N90845.AR.001281
NWIRP BETHPAGE
5090.3a

LETTER WORK PLAN ADDENDUM FOR PRE DESIGN FIELD INVESTIGATION FOR OFFSITE GROUNDWATER INVESTIGATION AT OPERABLE UNIT 2 (OU2) NWIRP BETHPAGE NY

3/30/2012

TETRA TECH

MARCH 2012 LETTER WORK PLAN ADDENDUM
TT-102D/TT-102D2 (VPB-133)
PRE-DESIGN FIELD INVESTIGATION
OU 2 OFF-SITE GROUNDWATER INVESTIGATION
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP)
BETHPAGE, NEW YORK

This Letter Work Plan Addendum has been prepared by Tetra Tech, Inc. (Tetra Tech) for the Naval Facilities Engineering Command Mid-Atlantic under Contract Task Order (CTO) WE62 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) contract number N62470-08-D-1001. This Work Plan is a supplement to the 2010 Letter Work Plan, Pre-Design Field Investigation, OU 2 Off-Site Groundwater Investigation, NWIRP Bethpage, New York (Tetra Tech NUS, 2010) and VPB-133 Work Plan Addendum – December 2011 (Tetra Tech NUS, 2011). This groundwater investigation is being conducted off site of the Naval Weapons Industrial Reserve Plant (NWIRP) Bethpage, Long Island, New York (Figure 1). Regional groundwater flow is south southeast, but is locally affected by the operation of recharge basins and public water supply wells.

This work plan finalizes monitoring well construction requirements for proposed monitoring wells TT-102D and TT-102D2. These wells are to be installed in the area of vertical profile boring (VPB)-133 (Figure 2) and will be used to assess groundwater conditions north of Massapequa Water District supply wells MWD-6442 and MWD-6443. The monitoring well screen intervals were determined from soil boring lithology and groundwater analytical data collected during the installation of VPB-133 and well screen intervals of Massapequa Water District supply wells MWD-6442 and MWD-6443. A cross section illustrating the anticipated screen intervals of the proposed monitoring wells is presented in Figures 3. Table 1 provides the proposed wells and screen intervals. The monitoring wells will be installed using mud rotary drilling methods and be constructed of 4-inch diameter, schedule 80 National Sanitation Foundation (NSF)-grade Polyvinyl Chloride (PVC) well casing and screen. Additional details providing the requirements for monitoring well drilling, monitoring development, sampling pump installation, investigation derived waste (IDW) handing, and reporting are provided in the VPB-133 Work Plan Addendum – December 2011.

REFERENCES

Tetra Tech NUS, Inc. 2010. 2010 Letter Work Plan, Pre-Design Field Investigation, OU 2 Off-Site Groundwater Investigation, NWIRP Bethpage, New York. September.

Tetra Tech NUS, Inc., 2011. VPB-133 Work Plan Addendum – December 2011, OU-2 Off-Site Groundwater Investigation, NWIRP Bethpage, New York. December.

TABLE

TABLE 1
MONITORING WELLS TT-102D AND 102D2
CONSTRUCTION DETAILS
OU 2 OFF-SITE GROUNDWATER INVESTIGATION
NWIRP BETHPAGE, NEW YORK

Monitoring Well Designation	Screend Interval (ft bgs) [1]	Total Well Depth (ft bgs) [1]	Height Gravel Pack (ft bgs) [2]	Height Fine Sand (ft bgs) [2]	Purpose
TT-102D	560 to 600	605	535	520	Monitor groundwater north of Massapequa Water District Supply Well N-06442 (531 to 618 ft bgs)
TT-102D2	740 to 770	775	715	700	Monitor groundwater north of Massapequa Water District Supply Well N-06443 (770 to 850 ft bgs), proposed screen depth correspondance to a gravel zone.

bgs - below ground surface

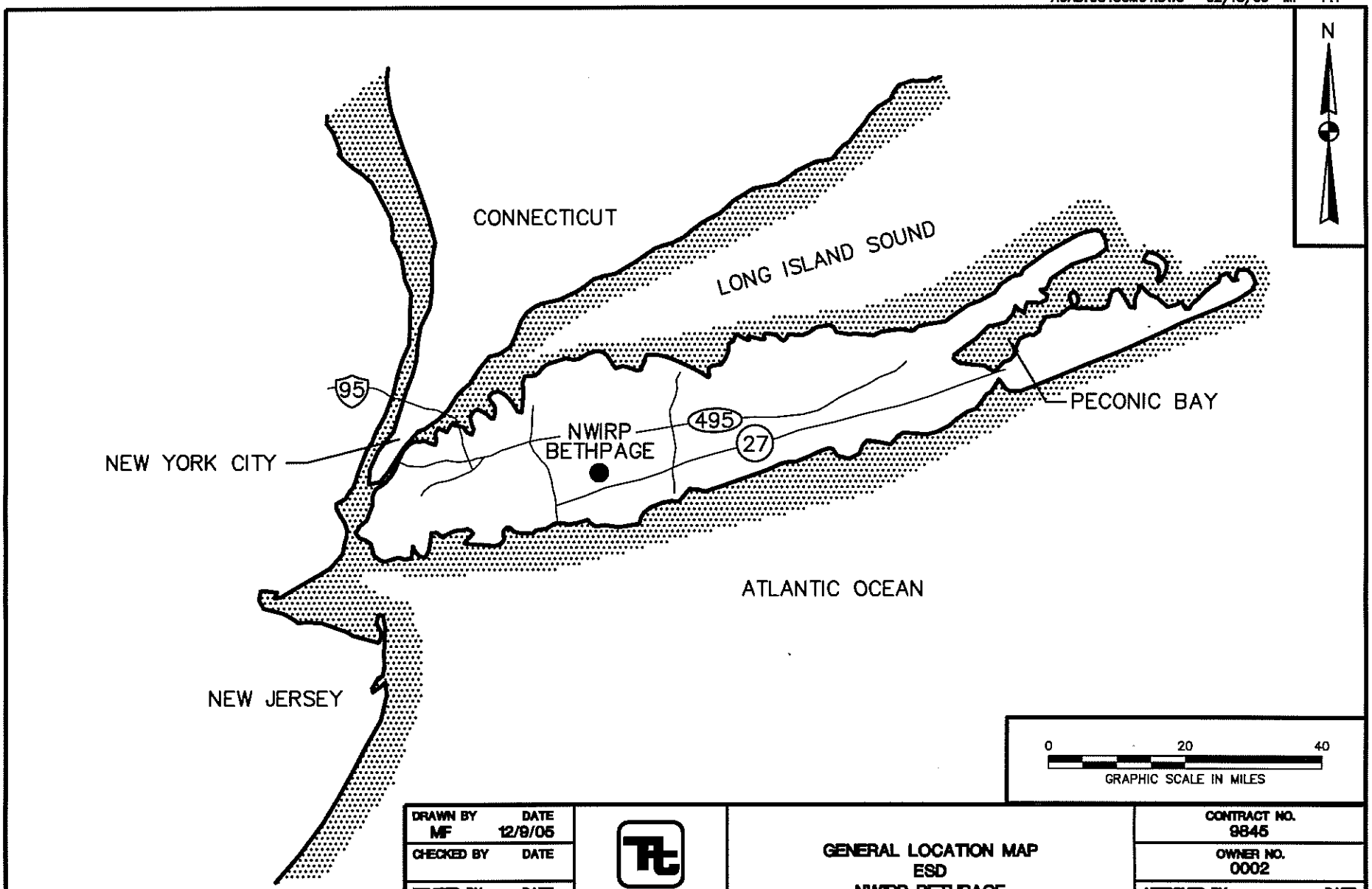
ft - feet

[1] Based on the local USGS quad sheet, ground surface is assumed to be 30 feet above mean sea level. Depth presented are based on lithology and groundwater data collected from vertical profile boring (VPB) - 133 and screen intervals from Massapequa Water District water supply wells MWD-6442 and MWD-6443.

[2] Height of gravel pack and fine sand layer are determined by total well depth. Details are provided in Section 2.2 of the VPB-133 Work Plan Addendum – December 2011, OU-2 Off-Site Groundwater Investigation, NWIRP Bethpage, New York.

FIGURES

ACAD: 9845CM04.DWG 02/15/06 MF PIT



DRAWN BY MF DATE 12/9/05	Tetra Tech NUS, Inc.	GENERAL LOCATION MAP ESD NWIRP BETHPAGE BETHPAGE, NEW YORK	CONTRACT NO. 9845
CHECKED BY DATE			OWNER NO. 0002
REVISED BY DATE			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 REV. 0

FORM CADD NO. TTNUS-AH.DWG - REV 1 -9/10/98

P: GIS files/Bethpage/MapDocs/BP_OU2_2012 BP_vpb133_03232012.mxd created by MMC 03232012

N

NORTHROP GRUMMAN

NWIRP BETHPAGE

S Broadway

State Hwy 135

Hempstead Tpke

Southern State Pkwy

State Hwy 135

Hicksville Rd

VPB-133
TT-102D/TT-102D2

HWD-10208 HWD-8779
BWD-8768
BWD-8767
BWD-9591
VPB-27 VPB-19A
VPB-21
FW-02 FW-01
FW-03
MW-201-1
MW-200-1
MW-202-1
MW-203-1
HN-24I HN-24S
HN-29D
HN-29IR
FW-01
FW-02
HN-42I HN-42S
VPB-106
MW-102-1
MW-100-1
MW-100-2
MW-100-3
VPB-107
VPB-105
VPB-108
MW-107-1
VPB-102
MW-108-1
GM-13D
GM-16SR
GM-16I
GP-3 WELL 3
N-10597
HN-40I
HN-40S
VPB-100
VPB-115
MW-109-3
MW-1GF
GM-32S
GM-17D GM-17I
GM-17SR
GM-17SR
VPB-109R
VPB-109
VPB-101
GP-1 WELL 1
GM-19S
GM-19I
MW-5
MW-6
MW-4
MW-2GF
GM-18S
GM-18I
GM-18D
VPB-39
MW-39DA
MW-39DB
MW-2
GM-15S,I,D, D2
VPB-113
VPB-110R
MW-111-4
VPB-73
GM-73
MW-3R
GM-33D2
N-10631
Well 17
GM-73D2
MW-3
Well 19
VPB-110
VPB-111
GM-74D,D2,I
GM-21S
Well 18
GM-20I
GM-20D
GM-21I
GM-21D
N-10600
GM-78I
GM-78S
GM-79D
GM-79I
VPB-103
N-10633
N-10628
VPB-114
VPB-49C
N-9921
GM-75D2
N-10624
N-10627
N-10634
VPB-104
GM-37D
GM-37D2
GM-70D2
GM-71D2
VPB-112
VPB-121
GM-35D2
MW-116-5
VPB-116
VPB-42
GM-36D
GM-36D2
N-10821
VPB-117
MW-117-5
BWD-6916
BWD-6915
VPB-51
VPB-123
GM-34D2
GM-34D
GM-38D2
BWD-8941
GM-38D
VPB-48
GM38-RW03
BWD-3876
VPB-38
GM38-RW01
VPB-118
MW-118-5
VPB-47
VPB-40
BWD-8004
VPB-119
VPB-77
LWD-7076
VPB-122
VPB-129
VPB-76
TT-101D
TT-101D1
TT-101D2
BPOW 1-4
BPOW 1-5
BPOW 1-6
VPB-127
VPB-43
SFWD-7377
BPOW 1-1
BPOW 1-2
BPOW 1-3
VPB-45
SFWD-5148
SFWD-4043
VPB-46
BPOW 3-3
BPOW 3-4
VPB-44
VPB-128
BPOW 4-1
BPOW 4-2
LWD-5303
VPB-50
VPB-130
BPOW 2-3
BPOW 2-1
BPOW 2-2
VPB-131
VPB-126
SFWD-6150
VPB-125
BPOW 3-1
BPOW 3-2
BPOW 5-1
BPOW 5-2
VPB-132
ANY-8480 ANY-9338
VPB-124
SFWD-8665 SFWD-6866
SFWD-6148
VPB-133
TT-102D
TT-102D2
MWD-6442
MWD-6443
I'
ANY-9910
ANY-8837
ANY-5767

0 1,000 2,000 4,000 6,000 Feet

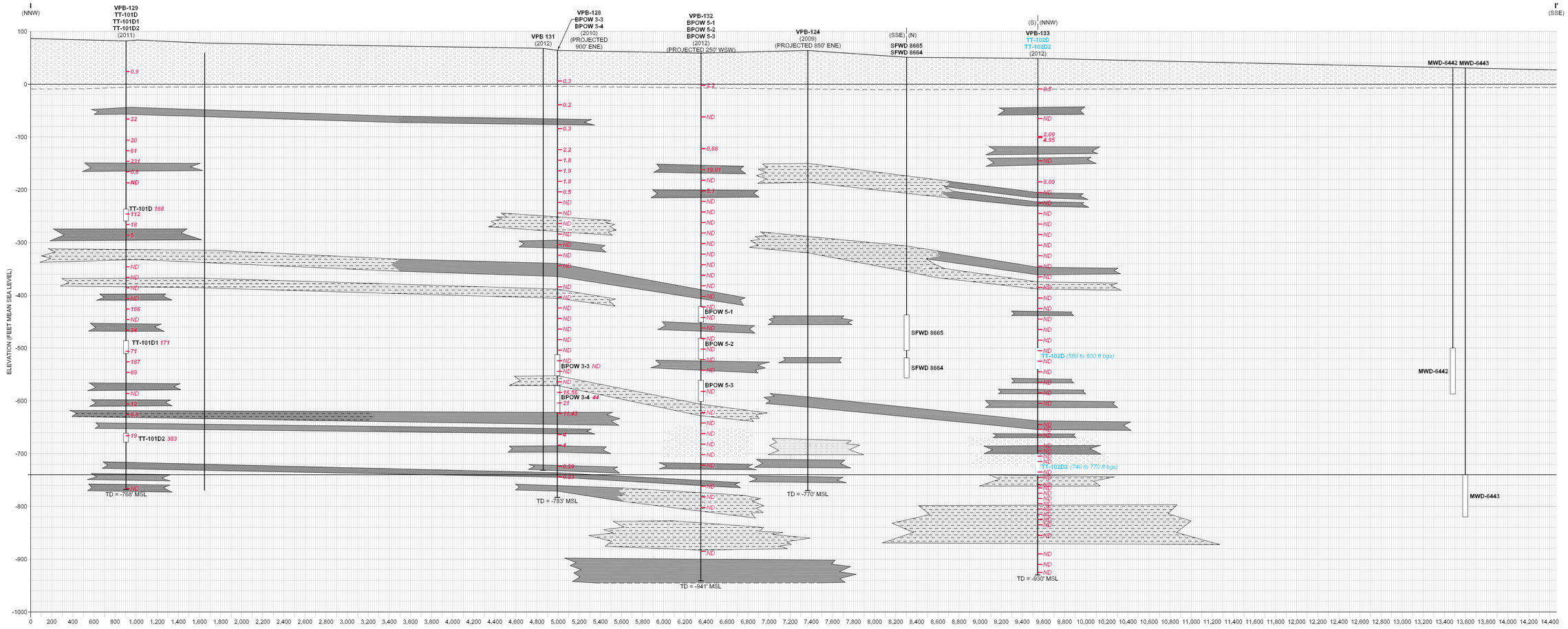
Legend

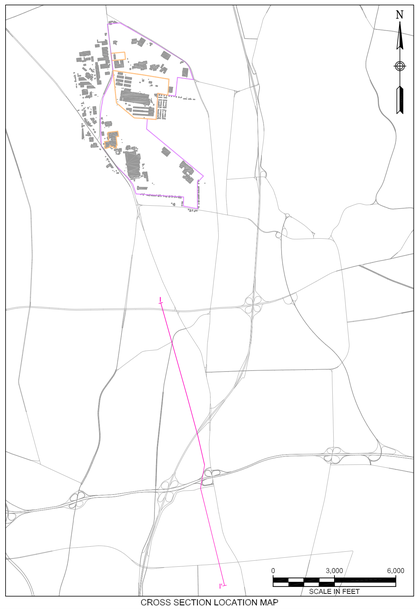
- Proposed Monitoring Well
- Monitoring Well
- Water Supply Well
- Vertical Profile Boring

TETRA TECH

VPB-133/TT-102D/TT-102D2
CROSS SECTION AND LOCATION MAP
BETHPAGE GROUNDWATER PLUME
NEW YORK

FILE	112G00622	SCALE	AS NOTED
FIGURE NO.	2	REV	DATE 3/23/12





CROSS SECTION LOCATION MAP

LEGEND

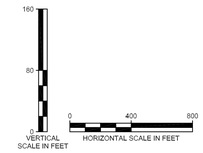
- SAND AND GRAVEL
- F-M SAND WITH VARYING AMOUNTS OF SILT, CLAY, AND C. SAND

CONFINING UNITS

- INTERBEDDED CLAY AND SAND
- SANDY CLAY
- CLAY

TT-101D	MONITORING WELL ID
(2000)	INSTALLATION YEAR
(PROJECTED 300' WSW)	PROJECTION
	GROUND SURFACE (APPROXIMATED TO BE FLAT)
	CONFINING UNIT (DASHED WHERE INFERRED)
TT-101D	MONITORING WELL SCREEN
181.5	VERTICAL PROFILE BORING VOC RESULTS IN µg/L
ND	NOT DETECTED
TD = -730' MSL	TOTAL DEPTH FEET MEAN SEA LEVEL
µg/L	MIGROGRAMS PER LITER

TT-102D2	PROPOSED MONITORING WELL ID
BPOW 2-3	PROPOSED MONITORING WELL SCREEN
(710 to 740 ft bgs)	PROPOSED MONITORING WELL DEPTH
ft bgs	FEET BELOW GROUND SURFACE



TETRA TECH

CROSS SECTION I – I'
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

FILE 112G01041GS47	SCALE AS NOTED
FIGURE NUMBER FIGURE 3	REV 0 / DATE 04/02/12