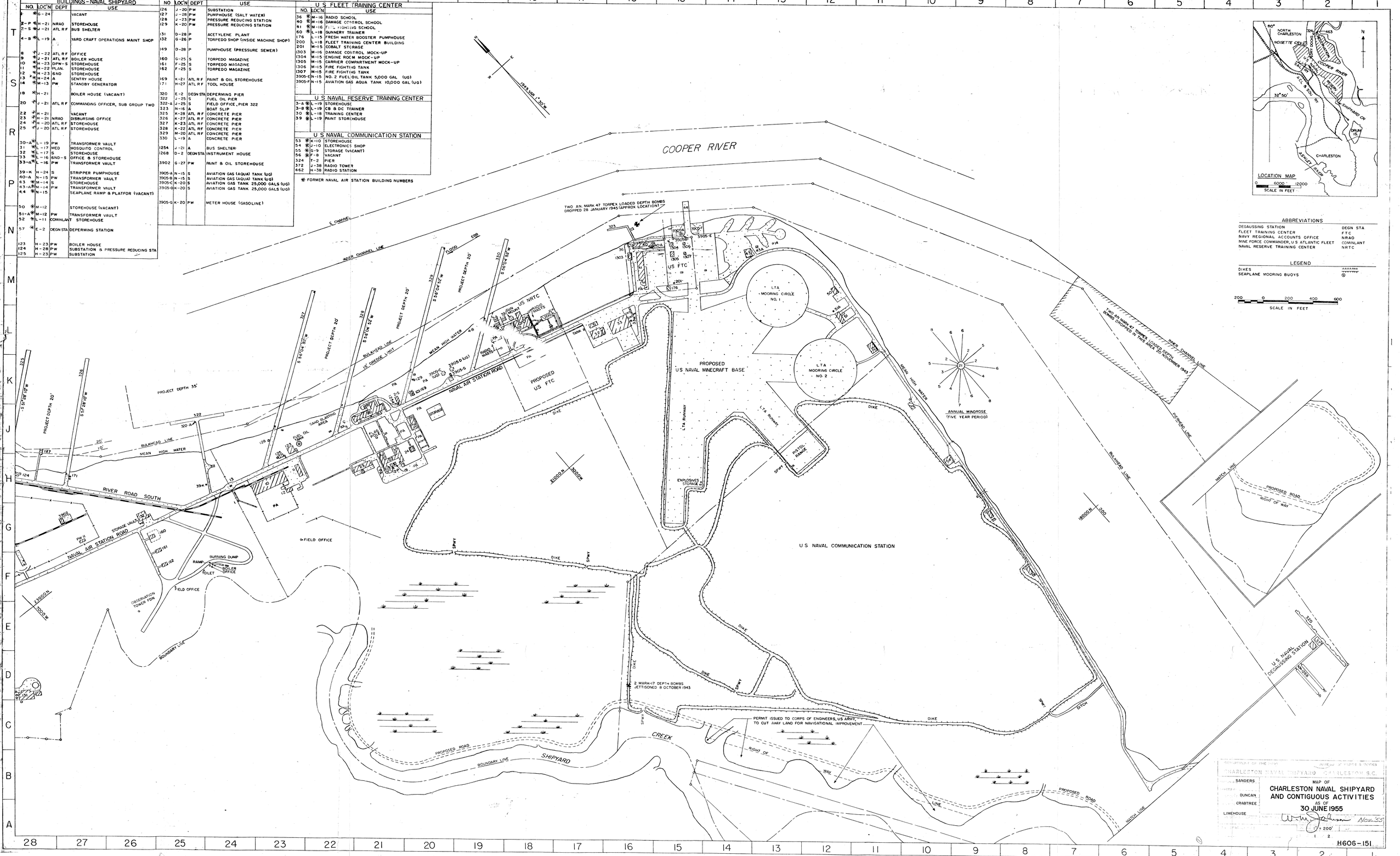
## U S NAVAL RESERVE TRAINING CENTER

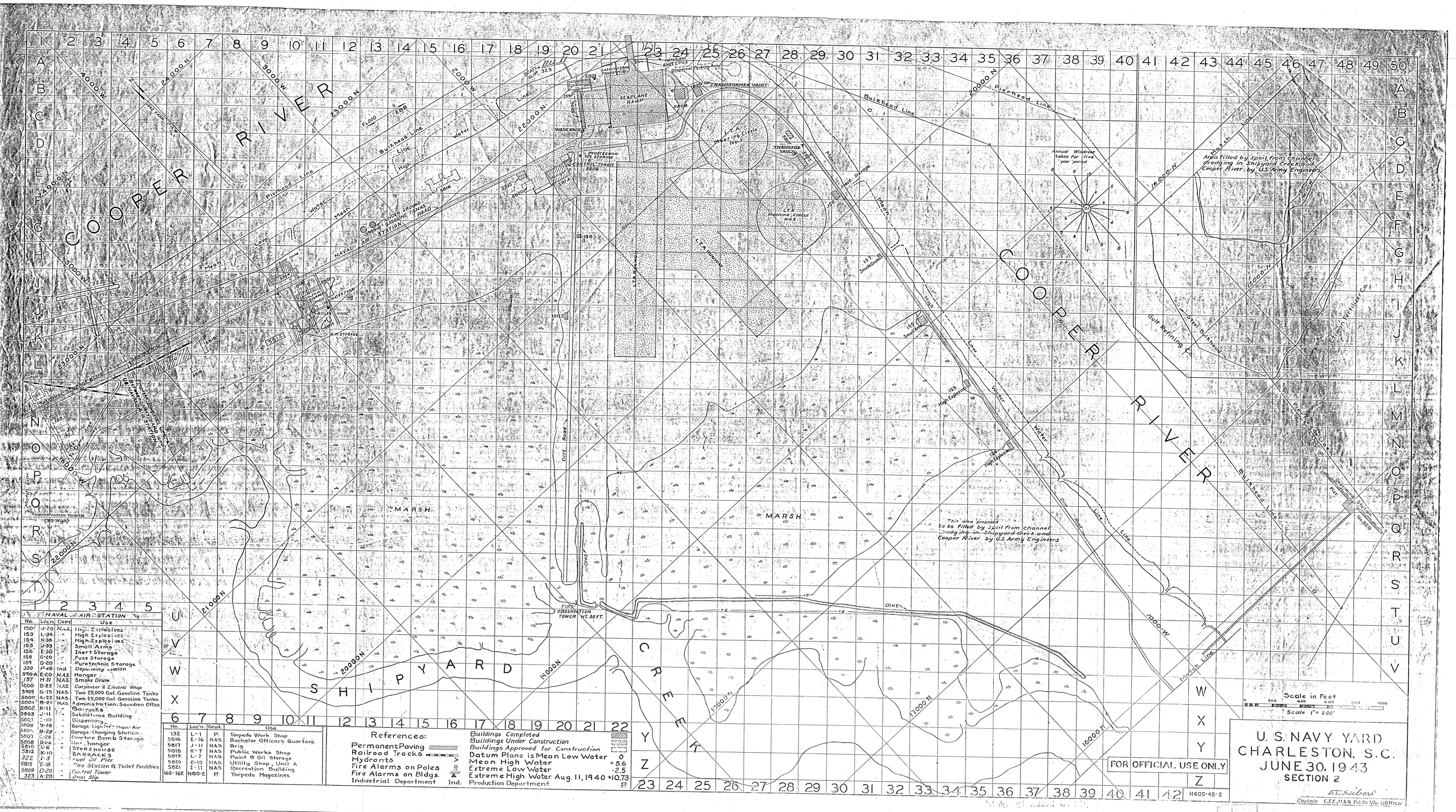
| | | |
|---|---|---|
| 3-A | *L-19 | STOREHOUSE |
| 3-B | *L-19 | CB & DC TRAINER |
| 30 | *L-18 | TRAINING CENTER |
| 39 | *L-19 | PAINT STOREHOUSE |

## U S NAVAL COMMUNICATION STATION

| | | |
|---|---|---|
| 53 | *K-10 | STOREHOUSE |
| 54 | *J-10 | ELECTRONICS SHOP |
| 55 | *G-9 | STORAGE (VACANT) |
| 56 | *F-8 | VACANT |
| 324 | T-2 | PIER |
| 372 | J-38 | RADIO TOWER |
| 462 | H-38 | RADIO STATION |

* FORMER NAVAL AIR STATION BUILDING NUMBERS






| NAVAL AIR STATION | | | |
|---|---|---|---|
| No. | Locn. | Dept. | Use |
| 150 | J-20 | N.A.S. | High Explosives |
| 153 | L-34 | " | High Explosives |
| 154 | N-36 | " | High Explosives |
| 155 | J-33 | " | Small Arms |
| 156 | E-30 | " | Inert Storage |
| 158 | G-20 | " | Fuse Storage |
| 159 | D-20 | " | Pyrotechnic Storage |
| 320 | P-48 | Ind. | Depaiming Station |
| 590-A | E-20 | N.A.S. | Hangar |
| 157 | H-31 | N.A.S. | Smoke Drum |
| 1200 | B-25 | N.A.S. | Carpenter & Electric Shop |
| 3905 | G-15 | NAS | Two 25,000 Gal. Gasoline Tanks |
| 5800 | A-22 | NAS | Two 25,000 Gal. Gasoline Tanks |
| 5801 | B-21 | NAS | Administration, Squadron Office |
| 5802 | K-11 | " | Barracks |
| 5803 | J-11 | " | Subsistence Building |
| 5805 | I-10 | " | Dispensary |
| 5806 | D-28 | " | Garage Lighter-than-Air |
| 5806 | B-20 | " | Garage Charging Station |
| 5807 | C-28 | " | Practice Bomb Storage |
| 5808 | B-24 | " | Non-Hangar |
| 5810 | L-6 | " | STOREHOUSE |
| 5812 | K-10 | " | BARRACKS |
| 322 | I-3 | " | Fuel Oil Pier |
| 5815 | E-18 | " | Fire Station & Toilet Facilities |
| 5809 | D-20 | " | Control Tower |
| 323 | A-20 | " | Boat Slip |

| No. | Locn. | Dept. | Use |
|---|---|---|---|
| 132 | L-1 | P. | Torpedo Work Shop |
| 5816 | E-16 | NAS | Bachelor Officers Quarters |
| 5817 | J-11 | NAS | Brig |
| 5818 | K-7 | NAS | Public Works Shop |
| 5819 | L-7 | NAS | Paint & Oil Storage |
| 5820 | E-19 | NAS | Utility Shop, Unit A |
| 5821 | I-11 | NAS | Recreation Building |
| 160-162 | NBO-2 | P. | Torpedo Magazines |

References:

- Permanent Paving
- Railroad Tracks
- Hydrants
- Fire Alarms on Poles
- Fire Alarms on Bldgs.
- Industrial Department Ind.
- Buildings Completed
- Buildings Under Construction
- Buildings Approved for Construction
- Datum Plane is Mean Low Water 0
- Mean High Water +5.6
- Extreme Low Water -2.5
- Extreme High Water Aug. 11, 1940 +10.73
- Production Department P.

# U. S. NAVY YARD
# CHARLESTON, S.C.
# JUNE 30, 1943
## SECTION 2

E.C. Seibert
Captain C.E.C., U.S.N. Public Works Officer

Make standard width and longer

CHARLESTON, S.C. 6-13

# Appendix I

## Reports From Others

**DEPARTMENT OF THE NAVY**
SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR, USN
PORTSMOUTH, VIRGINIA, ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE, BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

Ser: 430 IN REPLY REFER TO:
JUN 17 1999

MEMORANDUM

From: Director, Supervisor of Shipbuilding, Conversion and Repair, USN, Portsmouth, Va. Environmental Detachment Charleston, SC (SPROTENVDETCHASN)
To: Southern Division Naval Facilities Engineering Command
Reece Batten (Code 1876)

Subj: Area of Concern (AOC) 681 sampling results

Ref: (a) Authorization for Project C99013, dated 28 April 1999

1) The Environmental Detachment Charleston (DET) was tasked to perform investigative sampling per reference (a) at AOC 681. Previous sampling performed on this site by EnSafe showed significantly higher concentrations of semi-volatile organic compounds (SVOCs), specifically benzo(a)pyrene equivalents (BEQs) in the first interval sample location SB009 next to Building 1050. Additional sampling was required to determine if BEQ contamination extended out from sample SB009 in the south, southeast, east, and northeast direction.

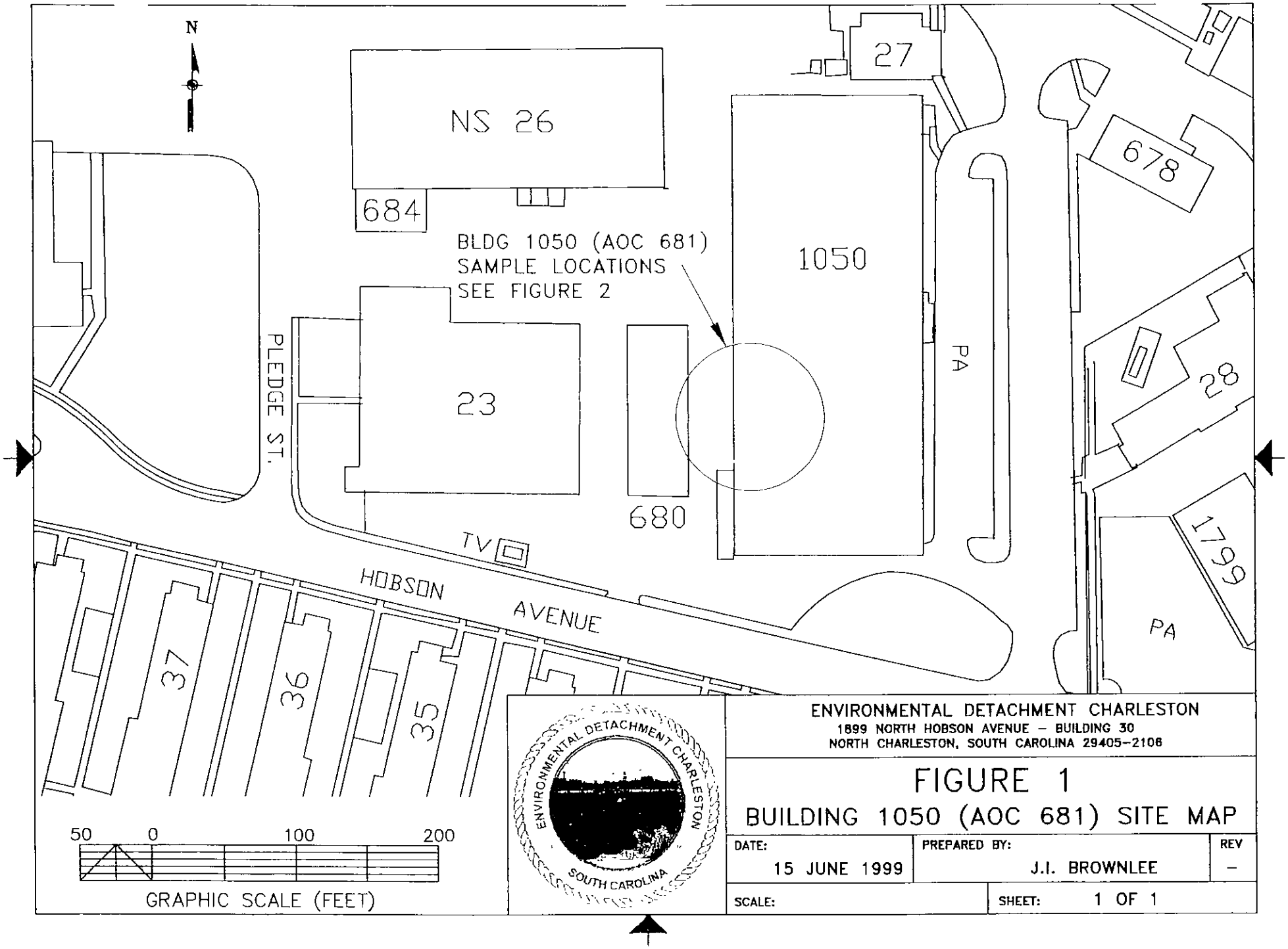
2) The DET collected six samples that covered the area of interest (See sample location map). Asphalt and concrete coring was required to perform the sampling. Two sample locations (Samples 1 & 2) located outside Building 1050 were collected in the first interval after removing approximately 3 inches of asphalt and six inches of Run of Crusher. The four remaining first interval samples (3, 4, 5 & 6) were collected inside of Building 1050 by coring through approximately nine inches of concrete. Table 1 shows the sample results.

3) Inquires should be addressed to Jed Heames, Environmental Detachment, Charleston at (843) 743-6303 ext. 123.

Respectfully,

J. A. Heames

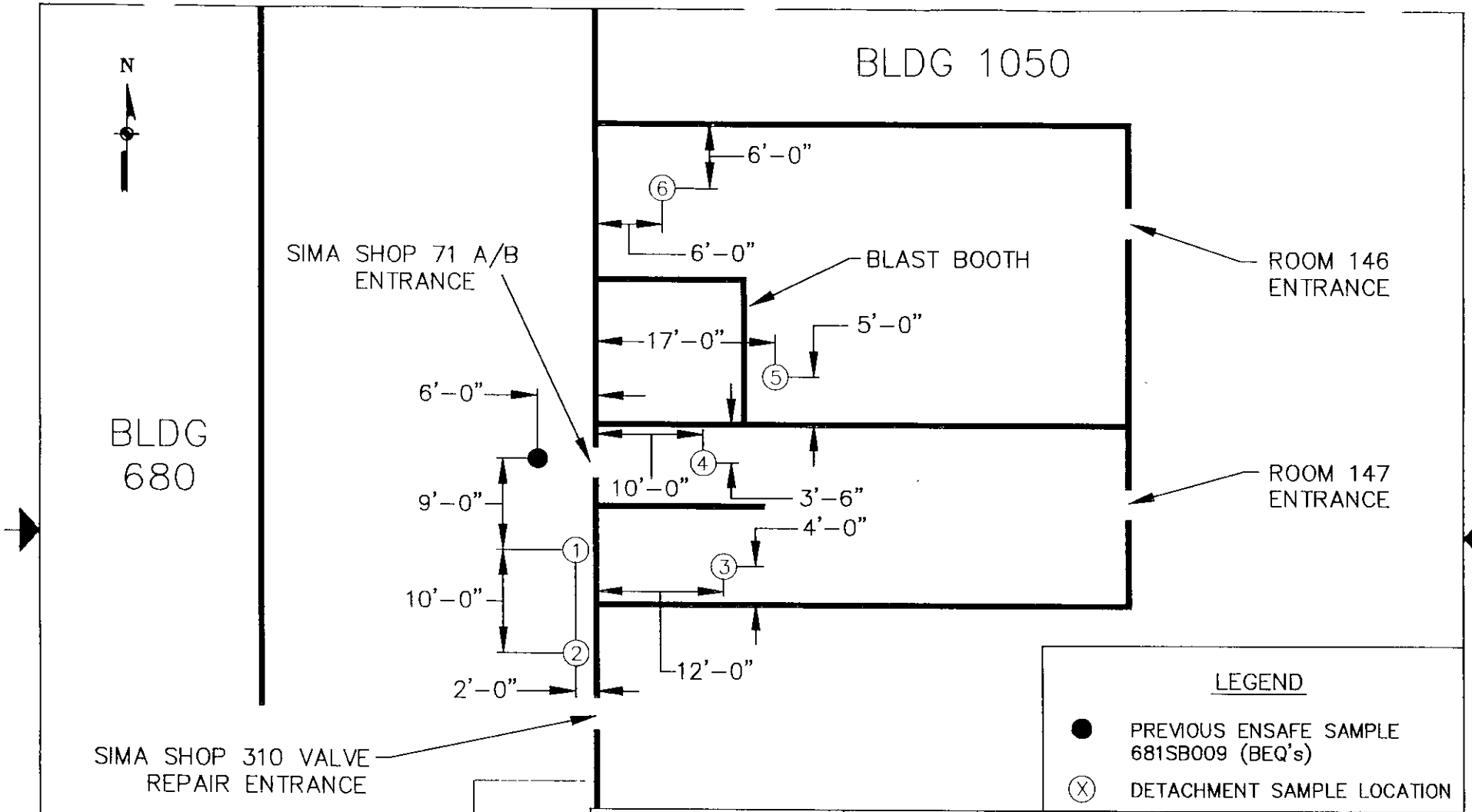
Copy:
EnSafe – Todd Haverkost




ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

# FIGURE 1
## BUILDING 1050 (AOC 681) SITE MAP

| DATE: | PREPARED BY: | REV |
|---|---|---|
| 15 JUNE 1999 | J.I. BROWNLEE | – |
| SCALE: | SHEET: 1 OF 1 | |




ENVIRONMENTAL DETACHMENT CHARLESTON
SOUTH CAROLINA

ENVIRONMENTAL DETACHMENT CHARLESTON
1899 NORTH HOBSON AVENUE – BUILDING 30
NORTH CHARLESTON, SOUTH CAROLINA 29405-2106

FIGURE 2
BUILDING 1050 (AOC 681)
SAMPLE LOCATIONS

| DATE: | PREPARED BY: | REV |
|---|---|---|
| 15 JUNE 1999 | J.I. BROWNLEE | – |
| SCALE: NONE | SHEET: 1 OF 1 | |

# AOC 681
# INVESTIGATIVE SAMPLING
# NAVAL BASE CHARLESTON
# CHARLESTON SC

Prepared for:

**DEPARTMENT OF THE NAVY**
**SOUTHERN DIVISION**
**NAVAL FACILITIES ENGINEERING COMMAND**
**CHARLESTON, SC**

Prepared by:

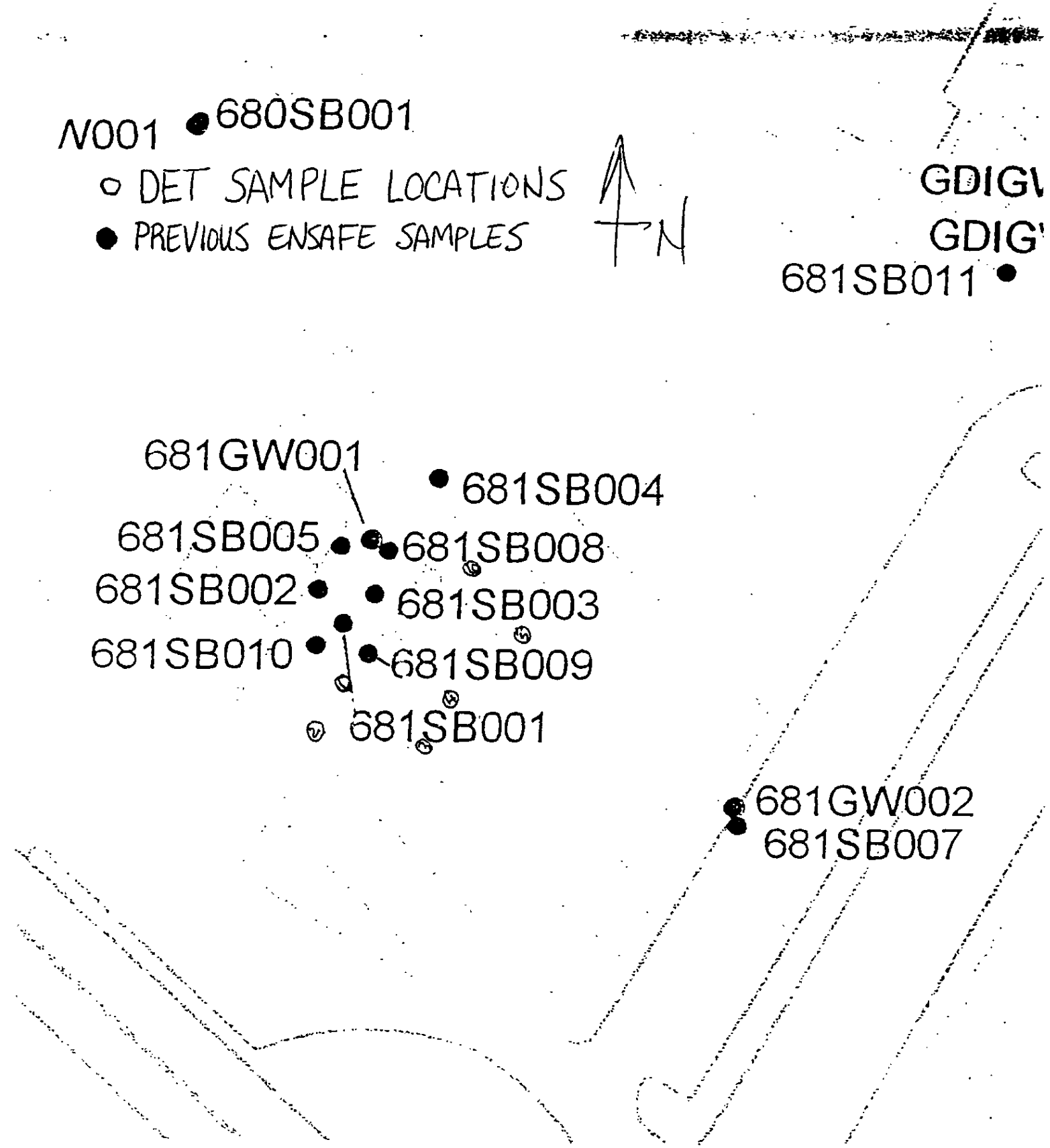
**Supervisor of Shipbuilding, Conversion and Repair,**
**USN, (SUPSHIP) Portsmouth Va.,**
**Environmental Detachment Charleston, S.C.**
**1899 North Hobson Ave.**
**North Charleston, SC 29405-2106**

June 1, 1999

The below table outlines the sample results in units of parts per billion (ppb).
ND – non detects
(j) – j qualifier

**Table 1**

| SVOC | Sample #1 ppb | Sample #2 ppb | Sample #3 ppb | Sample #4 ppb | Sample #5 ppb | Sample #6 ppb |
|---|---|---|---|---|---|---|
| Acenaphthene | ND | ND | ND | ND | ND | ND |
| Acenaphthylene | ND | ND | ND | ND | ND | ND |
| Anthracene | ND | ND | ND | ND | ND | ND |
| Benzo(a)anthracene | 57.2 | ND | 81.6 (j) | ND | ND | ND |
| Benzo(a)pyrene | 57.0 | 17.5 (j) | 78.1 (j) | ND | ND | ND |
| Benzo(b)fluoranthene | 142 | 20.0 (j) | 74.7 (j) | ND | ND | ND |
| Benzo(ghi)perylene | 37.2 | ND | ND | ND | ND | ND |
| Benzo(k)fluoranthene | ND | 17.0 (j) | 99.2 (j) | ND | ND | ND |
| Chrysene | 74.5 | 17.4 (j) | 152 | ND | ND | ND |
| Dibenzo(a,h)anthracene | ND | ND | ND | ND | ND | ND |
| Fluoranthene | 116 | 19.9 (j) | ND | ND | ND | ND |
| Fluorene | ND | ND | ND | ND | ND | ND |
| Indeno(123-c,d)pyrene | 26.5 (j) | ND | ND | ND | ND | ND |
| Naphthalene | ND | ND | ND | ND | ND | ND |
| Phenanthrene | 27.5 (j) | ND | ND | ND | ND | ND |
| Pyrene | 116 | 25.6 (j) | ND | ND | ND | ND |




O Proposed Soil Sample Location

## LEGEND

ONITORING WELL WITH ID NUMBER

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87438 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

Sample ID : 99SPORT0196-01
Lab ID : 9905780-01
Matrix : Soil
Date Collected : 05/21/99
Date Received : 05/21/99
Priority : Routine
Collector : Client

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Extractable Organics** | | | | | | | | | | | |
| *Polynuclear Aromatic Hydrocarbons - 13 items* | | | | | | | | | | | |
| Acenaphthene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | JPA | 05/26/99 | 1405 | 149825 | 1 |
| Acenaphthylene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Anthracene | U | ND | 5.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(a)anthracene | | 57.2 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(a)pyrene | | 57.0 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(b)fluoranthene | | 142 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(ghi)perylene | | 37.2 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(k)fluoranthene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Chrysene | | 74.5 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Dibenzo(a,h)anthracene | U | ND | 26.6 | 33.3 | ug/kg | 1.0 | | | | | |
| Fluoranthene | | 116 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Fluorene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Indeno(1,2,3-c,d)pyrene | J | 26.5 | 23.2 | 33.3 | ug/kg | 1.0 | | | | | |
| Naphthalene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Phenanthrene | J | 27.5 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Pyrene | | 116 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |

The following prep procedures were performed:
GC/MS Base/Neutral Compounds RDH 05/24/99 0900 149825 2

| urrogate Recovery | Test | Percent% | Acceptable Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | M610-5972 | 59.2 | (44.7 - 110.) |
| Nitrobenzene-d5 | M610-5972 | 55.4 | (42.4 - 107.) |
| p-Terphenyl-d14 | M610-5972 | 75.4 | (45.5 - 104.) |

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | RPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

Sample ID : 99SPORT0196-01

| Surrogate Recovery | Test | Percent% | Acceptable Limits |
|---|---|---|---|

| M = Method | Method-Description |
|---|---|
| M 1 | EPA 8270 |
| M 2 | EPA 3550 |

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

| | |
|---|---|
| Sample ID | : 99SPORT0196-02 |
| Lab ID | : 9905780-02 |
| Matrix | : Soil |
| Date Collected | : 05/21/99 |
| Date Received | : 05/21/99 |
| Priority | : Routine |
| Collector | : Client |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Extractable Organics** | | | | | | | | | | | |
| *Polynuclear Aromatic Hydrocarbons - 18 items* | | | | | | | | | | | |
| Acenaphthene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | JPA | 05/26/99 | 1434 | 149825 | 1 |
| Acenaphthylene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Anthracene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(a)anthracene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(a)pyrene | J | 17.5 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(b)fluoranthene | J | 20.0 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(ghi)perylene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(k)fluoranthene | J | 17.0 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Chrysene | J | 17.4 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Dibenzo(a,h)anthracene | U | ND | 26.6 | 33.3 | ug/kg | 1.0 | | | | | |
| Fluoranthene | J | 19.9 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Fluorene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Indeno(1,2,3-c,d)pyrene | U | ND | 23.2 | 33.3 | ug/kg | 1.0 | | | | | |
| Naphthalene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Phenanthrene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Pyrene | J | 25.6 | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |

**The following prep procedures were performed:**

GC/MS Base/Neutral Compounds RDH 05/24/99 0900 149825 2

| Surrogate Recovery | Test | Percent % | Acceptable Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | M610-5972 | 64.8 | (44.7 - 110.) |
| Nitrobenzene-d5 | M610-5972 | 59.3 | (42.4 - 107.) |
| p-Terphenyl-d14 | M610-5972 | 85.7 | (45.5 - 104.) |

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | EFI |
|---|---|---|
| FL | E87156/87394 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10982 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date. May 28, 1999 Page 2 of 2

Sample ID : 99SPORT0196-02

| Surrogate Recovery | Test | Percent % | Acceptable Limits |
|---|---|---|---|

| M = Method | Method-Description |
|---|---|
| M 1 | EPA 8270 |
| M 2 | EPA 3550 |

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87254 | E87472/87459 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10583 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

| | |
|---|---|
| Sample ID | : 99SPORT0196-03 |
| Lab ID | : 9905780-03 |
| Matrix | : Soil |
| Date Collected | : 05/21/99 |
| Date Received | : 05/21/99 |
| Priority | : Routine |
| Collector | : Client |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Extractable Organics** | | | | | | | | | | | |
| *Polynuclear Aromatic Hydrocarbons - 18 items* | | | | | | | | | | | |
| Acenaphthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | JPA | 05/25/99 | 2110 | 149825 | 1 |
| Acenaphthylene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Anthracene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(a)anthracene | J | 81.6 | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(a)pyrene | J | 78.1 | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(b)fluoranthene | J | 74.7 | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(ghi)perylene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(k)fluoranthene | J | 99.2 | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Chrysene | | 152 | 26.6 | 33.3 | ug/kg | 4.0 | | | | | |
| Dibenzo(a,h)anthracene | U | ND | 106 | 133 | ug/kg | 4.0 | | | | | |
| Fluoranthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Fluorene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Indeno(1,2,3-c,d)pyrene | U | ND | 93.0 | 133 | ug/kg | 4.0 | | | | | |
| Naphthalene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Phenanthrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Pyrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |

**The following prep procedures were performed:**

GC/MS Base/Neutral Compounds RDH 05/24/99 0900 149825 2

| Surrogate Recovery | Test | Percent% | Acceptable Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | M610-5972 | 64.3 | (44.7 - 110.) |
| Nitrobenzene-d5 | M610-5972 | 51.5 | (42.4 - 107.) |
| p-Terphenyl-d14 | M610-5972 | 77.4 | (45.5 - 104.) |

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

Sample ID : 99SPORT0196-03

| Surrogate Recovery | Test | Percent% | Acceptable Limits |
|---|---|---|---|

| M = Method | Method-Description |
|---|---|
| M 1 | EPA 8270 |
| M 2 | EPA 3550 |

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

| | |
|---|---|
| Sample ID | : 99SPORT0196-04 |
| Lab ID | : 9905780-04 |
| Matrix | : Soil |
| Date Collected | : 05/21/99 |
| Date Received | : 05/21/99 |
| Priority | : Routine |
| Collector | : Client |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Extractable Organics** | | | | | | | | | | | |
| *Polynuclear Aromatic Hydrocarbons - 18 items* | | | | | | | | | | | |
| Acenaphthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | JPA | 05/25/99 | 2138 | 149825 | 1 |
| Acenaphthylene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Anthracene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(a)anthracene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(a)pyrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(b)fluoranthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(ghi)perylene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(k)fluoranthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Chrysene | U | ND | 26.6 | 33.3 | ug/kg | 4.0 | | | | | |
| Dibenzo(a,h)anthracene | U | ND | 106 | 133 | ug/kg | 4.0 | | | | | |
| Fluoranthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Fluorene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Indeno(1,2,3-c,d)pyrene | U | ND | 93.0 | 133 | ug/kg | 4.0 | | | | | |
| Naphthalene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Phenanthrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Pyrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |

The following prep procedures were performed:
GC/MS Base/Neutral Compounds RDH 05/24/99 0900 149825 2

| Surrogate Recovery | Test | Percent% | Acceptable Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | M610-5972 | 59.2 | (44.7 - 110.) |
| Nitrobenzene-d5 | M610-5972 | 0.00** | (42.4 - 107.) |
| p-Terphenyl-d14 | M610-5972 | 85.9 | (45.5 - 104.) |

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

Sample ID : 99SPORT0196-04

| Surrogate Recovery | Test | Percent% | Acceptable Limits |
|---|---|---|---|

| M = Method | Method-Description |
|---|---|
| M 1 | EPA 8270 |
| M 2 | EPA 3550 |

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

E Hanson

Reviewed By

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87651 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

| | |
|---|---|
| Sample ID | : 99SPORT0196-05 |
| Lab ID | : 9905780-05 |
| Matrix | : Soil |
| Date Collected | : 05/21/99 |
| Date Received | 05/21/99 |
| Priority | : Routine |
| Collector | : Client |

| Parameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Extractable Organics** | | | | | | | | | | | |
| *Polynuclear Aromatic Hydrocarbons - 18 items* | | | | | | | | | | | |
| Acenaphthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | JPA | 05/26/99 | 0012 | 149825 | 1 |
| Acenaphthylene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Anthracene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(a)anthracene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(a)pyrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(b)fluoranthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(ghi)perylene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Benzo(k)fluoranthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Chrysene | U | ND | 26.6 | 33.3 | ug/kg | 4.0 | | | | | |
| Dibenzo(a,h)anthracene | U | ND | 106 | 133 | ug/kg | 4.0 | | | | | |
| Fluoranthene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Fluorene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Indeno(1,2,3-c,d)pyrene | U | ND | 93.0 | 133 | ug/kg | 4.0 | | | | | |
| Naphthalene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Phenanthrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |
| Pyrene | U | ND | 26.6 | 133 | ug/kg | 4.0 | | | | | |

**The following prep procedures were performed:**

GC/MS Base/Neutral Compounds RDH 05/24/99 0900 149825 2

| Surrogate Recovery | Test | Percent% | Acceptable Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | M610-5972 | 44.2* | (44.7 - 110.) |
| Nitrobenzene-d5 | M610-5972 | 0.00* | (42.4 - 107.) |
| p-Terphenyl-d14 | M610-5972 | 63.2 | (45.5 - 104.) |

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87204 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

Sample ID : 99SPORT0196-05

| Surrogate Recovery | Test | Percent % | Acceptable Limits |
|---|---|---|---|

| M = Method | Method-Description |
|---|---|
| M 1 | EPA 8270 |
| 1 2 | EPA 3550 |

Notes:
The qualifiers in this report are defined as follows.
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | [illegible] |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106

Contact: Mr. Bill Hiers

Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

Sample ID : 99SPORT0196-06
Lab ID : 9905780-06
Matrix : Soil
Date Collected : 05/21/99
Date Received : 05/21/99
Priority : Routine
Collector : Client

| rameter | Qualifier | Result | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| xtractable Organics | | | | | | | | | | | |
| *Polynuclear Aromatic Hydrocarbons - 18 items* | | | | | | | | | | | |
| Acenaphthene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | JPA | 05/26/99 | 1502 | 149825 | 1 |
| Acenaphthylene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Anthracene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(a)anthracene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(a)pyrene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(b)fluoranthene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(ghi)perylene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Benzo(k)fluoranthene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Chrysene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Dibenzo(a,h)anthracene | U | ND | 26.6 | 33.3 | ug/kg | 1.0 | | | | | |
| Fluoranthene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Fluorene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Indeno(1,2,3-c,d)pyrene | U | ND | 23.2 | 33.3 | ug/kg | 1.0 | | | | | |
| Naphthalene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Phenanthrene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |
| Pyrene | U | ND | 6.64 | 33.3 | ug/kg | 1.0 | | | | | |

**The following prep procedures were performed:**

GC/MS Base/Neutral Compounds RDH 05/24/99 0900 149825 2

| rogate Recovery | Test | Percent % | Acceptable Limits |
|---|---|---|---|
| Fluorobiphenyl | M610-5972 | 57.5 | (44.7 - 110.) |
| Nitrobenzene-d5 | M610-5972 | 54.4 | (42.4 - 107.) |
| p-Terphenyl-d14 | M610-5972 | 77.5 | (45.5 - 104.) |

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87473/87438 |
| NC | 233 | |
| NJ | 79002 | 79002 |
| SC | 10120 | 10582 |
| TN | 02934 | 02934 |

Client: Supervisor of Ship Building & Conversion
SUPSHIP-Portsmouth Detachment-Env.
1899 North Hobson Ave.
North Charleston, South Carolina 29405-2106
Contact: Mr. Bill Hiers
Project Description: SUPSHIP-Portsmouth Detachment

cc: NPWC00197 Report Date: May 28, 1999 

Sample ID : 99SPORT0196-06

| Surrogate Recovery | Test | Percent % | Acceptable Limits |
|---|---|---|---|

| M = Method | Method-Description |
|---|---|
| M 1 | EPA 8270 |
| M 2 | EPA 3550 |

Notes:
The qualifiers in this report are defined as follows:
ND indicates that the analyte was not detected at a concentration greater than the detection limit.
J indicates presence of analyte at a concentration less than the reporting limit (RL) and greater than the detection limit (DL).
U indicates that the analyte was not detected at a concentration greater than the detection limit.
* indicates that a quality control analyte recovery is outside of specified acceptance criteria.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Elise Hanson at 843-556-8171.

Reviewed By

General Engineering L[illegible]es, Inc.
2040 Savage Road
Charleston, South Carolina [illegible]407
P.O. Box 30712
Charleston, South Carolina 29417
(803) 556-8171

# CHAIN OF CUSTODY RECORD



Client Name/Facility Name: SPORT ENV DET CHASN

Collected by/Company: SPORT ENV DET CHASN

SAMPLE ANALYSIS REQUIRED (x) - use remarks area to specify specific compounds or methods

Use F or P in the boxes to indicate whether sample was filtered and/or preserved

| SAMPLE ID | DATE | TIME | WELL | SOIL | COMP | GRAB | # OF CONTAINERS | pH, conductivity | TOC/DOC | TOX | Chloride, Fluoride, Sulfide | Nitrite/Nitrate | VOC - Specify Method required | METALS - specify | Pesticide | Herbicide | Total Phenol | Acid Extractables | B/N Extractables | PCB's | Cyanide | Coliform - specify type | PAH | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 99 SPORT0196-01 | 5/21/99 | 1030 | | X | | X | — | | | | | | | | | | | | | | | | X | AOC 681 |
| 99SPORT0196-02 | 5/21/99 | 1035 | | X | | X | — | | | | | | | | | | | | | | | | X | AOC 681 |
| 99SPORT0196-03 | 5/21/99 | 1040 | | X | | X | — | | | | | | | | | | | | | | | | X | AOC 681 |
| 99SPORT0196-04 | 5/21/99 | 1045 | | X | | X | 1 | | | | | | | | | | | | | | | | X | AOC 681 |
| 99SPORT0196-05 | 5/21/99 | 1055 | | X | | X | 1 | | | | | | | | | | | | | | | | X | AOC 681 |
| 99SPORT0196-06 | 5/21/99 | 1105 | | X | | X | 1 | | | | | | | | | | | | | | | | X | AOC 681 |

| Relinquished by: | Date: | Time: | Received by: | Relinquished by: | Date: | Time: | Received by: |
|---|---|---|---|---|---|---|---|
| [signature] | 5/21/99 | 1240 | W.R. Hiers, Jr. | | | | |

| Relinquished by: | Date: | Time: | Received by lab by: | Date: | Time: | Remarks: |
|---|---|---|---|---|---|---|
| W.R. Hiers, Jr. | 5/21/99 | 1536 | [signature] | 5/21/99 | 1536 | |

White = sample collector Yellow = file Pink = with report