

APPENDIX J

FIELD NOTES

**BROADWAY-PANTANO WQARF SITE, LANDFILL OPERABLE UNIT
TUCSON, ARIZONA**

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2/19/13 - 3/4/13



Rite in the Rain.

ALL-WEATHER

FIELD

No 353N

233005 2.2

BP LOU RI

Soil Gas Sampling

Book 1 of 3

2/19/13 PRUD-6 MB

0940 Purging @ 1 cfm w/ ~~0.2~~ 2.5 in H₂O vacuum.

0944 Collected landfill gas readings every 1 cf of air removed from probe. Serial #A8578 Lab # 1213

0945* turned off pump, open Summa canister (14), initial vacuum in Summa -27 in Hg, 4 cf ^{Purged}

0950 closed valve between hose connecting well and summa, and air sampling manifold.

0950 Vacuum in summa 0 in Hg, closed valve on summa. Disconnected dedicated hose and stored in zip lock bag.

0951 Breaking down sampling system PID reading 0.0 ppm (Mini RAE 3000, Serial #592-908766 #3941)

Landfill Gas Meter - GEM500 by LandTec Rental #913

* While filling Summa canister a rag w/ isopropanol ^{MB} was on it, was placed next to hose connection as

2/19/13 PRUD-5 MB

a leak test

1010 Mapped to PRUD-5

1012 Setting up Sampling System Crew is wearing Nitrile glove while setting up dedicated hoses and when collecting sample in Summa canister

1020 PRUD-5 has the ~~ham~~ number 15 written on the valve, depth of probe

1025 Set up Sampling System same as PRUD-6, see drawing on page 4

1030 Using Summa Serial #A8602 Lab # 1211

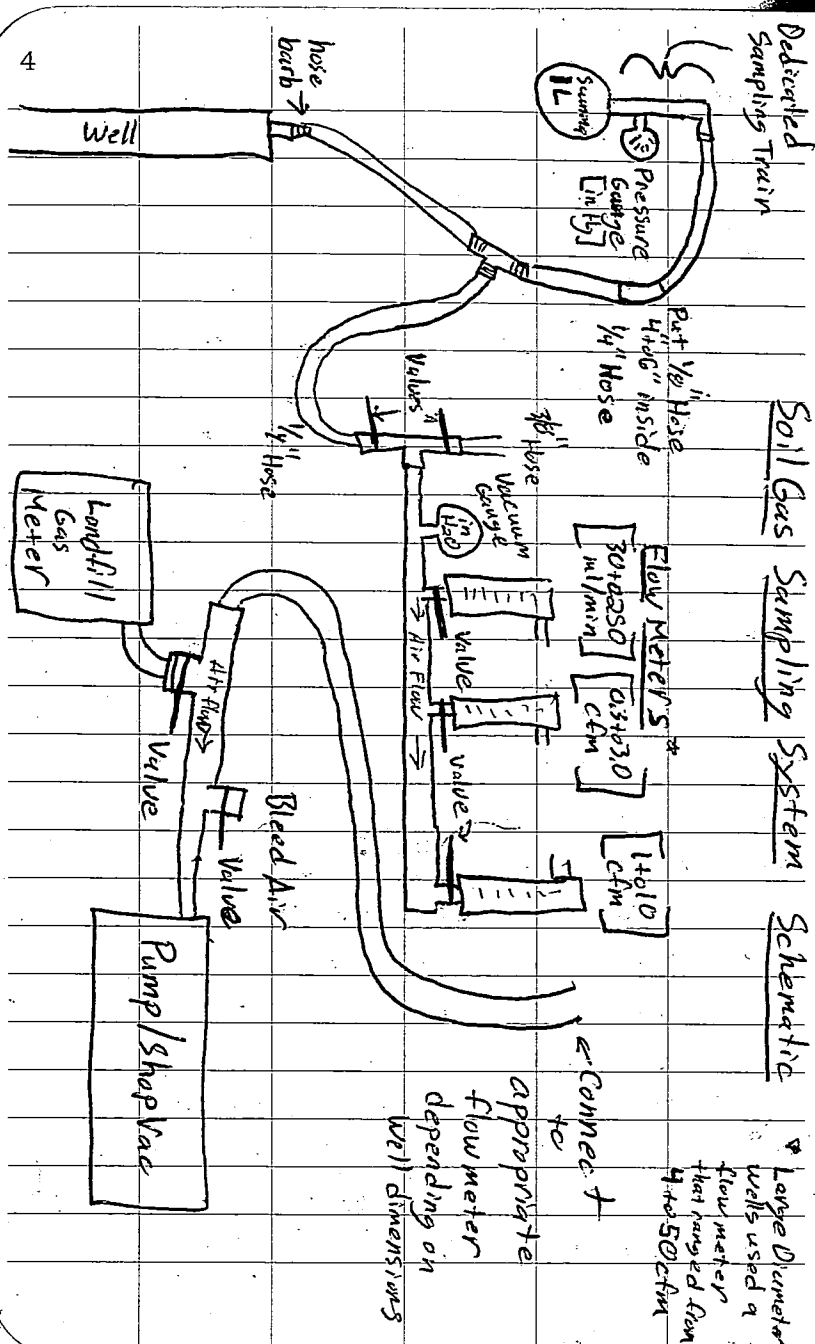
1034 Turned on vac pump (shop vac), purging @ 0.7 cfm w/ a vac of 12 in H₂O

1035 Taking landfill gas reading (CH₄, O₂, CO₂) every minute - see field sampling form

1041 turned vac pump off after purging 4.2 cf. Well construction unknown opened valve to summa canister

1048 closed valve to summa, initial vac in summa was -27.5 in Hg final -0.5

Rite in the Rain.



2/19/13

PRUD-4

MB

- 1050 Mobbing to PRUD-4, PID reading @ PRUD-5 was 0.0ppm
- 1055 Setting up @ PRUD-4, well construction unknown but a number 15 is written on probe valve, For each well a dedicated set of hoses connects the probe to the Summa canister
- 1058 Summa Serial # A8234 Lab # 1094 No ID on Summa flow Regulator
- 1100 Set up Same ^{MB} as prev setups PID 0.0ppm
- 1113 Turn vac pump (shop vac) on ^{MB} purging @ 0.7 cfm w/ 0 in H₂O Vacuum
- 1120 Turned off pump after purging 4.2 cf, Open Summa canister valve, initial Vacuum = 27 in Hg Rag w/ isopropanol next to hole connection
- 1126 closed Summa valve, final pressure reading 0 in Hg.
- 1128 cleaning up/breaking down set up
- 1130 Mob to PRUD-3

Rite in the Rain

2/19/13 PRUD-3 & PRUD-2 MB

1133 Setting up @ PRUD-3, same set up as prev locations. Well construction unknown, Summa Serial # A8571 Lab # 1208, Well is 1" dia pvc w/ 3/8" hose barb.

1145 Turned on vac pump, purging @ 0.7 cfm w/ 0 in H₂O

1151 Turned off vac pump, opened Summa canister valve, initial pressure - 27 in Hg
PID reading 0.0 ppm.

1154 Alison called to get up date

1157 Closed Summa canister valve final pressure - 1 in Hg

1159 Breaking down system

1200 Mob. to PRUD-2

1210 At PRUD-2, All wells sampled so far today have used 2007 key. Setting up purge system same as previous wells, Summa Serial # A8590 Lab # 1216, No ID on Summa Regulator. Turned vac pump on, purging @ w/ in H₂O vacuum. PRUD-2 has 1/2" pvc & 3/8" barb.

2/19/13

PRUD-2 (PRUD-1)

1225 Turned vac pump on, purging @ 0.7 cfm w/ 0 in H₂O, slightly closed bleed valve, increased to ^{MB} 0.9 cfm and 4 in H₂O

1230 Turned off pump, opened Summa Valve, as w/ all previous locations rag w/ Isopropanol is near hose connections

1237 Closed valve final pressure in Summa - 1 in Hg

1240 Breakdown system, walk across parking lot to PRUD-1

1243 PRUD-1 well construction unknown 1" pvc w/ 3/8" barb. Summa Serial # A8222 Lab # 1005. Regulator has a #9. Started vac pump, same set up as previous locations.

1255 Turned on pump @ 0.3 cfm w/ 1 in H₂O vacuum; small water droplets spurting up tube but staying w/in 1 ft of top of probe and 3 ft from Summa canister and gauges.

- 2/14/13 PRUD-1/PRUD-16 MB
- 1307 Turned off vac pump after purging 3.6 cf, opened summa valve w/ initial pressure of -27 in Hg PID had been placed @ vac pump outlet/exhaust 0.0 ppm reading during purging
- 1315 Closed Summa Valve w/ final pressure, ~~B~~ MB -1 in Hg
- 1316 Cleaning up, Walk to PRUD-16 Started getting breezy @ ~1230
- 1332 Started Vac pump on PRUD-16-25, there are two probe @ this location, well also has PRUD-16-15 (depth 15 ft)
- 1335 Purging @ 0.6 cfm w/ 2 in H₂O vac
- 1335 Turned off pump after purging 1.8 cf, ~~sup~~ SAP (Sampling Plan and Analysis Plan) had a purge volume of 47,331 ml = 1.7 cf
- Open Summa Valve, initial reading -27 in Hg
- 1344 Closed Summa Valve, final pressure -1 in Hg
- 1350 Removed dedicated hose and Summa serial # A8577 Lab # 1219

- 2/14/13 PRUD-16 & PRUD-17 MB
- 1350 Connected new dedicated hose and Summa canister serial # A8600 Lab # 1218 to PRUD-16-15 (15 ft)
- 1352 Turned on pump @ 0.6 cfm, 2 in H₂O
- 1355 Turned off pump after purging 1.8 cf, SAP started purge volume as 45,999 ml = 1.6 cf, Opened Summa Valve w/ initial pressure -28 in Hg
- 1403 Closed Summa Valve final reading -1 in Hg
- 1405 Moved to PRUD-17, has two probes, starting w/ 10 ft, PRUD-17-10 Collecting duplicate here so adding a second Tee so both summars fill @ the same time
- 1418 Start Shop Vac @ 0.6 cfm, w/ 8 in H₂O
- 1422 Turned off Shop Vac after purging Opened Summa valve to both primary and duplicate Summas initial pressure -26 in Hg and in -28 in Hg respectively
- 1428 Closed both valves @ same time w/ final reading of -1 in Hg and -3 in Hg

2/19/17 PRUD-17 MB

for primary and duplicate sample

Sample ID primary PRUD-17-10 @

14:22 and duplicate PRUD-17-100 @

14:27, though collected @ same time

Prior to turning off pump purged

2.4 cf, SAP states purge volume @

45420 ml = 1.6 cf *

-PID reading 0.0 ppm

1430 Connected new dedicated tubing and
Summa canister* Summa Canister serial # for PRUD-17-10
was A6622 Lab # 755, Duplicate PR (MB)

PRUD-17-100 Serial # A8558 Lab # 1033

1430 Turned on vac pump @ 0.7 cf w/
10 in H₂O vacuum for PRUD-17-251441 Turned off pump after purging 2.1 cf
SAP stated purge vol 1.7 cf, open
Valve to Summa Canister serial
A8580 Lab # 1227.Sampling setup for last few
probs (All of today's probes) has
been the same including generator
down wind and rag w/ Isopropanol
Near hose connection to Summa

2/19/12 PRUD-18 MB/UT

1450 Closed Summa Valve final pressure
-2 in Hg

1452 Move to PRUD-18

1453 While disconnecting from
PRUD-17-25 top of probe (cap
and hose barb) came off probe,
pushed back on. A small amount
of water was in hose right next
to probe

1455 setting up @ PRUD-18-10 (10 ft)

1500 Connected new dedicated hose @
Summa canister, serial A8224,
lab # 10811508 Vac pump on @ 0.7 cf w/
10 in. H₂O vacuum for PRUD-18-101512 Vac pump off after 2.1 ft³ purged
+ SAP vol = 1.6 ft³. Open Summa
canister # A8224/lab 1081 @ -27 in. HgNOTE Sampling setup same as all
other sampling events today1518 Stop filling Summa canister
@ -1 in. Hg

1523 Setting up PRUD-18-25 (25 ft)

NOTE Wind picking up

2/19/13

PRUD-18/19

MB/21

1531 Vac pump on @ 0.6 cfm, 10 in. H₂O

1534 Vac pump off after 1.8 cf purged

NOTE SAP vol = 1.7 ft³NOTE Open Summa #A8589 / lab #1255
@ -27 in. Hg.NOTE Setup as before, new dedicated
tubing for purge1540 Stop filling Summa canister
@ -1 in. Hg

1542 Setting up @ PRUD-19-10 (10 ft)

1545 Connected new dedicated hose
to Summa canister #5486 / lab #5751550 Vac pump on @ 0.4 cfm, 5 in H₂ONOTE Water droplets (~4) came
up dedicated tubing, & got into
Air Sampling manifold

1556 Vac pump off, purged 2.4 cf

SAP vol = 1.6 cf.

Open Summa canister 5486 / lab #575
@ -27 in. Hg.

NOTE sampling set up same as before.

1605 Summa canister closed @ -3 in. Hg

Begin cleaning site.

1615 MB offsite.

2/19/13

MB

1625 MB meet w/ courier @ Hilton Hotel.
Signed over 14 samples, COC, box
has 2 custody seals and is taped
shut w/ COC inside box

1630 MB headed to office.

1516 Arrive @ office

1520 Update Alison, unload truck,
prep for tomorrow's sampling
and soil borehole logging~~MB~~

2/20/13

Gollob Push Prob

MPS

0800 MW arrives @ Gollob Park

0820 Kevin and Tom from Engineering and Environmental Consultants onsite. Tom will be observing today. Kevin turned blower system for Prudence landfill off this morning.

0830 Xavier and Jake from Geomechanics onsite w/ Push Rig.

0840 Safety tailgate meeting, stay away from rig, slip/trip/falls, be aware of public, signed HASP

0850 Mapped track mounted rig to 1st location, used large rubber sheets to protect grass, no signs of wear on grass.

0902 Started pushing in 1st 5 ft section of wt steel casing w/ inner acrylic tubing.

0905 1st 5' joint had 3.5' recovery.

0910 2nd joint 4' long had 2.3' recovery possible top of landfill material on bottom 0.5 ft of 2nd joint.

0920 3rd joint, 4 ft long, 2.5 ft recovery.

0925 3rd joint dark clay w/ red brick pieces.

2/20/13

Gollob Geoprob

MWB

0930 4th joint, 1 ft recovery from

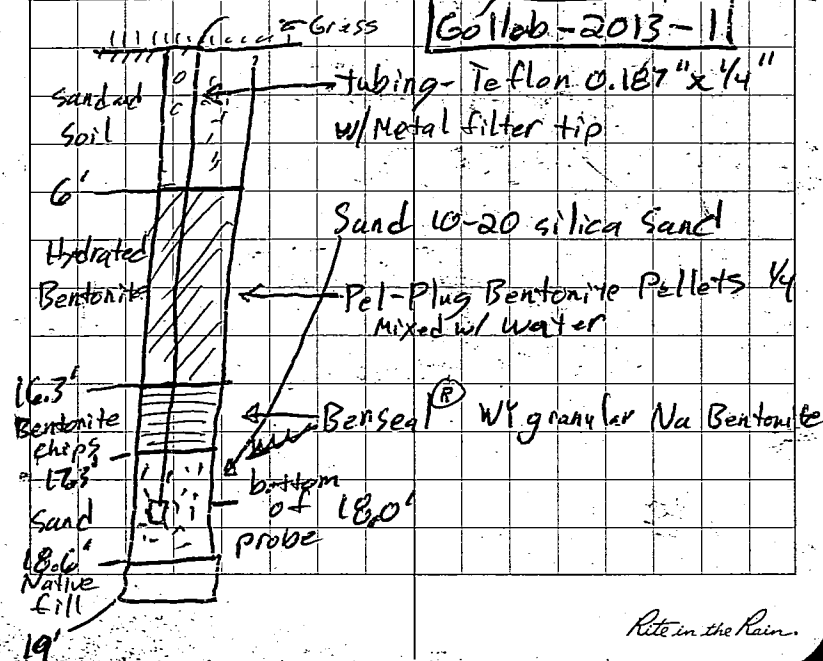
930 4 ft long joint, Gravel last 0.3'

940 Put organic material into zip lock and check stuck tip of PID into bag - reading 0.0 ppm

942 Refusal @ 1.9 ft b/s - Gravel. Called Alison left message.

945 Spoke w/ David Gordon, confirm construct Soil Vapor prob even though didn't get a full 5 ft below landfill material.

1000 Started Constructing Soil Vapor Prob



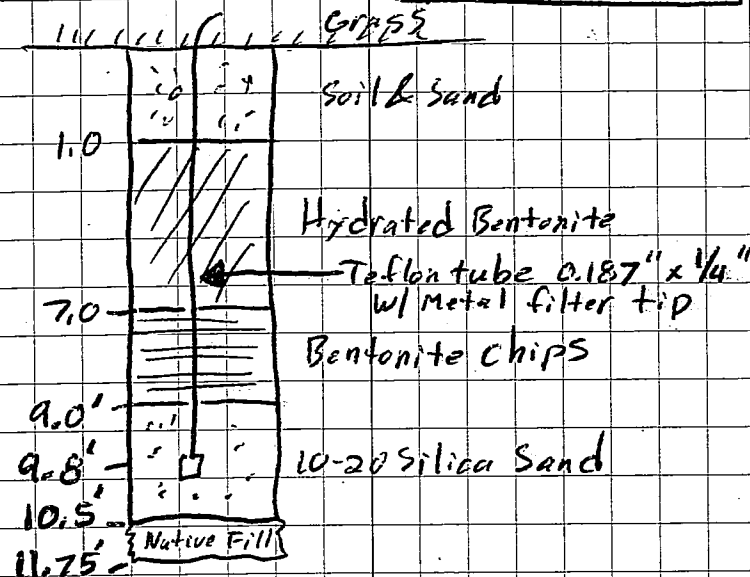
Rite in the Rain

2/20/13 Gollob Geoprobe MWS

- 1030 Finished Construction of Gollob-2013-1, put sod back on top. End of soil vapor probe has a valve on it, switch off. End of tube was placed in a zip lock bag
- 1040 Mob to Gollob-2013-2, located just SW of the right field fence of Gollob Park Baseball Diamond
- 1045 Started pushing in ^{MWS} ~~pro~~ geoprobe
- 1050 1st joint 5ft long, 3.75' recovery Native soil w/ ~1/2 ft of top soil on from 0-0.5 ft bls
- 1055 2nd joint, 4 ft long 2.75' recovery then black lense of organic looking material from 5 to 5.5 ft bls small pieces of plastic/rubber in this zone ~3/4" x 1/2" x 1/8" thick
- 1100 Twisted off tip of geoprobe
- 1102 Able to fish tip out of hole
- 1110 Hit refusal @ 11.95' in cobbles 3rd joint removed 2.75ft pushed into the ground only 2 ft of recovery
- 1120 Starting to rain
- 1125 Started temp probe construction

2/20/13 Gollob Geoprobe MWS

1145 As-Built of Gollob-2013-2



- 1150 Put patch of sod back on top of Gollob-2013-2. Put valve @ end of probe and turned off. Put end of probe in Ziplock bag
- 1155 Mob to Gollob-2013-2, located NE of Home plate outside fenced area
- 1200 Starting to snow
- 1205 Start geoprobe

Rite in the Rain.

- 2/20/13 Gollob Park Geoprobe MWTB
- 1208 1st joint Sfe long w/ 3 ft recovery
plastic liner is breaking - possible
(MWB) b/c it is cold out
- ~~1212~~ 1212 started 2nd joint having
problems w/ plastic liner.
Snowing Harder
- 1215 Stopping for lunch
- 1300 Bt Crew back from lunch
decide to abandon this 1st
attempt @ #3 and call it
a day.
- 1310 Tripped tooling out of hole
back filled w/ sand & soil
- 1320 Load equipment on trailer
and Mob off site
- 1400 MWTB Back @ office unloading
truck - end of field work day,

~~MWB~~

VNH

Gollob Park Soil Gas Sampling 2/21/13

- 0805 VNH on site WR-434A
Requires 2007 key to unlock vault
NOTE It's cold, clear, and there
is snow on the ground.
- 0807 Begin setting up for sampling.
NOTE There are 4 probes underneath
vault (50', 150', 250', 350'). Will
work from shallow to deep.
- 0840 From BSL construction + volume table,
volume for WR-434A-D = 404,016 mL
or 14.3 ft³.
Note All probes are 1/2" PVC
- 0903 Vac Pump on @ 0.7 cfm, 10 in H₂O
Note MB came over from probe
installation to double check set-up.
*Vapor or mist in tube from probe
*Summa canister serial #5524, Lab #615
- 0924 Vac pump off, Summa 5524/615 open
@ -27 in. Hg. Also open bag
w/ alcohol to detect leaks.
- 0932 Close Summa @ -1 in Hg. Begin
breaking down, & setting up for
WR-434A-C (150 ft)
- *NOTE* Dedicated tubing goes into ziplock

Rite in the Rain.

2/21/13 Gollob Park Soil Gas Sampling VNH

0945 Set up for WR-434A-C (150ft) is
same as WR-434A-D (50ft)0951 Vac pump on @ 0.6 cfm, 12 in H₂O

Note Summa canister (dedicated)

is serial # A7598, lab id 791

*Mist/moisture in tube leading from
probe1012 Vac pump off after purging 14.7 cf
Summa #A7598/791 open @ -28 in Hg*NOTE* Bag w/ rubbing alcohol open
as leak detector1019 Summa A7598 closed @ -1 in Hg
Begin breaking down, & setting up
for WR-434A-B (250ft)1031 Vac pump on @ 0.7 cfm, 12 in H₂O

*Summa canister (dedicated to WR-434A-B)

serial = A7606, lab ID 790

NOTE Moisture in dedicated tube

1054 Vac pump off after 16.1 cf purge

Summa A7606 open @ -28 in Hg

*Leak detection bag open

1101 Summa closed @ -1 in Hg. Begin
breaking down, & setting up
for WR-434A-A (350ft)

VNH Gollob Park Soil Gas Sampling

2/21/13

1106 Set up for WR-434A-A (350ft). All
is same as before*Dedicated Summa canister is
serial # A6607, lab ID 732

1115 Vac pump on @ 0.7 cfm, 12 in Hg.

*Moisture in dedicated tubing

1138 Vac pump off after 16.1 cf purge
Summa A6607 open @ -27 in Hg

*Leak detection bag open

Note All collection times @ start
of Summa opening.1145 Summa closed @ -1 in Hg. Begin
breaking down & cleaning up.1210 Stopped by MB @ probe-drilling
crew for further instruction.1230 On site BSDP-3, requires 2359 key
Inside are 3 1" stick-ups.Looked through all Grainger
connection pieces - could not find
fittings for these probes.Called MB over, no fittings,
cannot proceed here.

Will move on to other probes

1330 VNH on site MW-5

- 2/21/13 Broadway Proper Soil Gas Sampling VNI
- 1335 Begin setting up for sample. Well requires $\frac{1}{4}$ " threaded (male) barb. Summa canister serial is A7993
Lab ID 943
- 1404 Vac pump on @ 0.8 cfm, 12 in H₂O
*moisture in dedicated tubing
- 1421 Vac pump off after 15.3 cf purged
Summa A7993 open @ -28 in Hg
- 1434 Summa A7993 closed @ -1 in Hg
Begin breaking everything down.
- 1455 On site M-W-6, Begin setting up.
Summa canister serial = A8579
Lab ID 1230
- 1512 Vac Pump on @ 0.9 cfm, 12 in H₂O.
*Moisture in dedicated tubing
- 1521 Vac pump off. after 7.2 cf purged
Open Summa A8579, @ -27 in Hg.
- 1528 Close Summa A8579, @ -1 in Hg.
Begin breaking down.
- 1635 Hand off box (bought @ Home Depot)
to courier after signature

[Signature]

- 24 Gallow Park - New Probes 2/22/13
- 0740 VNI on site Gallow Park to sample newly installed probes
Begin setting up for Gallow-2013-3 which is the Northernmost new probe in Gallow Park. Located between parking lot & baseball field.
- 0820 Set-up, begin calculations to determine purge vol.
- ★ Use $(.005454)(6.125 \text{ in}^2)(8.7 \text{ ft})(28316.9 \frac{\text{mL}}{\text{ft}^3}) = 21 \text{ mL Probe}$
 $(.005454)(.25 \text{ in}^2)(2 \text{ ft})(28316.9 \frac{\text{mL}}{\text{ft}^3}) = 19 \text{ mL Dead}$
 $21 \text{ mL} + 19 \text{ mL} = 40 \text{ mL}$ ♥
- $(.005454)(2.375 \text{ in}^2)(1 \text{ ft})(28316.9 \frac{\text{mL}}{\text{ft}^3}) = 371 \text{ mL Bore}$
 $371 + 40 = 411 \text{ mL Volume (Total)}$
 $(411 \text{ mL})(3) = 2733 \text{ mL purge vol}$
- ★ Note ★ Severe confusion w/ calculations ★
- Where .125 in = Probe dia
 8.7 ft = Probe L
 .25 in = Dead dia
 2 ft = Dead L
 2.375 in = Borehole Dia
 1 ft = Borehole L
- 0922 Finished w/ field calculations, will connect to cc/min flow meter as 1 cc = 1 mL

2/22/13 Gollob Park - New Probes VNH

0937 Mini-pump on @ 200 cc/min, ϕ in H_2O
 * Summa canister is serial A8550
 lab ID = 1222, gauge # 8.

0953 Mini Pump off after 3000 mL
 purged. Some moisture in dedicated.

0954 Summa A8550 open @ -27 in. Hg
 * Leak detector bag (rag w/ rubbing alcohol) open.

1000 Summa A8550 closed @ -1 in. Hg
 Begin cleaning site.

1030 VNH & MB on site Gollob-2013-2
 which is located at the SW corner
 of the baseball field. Begin
 setting up.
 * NOTE * Crew broke rig, hence
 MB has joined VNH
 * MB Notices VNH has incorrectly
 set up Air Sampling manifold
 as new probes require different
 pump & valve interchange.
 - Begin correcting set-up, &
 modifying valve interchange.

1115 Generator on, but vacuum
 gauge stuck on 18 in. H_2O

VNH, MB Gollob Park - New Probes 2/22/13

1115 MB begins working to fix
 vacuum gauge.

1130 Multiple attempts made, vacuum
 gauge works w/ vac pump, but
 not mini-pump. (works = shows reading)

1145 Still adjusting vacuum gauge
 * Alison Jones has been informed
 of situation.

1155 MB on phone with Miljoco corp
 (makers of vacuum gauge)

1200 VNH on phone w/ Grainger, able
 to reserve new vacuum gauge @
 Terson distribution center

1201 MB off site to get new gauge

1205 Tom from ECC on site,
 asking questions about system.

1225 Tom off site.

1235 MB called to say Grainger doesn't
 have the gauge, will double
 check reserved status.

1240 Acquired vacuum gauge.

1300 MB on site w/ new vacuum gauge
 vacuum gauge works w/ vac
 pump but not mini-pump

2/22/13 Gollob Park - New Probes MB, VNH

1312 Mini-pump on @ 200 mL/min

Ø in H₂O

Note Vacuum gauge works/reads w/vac-pump, not mini-pump.

★ DO NOT BLOW AIR INTO VACUUM GAUGE OR YOU WILL BREAK IT

⇒ Double Check Set-Up

NOTE Summa connected to system is Serial # 5487, lab ID 579 w/train # 1007002275

1332 Pump off after 4000 mL purge

Summa # 6487 open @ -26 in Hg.

1338 Summa closed @ -1 in Hg.

Begin breaking down.

1340 On site Gollob-2013-1, set up

1341 Alison Jones (AT) on site

1353 Pump on @ 200 mL/min, Ø in H₂O.

*Summa connected is serial # A6611 lab ID 743

*Notice moisture in dedicated

1414 Pump off after 4200 mL purge

Summa A6611 open @ -27 in Hg.

1420 Close Summa @ -1 in Hg, clean

AT VNH, MB Prudence Field, New Probes 2/22/13

1440 VNH & MB on site, set up BSL-201304

*Summa = A6621, lab 744, train 1007002119

1457 Pump on @ 200 mL, Ø in H₂O

1512 Pump off after 3000 mL purge, Summa A6621 open @ -26 in Hg

1519 Close summa @ -1 in Hg, clean site

1535 VNH & MB on site BSL-2013-05

Begin setting up.

Note AT left for office

Summa # A8604/lab 122 = Primary Sample

Summa # A8574/lab 1224 = Dup Sample

* All mechanical parts down wind of sampling

1550 Pump on @ 200 mL/min, Ø in H₂O

1605 Pump off after 3000 mL purge

Summa A8604/A8574 both open @ -27 in. Hg

1612 Summa A8604 closed @ -4 in Hg

Summa A8574 closed @ Ø in Hg

Clean site.

* All sample times @ Summa opening

1700 At CCA office, unload

Rite in the Rain.

Primary and duplicate sample collected at same time, but give different times so lab did not know there was a duplicate sample. MB

2/25/13 BSDP Sampling

VNH

0840 VNH on site Broadway South Landfill
for continued soil gas sampling. Today is
sunny, mid-40's, clear. Safety Vitemis
for today: dehydration, being aware of
other people, well-vault cover weight.

0850 Open BSDP-4 w/2359 Key.

Several spider webs inside, 3 probes
w/ capped PVC Top. No nozzles
or fittings. Set-up.

0945 Unable to get any available
fittings for PVC stick-ups.

Opened BP-23, also has
PVC-stick-up for which I
have no fittings.

Break-down. Conversation
with Mike Busby resulted
in direction to check out
probes @ other BSDP wells
before going to Home Depot
for correct fittings.

1100 VNH on site BSDP-4-50.

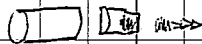
after checking other BSDP wells,
and going to Home Depot
Bought 20 1" flush couplers

VNH

BSDP Sampling

2/25/13

Bought 20 1" X 1 1/2" flush to
female thread adapters.

ex) → 

1" coupler 1" X 1 1/2" Barb (3/8")

1130 Mike Busby on site

1147 Vac pump on @ 1.0 cfm, 0 in H₂O
checked to make sure vacuum
gauge worked.

Dedicated Summa is serial # A8603
lab ID 1215, train no. 6.

1154 Vac pump off, Summa A8603

open @ -28 in Hg. Note 7.0 cf purged
Begin setting up for BSDP-4-100.

Note Keep fittings w/ dedicated.

1200 Summa A8603 closed @ -1 Hg (in)

1208 Set up for BSDP-4-100 (100 ft deep)
w/ Summa A8215, lab 1093.

1212 Vac pump on @ 1.0 cfm, 2 in H₂O
vacuum. Notice moisture in
dedicated.

1220 Vac pump off after 8.0 cf purge

1221 Summa A8215 open @ -26 in Hg.
Begin breaking down BSDP-4-100
Setting up BSDP-4-150

Rite in the Rain.

2/25/13 BSDP Sampling VNH

1229 Summa A8215 closed @ -1 in Hg. Break down dedicated w/ fittings.

1245 Set up for BSDP-4-150 (150 ft) w/ Summa A8221, lab ID 1066.

1249 Vac pump on @ 1.0 cfm, 6 in H₂O vacuum. Vacuum does work.

1259 Vac pump off after 10 cf purge. Summa # A8221 open @ -27 in Hg. Begin breaking down to move to BP-23 probes.

1305 Summa A8221 closed @ -1 in Hg. Break down, move over.

1315 Set up for BP-23-200 w/ Summa # A8575, lab ID #1226. *These probes also require 1" coupling w/ 1" x 1/2" adapter + 1/2" x 3/8" threaded barb.

1321 Vac pump on @ 1.0 cfm, ~3 in H₂O vacuum. Moisture in dedicated.

1332 Vac pump off after 11 cf purge. Summa A8575 open @ -27 in Hg.

1339 Summa A8575 closed @ -1 in Hg. Break down -200, set up BP-23-250.

VNH BSDP Sampling 2/25/13

1345 Set up @ BP-23-250 (250 ft) w/ Summa # 2352, lab ID # 375

1350 Vac pump on @ 0.9 cfm, 6 in H₂O vacuum. Moisture in dedicated.

1403 Vac pump off after 11.7 cf purge. Summa # 2352 open @ -27 in H₂O.

1409 Summa 2352 closed @ -1 in Hg break down.

1415 Set up BP-23-300 (300 ft) with Summa # A8198, lab ID 1069, train no. 5.

1422 Vac pump on @ 0.9 cfm @ 5 in H₂O vacuum. Notice moisture in dedicated.

1436 Vac pump off after 12.6 cf purged. Summa A8198 open @ -27 in Hg. Begin breaking down.

1445 Summa A8198 canister closed @ -1 in Hg. Continue breaking down manifold.

1500 Catch up on notes

1510 VNH on site BSDP-2, Begin setting up for sample

- 2/25/13 BSDP - Sampling VNH
- 1529 Set up for BSDP -2-100
w/ Summa #5529, lab ID 597.
Dedicated requires 1" coupling
+ 1" X 1/2" reducer + 1/2" X 3/8"
threaded barb.
- 1529 Vac pump on @ 1.0 cfm @
Ø in H₂O. Vacuum works.
Notice moisture in dedicated
- 1539 Vac pump off after 10cf purge
Open Summa #5529 @ -24 in Hg.
- 1539 Close Summa #5529 (filled very
quickly) Begin breaking
down site
- 1600 Fill out CoC
- 1608 VNH in front of Hilton
waiting for courier
- 1636 Courier took box
- 1720 At office, unload

[Signature]

- VNH+MB Soil Gas Sampling New 2/26/13
- 0920 VNH+MB on site NE corner
of Gollob Park @ Gollob-2013-4
Weather is clear, sunny, 50's
Safety Topics = proper PPE
(vest, ear pro, Sun pro,
electricity from Generator,
pinch points for hands (i.e.
wear gloves).
- 0930 Set up sampling manifold @
calculate necessary vol.
- 0944 All set up w/ Summa #A8223
lab ID = 1078, train no. 4.
Calculations:
- 3/16" Dia x 22.5ft L Probe
1/4" Dia x 2ft L Dead Space
2 3/8" Dia x 25ft L Bore hole
- $$(0.005454)(\text{dia})^2(L)(28.316.9 \frac{\text{oz}}{\text{ft}^3}) = \text{Vol (mL)}$$
- Probe vol + Dead Vol + Borehole Vol = Total Vol
- Total Vol X 3 = Purge Vol
- 0946 Pump on (mini-pump) @ 250 ^{cc} mL/min
Ø in H₂O. Vacuum gauge does
work.
- *Note* Gas meter is low on
battery. Charger has been ineffective.

Return the Rain.

2/26/13 Soil Gas Sampling New MB+VNH

* MB will contact CES LANDTEK for replacement charger.

1014 Mini-pump off after 7000mL

Purge

1015 Summa A8223 open @ -27 in Hg.

Begin breaking down site

1021 Summa A8223 closed @ -1 in Hg

Continue cleaning site. Pull

probe, pack truck.

1035 VNH + MB on site BSL-2013-3

Begin setting up & calculating Vol

* Located @ Breakway South Landfill,

South of Hilton, ~15m SSW of

BSDP-2.

Calculations:

$$\frac{3}{16} \text{ in Dia} \times 5 \text{ ft L} = \text{Probe Vol} = 27 \text{ mL}$$

$$\frac{1}{4} \text{ in Dia} \times 2 \text{ ft L} = \text{Dead Vol} = 19 \text{ mL}$$

$$2\frac{3}{8} \text{ in Dia} \times 1 \text{ ft L} = \text{Bore Vol} = 871 \text{ mL}$$

$$(27 + 19 + 871) \text{ mL} = 917 \text{ mL} \times 3 = 2751 \text{ mL}$$

★ Purge 2751mL for all new 5ft probes

1050 Sampling man. Spd set up w/

Sample Summa 2661, Lab ID 283

QA Summa A7983, Lab ID 954

1054 Mini pump on @ 250mL/min, Ø in H₂O

MB+VNH Soil Gas Sampling New 2/26/13

* NOTE* Vacuum gauge does work but mini-pump is too small to create vacuum w/ this set-up.

1106 Pump off after 3000mL purge

Sample Summa 2661 open @ -26 in Hg

QA Summa A7983 open @ -28 in Hg

Begin breaking down.

1112 Summa 2661 closed @ -1 in Hg

Summa A7983 closed @ -4 in Hg

* QA sample labelled BSL-2013-030

Q time is '1116'.

Continue breaking down.

1145 MB+VNH on site BSL-2013-02

after bathroom break @ time Dept.

Begin setting up. Purge vol = 2751mL

Dedicated Summa = A8726, Lab ID 281

train no. 12.

1155 Mini-pump on @ 250mL/min, Ø in H₂O vacuum.

1207 Mini-pump off after 3000mL purge

Summa A8726 open @ -28 in Hg

Begin breaking down.

1216 Close Summa A8726 @ -1 in Hg

Continue breaking down

Rite in the Rain.

2/26/13 Soil Gas Sampling New MB+VNH

1240 VNH + MB on site BNL-2013-12
Setting up for sample w/
Summa A8738, Lab ID #1274
Train no. 1004006313
Calculations + purge vol same
as BSL-2013-03, 2751 mL purge

1255 Mini-pump on @ 250 mL/min
Ø in H₂O vacuum. Vac gauge works

1300 MB called GeoTech re: gas meter.
GeoTech will send new meter +
charger in 2 days

1307 Mini-pump off after 3000 mL
purge. Summa A8738 open
@ -30 in Hg.
Begin breaking down.

1319 Summa A8738 closed @ -1 in Hg.
Break down.

1330 VNH + MB on site BNL-2013-11
Set up sampling w/ Summa
#A7981, Lab ID #922, Train no
1007002157
Calculations + Purge vol = same as
BSL-2013-03 = 2751 mL.

1340 Minipump on @ 250 mL/min, Ø in H₂O vacuum.

MB+VNH Soil Gas Sampling New 2/26/13

1352 Mini pump off after 3000 mL
purge.

1353 Summa A7981 open @ -27 in Hg
Begin breaking down.

1401 Close Summa A7981 @ -1 in Hg
Break Down.

1410 VNH + MB on site BNL-2013-15
Begin setting up. Use Summa
Serial A6603, Lab ID 734, 2751 mL

1421 Mini pump on @ 250 mL/min,
Ø in H₂O vacuum. Vacuum gauge works

1433 Mini pump off after 3000 mL purge
Open Summa A6603 @ -27 in Hg
Begin cleaning site

1440 Summa A6603 closed @ -1 in Hg
Break down site.

1446 MB + VNH on site BNL-2013-18
Begin setting up for sample.
Dedicate Summa A8211, Lab #1063
Train #3. Calculations and
purge vol same as BSL-2013-03
= 2751 mL

1458 Mini pump on @ 250 mL/min
Ø in H₂O vacuum

2/26/13 Soil Gas Sampling New MB+VNH
 1510 Mini pump off after 3000mL
 purge. Open Summa A8211
 @ -27 in Hg. Begin
 breaking down site.
 1513 Alison Jones, David Gordon, (cca)
 & Gretchen Wagenseiller (ADEQ)
 on site
 1516 Close Summa A8211 @ -1 in Hg.
 Break down site
 1523 VNH + MB on site BNL-2013-20
 Begin setting up. AT/OG/GW
 in site as well
 Dedicate Summa #A8582
 Lab ID 1220. Calculations =
 Purge vol ~~1220~~ same as BSL-2013-03
 = 2751mL to purge
 1533 Mini pump on @ 250mL/min
 and @ in H₂O vac. Vac gauge works
 1545 Mini pump off after 3000mL
 purge. Summa A8582 open
 @ -27 in Hg. Begin breaking
 down site.
 1552 Summa A8582 closed @ -1 in Hg.
 Continue breaking down

MB/VNH Soil Gas Sampling New 2/26/13
 1600 VNH + MB on site BNL-2013-19
 Begin setting up. Dedicate
 Summa Lab ID 359 (no serial!).
 Calculations + Purge Vol same as
 BSL-2013-03, purge = 2751mL
 1615 Mini pump on @ 250mL/min
 and @ in H₂O vac. Vac gauge works
 Note Wind has increased.
 1627 Mini pump off after 3000mL
 purge.
 1628 Summa NA, Lab 359 open @
 -16 in Hg.
 1631 Summa NA closed @ -1 in Hg.
 However, low vac - concerning.
 AT directs to purge &
 collect 2nd sample. First
 will have "-LOW" as part of
 name.
 1639 Mini-pump on again @ 250mL/min
 & @ in H₂O vacuum
 Readings stabilize
 1647 Mini pump off after 2000mL
 purge for total of 5000mL
 purged. Summa A7955 open @ -27 in Hg.

Rite in the Rain.

2/26/13 Soil Gas Sampling New MB+VNH
 1653 Close Summa A7955 @
 -1 in Hg.
 Break down site. Check
 gas in generator. Gas OK.
 1706 VNH + MB off BNL property
 & headed to CCA TUC office
 NOTE All samples had
 leak detector (rubbing-alcohol
 soaked rag in Zip-lock) in
 close proximity to Summa
 & dedicated tubing junction.
 1800 MB + VNH @ office, unload

~~Summa
 2/26/13~~

MB+VNH Soil Gas Sampling New 2/27/13
 0840 VNH + MB on site BNL-2013-06a
 Begin setting up. Use Summa A8719
 Lab FD 1269. Use Gem 500 gas
 meter to take gas field
 parameters (GeoTech #913). Use
 GAST Pump (model MOA-P122-AA)
 (serial 0602123596) known as 'mini'
 pump.
 Air Sampling manifold has
 Dwyer RMA-11, & KI flow
 meters in c/min & SCFM respectively
 MILTOCO vacuum gauge.
 All parts in air man. fold, including
 gas meter, have been used
 for all new 5ft probes (BS/BNL-2013).
 And will continue to be used for
 sampling new probes.
 Weather is sunny, clear, 50's.
 0907 Mini pump on @ 250mL/min @
 & in H₂O. Vacuum gauge does work
 Note Double check to see if
 all air inlets/outlets in manifold
 are sealed in correct sampling
 direction.

2/27/13 Soil Gas Sampling New NB+VNH

0919 Mini-pump off after 300ml purge.

0920 Summa A8719 open @ -27 in Hg

~~NOTE~~ Gas meter was not staying on between readings.

At final reading, meter turned off immediately. Upon further investigation, meter will not stay on. Likely related to battery @ inability to recharge w/ assigned charger.

0925 Attempting to charge meter w/ generator. Will test again shortly.

~~NOTE~~ NB+VNH in Orange vests + Sun pro, caution w/ pinch points, other people, @ dehydration.

0930 Moved 20m South to DP-7 to test meter. Plugged meter directly in to grounding wire, which is plugged into extension cord leading from generator.

NB+VNH Soil Gas Sampling BNL 2/27/13

0941 Vac-Pump (Ginger Shop Vac Model WD2025) connected

to manifold, Turned On.

Flow Rate = 0.8 cfm, 0 in H₂O vacuum.

*Summa serial #A8723, lab ID 1272. for DP-7-50

0948 Vac-pump off after 5.6 cf purge.

Summa A8723 open @ -27 in Hg.

~~NOTE~~ Gas meter is working so long as pump is on (pump in device) @ meter is plugged in.

Will use this method of meter-plugged-in-during-purge for all probes until new meter arrives

0955 Summa A8723 closed @ -1 in Hg.

Set up for DP-7-100.

1006 Vac-pump on @ 1.0 cfm, 0 in H₂O

vacuum. Summa A8744, lab ID 1262 Train no 1007002268.

1012 Vac pump off after 6.0 cf purge.

1013 Summa A8744 open @ -27 in Hg

Rite in the Rain.

- 2/27/13 Soil Gas Sampling BNL MB+VNH
- 1020 Summa A8744 closed @ -1 inHg
Begin setting up for DP-7-150
- 1025 DP-7-150 set up w/ dedicated
tubing + Summa serial #A6609,
Lab ID 731
- 1026 Vac pump on @ 100cm, 2 in H₂O
vacuum. Meter is on & reading
gas parameters momentarily
- 1028 Meter won't turn on.
- 1029 Vac-pump off. MB trying to
fix
- 1055 Unable to fix. AT was
able to locate another meter -
will bring to MB+VNH
- 1200 AT handed off new meter to
VNH. Warned of broken
glass & that meter had
not been used in a
while
- 1215 VNH + MB hooked it up
to manifold. When meter
turned on, warning message
appeared stating CO readings
may be off due to lack of

- MB+VNH Soil Gas Sampling BNL 2/27/13
- calibration. When meter's pump
was on, there was no
discernable change in readings.
Meter only read ambient air
oxygen levels, even when
fully connected to (a sealed
to prevent leaks) air
sampling manifold for
DP-7-150.
- Meter is not working to
QAPP specifications and
field staff confidence.
- 1220 Pack site, head to CCA
Tucson office

[Signature]
2/27/13

3/1/13 Soil Gas Sampling New MB, VNH

0720 VNH + MB on site BNL-2013-07.

Begin setting up.

Weather is clear, 50's, sunny.

Forecast for low 70's later.

Safety Topics are: slip/trip/fall, dehydration. Field staff is in safety vests.

* Today, use Lantech gas meter GEM2000, rental # 2043 -

The replacement for other meter. Lab-calibrated, no field calibration necessary.

* Use Summa A8710, lab #1265

Train no 1007002095. for dedicated.

0741 Pump (mini-pump 'Gast') on @ 250 mL/min, \emptyset vacuum (in H₂O).

Vacuum gauge tested, did work.

* Tested Gas meter by pulling tube from manifold & observing change in meter readings.

0753 Pump off after 3000 mL purge Summa A8710 open @ -27 in Hg. Begin breaking down.

MB/VNH Soil Gas Sampling New 3/1/13

0754 Summa A8710 closed @ -1 in Hg.

Leak detector (zip-locks w/ rubbing alcohol-soaked rag) open

@ Summa/Probe connection during sample collection.

* Finish cleaning site

0808 VNH + MB on site BNL-2013-08.

Begin setting up, same as BNL-2013-07

* Dedicate Summa Serial # A8737

Lab ID 1270 to sample.

0818 Mini-pump on @ 250 mL/min,

 \emptyset in H₂O vacuum. Vac gauge works

0830 Mini-pump off after 3000 mL

purge. Summa A8737, lab #1270

open @ -27 in Hg. Begin cleaning site. Leak detector open.

0837 Summa A8737 closed @ -1 in Hg.

Clean site.

0845 On site BNL-2013-09. Probe

has been pulled from ground.

Notify Aat. No sample here

0850 VNH + MB on site BNL-2013-10

Begin setting up. Same as BNL-2013-07

Use Summa A8740, Lab ID 1268

3/1/13

Soil Gas Sampling New

VNT+MB

* QA sample BNL-2013-100 has
Summa A6609, Lab ID 731
dedicated.

0900 Mini-pump on @ 250 mL/min, \emptyset
in H₂O vacuum.

0904 First reading after 1000 mL purge.
Change purge rate to 200 mL/min
per EPA Guidelines.

0915 Mini-pump off after 3000 mL
purge. Summa A8740 for sample
BNL-2013-10 open @ -27 in Hg.
Summa A6609 for QA sample
BNL-2013-100 open @ -28 in Hg.
Sample time = 0915

QA Sample time = 0925

0922 Summa A6609 & A8740 both
closed @ -1 in Hg. Break down
site.

* NOTE * Leak detector open during
sample collection.

0930 VNT + MB on site BNL-2013-13.
Begin setting up, same as
BNL-2013-07.

Dedicate Summa 2641, Lab ID 311

MB+VNT Soil Gas Sampling, New 3/1/13

0938 Mini-pump on @ 200 mL/min,
 \emptyset in H₂O vacuum.

* NOTE * Generator is (for all samples)
downwind of sampling manifold
& probe.

0954 Mini-pump off after 3000 mL purge.
Open Summa 2641 @ -28 in Hg.
Open leak detector. Begin
cleaning site.

1000 Close Summa 2641 @ -1 in Hg.
Break down site.

1010 VNT + MB on site BNL-2013-14.
Begin setting up, same as
BNL-2013-07.

Dedicate Summa A8725, Lab ID 1277
to sample

1017 Mini-pump on @ 200 mL/min,
 \emptyset in H₂O vacuum.

1032 Mini-pump off @ 3000 mL purge
Summa A8725 @ -27 in Hg.
Begin cleaning site.

1038 Summa A8725 closed @ -1 in Hg.
Clean site

* NOTE * Leak detector open during sample

Rite in the Rain.

Primary and duplicate sample collected
at same time, but give different times so
lab did not know there was a duplicate
sample. MB

- 3/1/13 Soil Gas Sampling New MB + VNH
- 1050 VNH + MB on site BNL-2013-17
Begin setting up. Dedicate
Summa A8722, Lab ID 1266
- 1058 Mini-pump on @ 200 mL/min
0 in H₂O.
- 1113 Mini-pump off after 3000 mL
purge. Summa A8722 open
@ -28 in Hg. Leak detector
open.
- 1120 Summa A8722 closed @
-1 in Hg. Begin breaking
down site
- 1130 VNH + MB on site BNL-2013-16
Begin setting up. Dedicate
Summa A8708 Lab ID 1275
to sample. Same as BNL-2013-07
- 1139 Mini-pump on @ 200 mL/min,
0 in H₂O vacuum.
- 1154 Mini-pump off after 3000 mL purge.
Summa A8708 open @ -27
in Hg. Break down.
NOTE Leak detector open
- 1202 Summa A8708 closed @ -1 in Hg
Clean site

- MB + VNH Soil Gas Sampling New 3/1/13
- 1215 VNH + MB on site BSL-2013-01
Begin setting up, same as
BNL-2013-07. Use 2
extension cords as truck
must park further away.
* Dedicate Summa A8741
Lab ID 1273 to BSL-2013-01
Summa A8729, Lab ID to
1276 to QA sample BSL-2013-010
- 1231 Mini-pump on @ 200 mL/min,
0 in H₂O vacuum.
- 1247 Mini-Pump off after 3100 mL
purge. Summa A8741 open @
-26 in Hg (BSL-2013-01)
Summa A8729 open @ -26 in Hg
(BSL-2013-010)
- 1253 Summas closed @ -1 in Hg
Break down site
- 1300 VNH + MB on site BSDP-3
Requires key 2359 to open.
Also requires 1" coupling w/
1" X 1/2" reducer bushing w/
1/2" X 3/8" threaded barb for
ea. of 3 probes (50, 100, 150 ft depths)

Rite in the Rain.

- 3/1/13 Soil Gas Sampling -BSL VN4+MB
 1310 Dedicate Summa #A8733, lab
 ID 1278 to sample BSDP-3-50.
 Will need to purge 6.6cf, so
 use shop-vac instead of mini-pump.
 Otherwise, set-up is same
 1317 Vac-pump on @ 1.0cfm, 2 in H₂O
 vacuum.
 1324 Vac pump off after 7.0 cf purge
 Summa A8733 open @ -27 in Hg
 Leak Detector open.
 1331 Summa A8733 closed @ -1 in Hg
 Set up for BSDP-3-100
~~1331~~ Dedicate Summa A8712,
 lab ID 1280 to sample.
 1331 Vac-pump on @ 1cfm, 8 in H₂O
 1339 Vac-pump off after 8.0cf purged
 Open Summa A8712 @ -27 in Hg
 Set up for BSDP-3-150
 1345 Close Summa A8712 @ -1 in Hg.
 Switch to BSDP-3-150 sample
 w/Summa #2438, lab ID 136.
 1347 Vac-pump on @ 1.0 cfm, 8 in H₂O
 vacuum.
 1357 Vac-pump off after 10.0 cf purge.

- MB+VNH Soil Gas Sampling -BSL 3/1/13
 1357 Open Summa #2438 @
 -28 in Hg. Begin moving to
 BP-22
 1403 Close Summa 2438 @ -1 in Hg
 Move to set-up BP-22-200
 Dedicate Summa A8720, lab
 ID 1271 to sample. Will purge 10.4cf
 1409 Vac pump on @ 0.8cfm,
 0 in H₂O vacuum. Check vacuum
 gauge → works.
 1422 Vac pump off after 10.4cf purge
 Open Summa A8720 @ -28 in Hg
 1429 Close Summa A8720 @ -1 in Hg,
 Set up for BP-22-250 sample
 Dedicate Summa A7992, lab
 ID 942, Train no. 1007002227
 to sample
 1432 Vac-pump on @ 0.8 cfm, ~4 in
 H₂O vacuum
 1448 Vac pump off after 12.8cf purge
 Summa A7992 open @ -26 in Hg
 1457 Summa A7992 closed @ -1 in Hg
 Set up for next sample
 BP-22-300

3/1/13 Soil Gas Sampling, BSL VNH+MB

1455 Set up for sample BP-72-300

Dedicate Summa A8714, lab ID 1264

Q Train no. 100700 2250 to sample

1500 Vac pump on @ 0.7 cfm, 24 in H₂O. Flow rate dropped to 0.4 cfm for remainder of purge.

1531 Vac pump off after 12.4 cf purge. Summa A8714 open @ -26 in Hg. Begin cleaning site.

1536 Summa A8714 closed @ -1 in Hg. Finish cleaning site.

1552 VNH & MB in front of Hilti for courier. Finish Cal.

1630 Courier has box, said to use labels provided.

VNH+MB Soil Gas Sampling, BSL 3/4/13

0720 VNH+MB on site Gollob Park to finish sampling PRUD-19-25, PRUD-20. Begin setting up.

* Weather is mostly clear, 60's slight breeze.

* Safety topics: safe lifting, slip/trip/fall, dehydration, loose or stray dogs.

* MB+VNH in safety vests + hard-toe boots.

* Set up sampling w/ clear tubing, Air Sampling Manifold that hosts MILCOO vacuum gauge, flow meters in cfm & cfm graduations, gas meter by LANTECT (rental no. 2043) which measures CH₄, CO₂, & O₂, and either a mini-pump (GAST MOA-PI22-AA) or a small shop-vac (Stinger WD2025), and canister.

* Dedicate Summa canister serial # 2857, lab ID 382, train no. 10 to PRUD-19-25.

3/4/13 Soil Gas Sampling BSL VNH+MB
 0746 Vac-pump on @ 0.9 cfm, ~2 in H₂O.
 0748 Vac-pump off after 1.8 cf purge.
 Open Summa #2857 @ -19 in Hg.
 NOTE Vacuum is too low for sufficient sample. Will relabel as 'DO NOT SAMPLE' & start over.
 0755 Vac-pump on @ 0.9 cfm, ~2 in H₂O
 Summa A7976 dedicated to sample. Same train (no. 10)
 0757 Vac-pump off after 1.8 cf purge, Summa A7976 open @ -27 in Hg.
 0804 Summa A7976 closed @ -1 in Hg. Begin cleaning site
 0810 On site PRUD-20, begin setting up for sample PRUD-20-10
 Dedicate Summa 5450, lab #567 Train no 11 to sample
 0820 Vac-pump on @ 0.8 cfm, ~2 in H₂O
 0822 Vac-pump off after 1.6 cf purge
 0823 Open Summa 5450 @ -27 in Hg
 0829 Close Summa 5450 @ -1 in Hg.

MB+VNH Soil Gas Sampling, BSL 3/4/13
 0831 Vac-pump on @ 0.9 cfm, 3 in H₂O for PRUD-20-25 sample.
 Dedicate Summa A8562, lab ID 1249, Train no. 9.
 NOTE Notice water in dedicated tubing, decrease flow rate to 0.6 cfm.
 0834 Vac-pump off after 1.8 cf purge
 0835 Vac with Summa A8562 open @ -28 in Hg. begin cleaning site.
 0850 Prep to soil sample. will label SS-BSL-XX
 0855 AT Gollob-2013-01 location. Decon shovel w/ Alconox sol'n + distilled water.
 Dig down ~5 inches. Grab soil & press into jars provided
 0900 Collect + label samples. replace turf.
 0907 VNH + MB on site Gollob-2013-04 site for 2nd ss.
 VNH grabs sample, SS-BSL-02
 0910 VNH + MB off site for bathroom + ice

3/4/13 Soil Gas Sampling BS MB + VNH

1000 VNH + MB on site MW-7
which is in front of Broadway
Proper, next to address.
Begin setting up.

NOTE No known purge vol +
line, will estimate a minnick
based on MW-5/6, ~10 cf

*Dedicate Summa #A8727, lab
ID 1263 to sample

NOTE Parked on dirt field N of
Broadway Proper. used 2 extension
cords

1016 Vac-pump on @ 0.9 cfm, 4 in H₂O
vacuum.

1028 Vac-pump off after 10.8 cf purge

1029 Summa A8727 open @ -28 in Hg.

1035 Summa A8727 closed @ -1 in Hg,
prepare to move to MW-8

1040 VNH + MB on site MW-8,
begin setting up.

Dedicate Summa 5454, lab ID 561
to sample.

*Will also purge ~10 cf,
similar to other MW wells

MB + VNH Soil Gas Sampling 3/4/13

1048 Vac-pump on @ 0.8 cfm,
10 in H₂O vacuum

1107 Vac-pump off after 10.4 cf purge.
Open Summa #5454 @ -27 in Hg

1108 Close Summa 5454 @ -1 in Hg
Clean site

1115 VNH + MB on site BSDP-02.

We have 6 summa canisters
left, BSDP-02 has 5 more probes
to sample, & we have to do
a duplicate today. MW-09 can
wait.

Begin setting up. All probes will
require 1" coupler + 1" x 1/2" reducer bushing +
1/2" x 3/8" threaded barb to get purge
@ sample.

NOTE Requires 2359 Key to
access.

→ Dedicate Summa serial #A7965

lab ID 919 to sample BSDP-02-150

1130 Vac-pump on @ 0.9 cfm, 4 in H₂O
vacuum.

*For 90' samples, all jars
wrapped, sealed, & put on ice.

3/4/13 Soil Gas Sampling BSL MB-VNH

1145 Vac pump off after 13.5 cf purge
Open Summa A7965 @ -26 in Hg
Set up for BSDP-02-200

1151 Summa A7965 closed @ -1 in Hg
Set up BSDP-02-200 w/
dedicated Summa A8743, lab ID
1283, Train no. 1004006086

1152 Vac pump on @ 0.9 cfm, 0 in H₂O
vacuum.

1205 Vac-pump off after 11.7 cf purge
Open Summa A8743 @ -26 in Hg

1211 Close Summa A8743 @ -1 in Hg
Set up for BSDP-02-250(0)
w/ dedicated Summa A8559
lab ID 1254 for sample and
Summa 2645, lab ID 290 for
Duplicate

1213 Vac-pump on @ 0.9 ~~in Hg~~ cfm
and 0 in H₂O vacuum

1227 Vac-pump off after 12.6 cf purge
Open Summa A8559 @ -27 in Hg
Open Summa 2645 @ -16 in Hg

1231 Close Summa 2645 @ -1 in Hg

1233 Close Summa A8559 @ -1 in Hg

MB-VNH Soil Gas Sampling BSL 3/4/13

1234 Set up for ~~BSDP-02-200~~ BSDP-02-300
Dedicate Summa A8226, lab ID
1067 to sample BSDP-02-300

1237 Vac pump on @ 0.9 cfm, 5 in
H₂O vacuum
*note Rate dropped to 0.8 cfm,
vacuum increased to 8 in H₂O
for remainder of purge

1251 Vac-pump off after 13.6 cf purge
Open Summa A8226 @ -25 in Hg

1300 Close Summa A8226 @ -1 in Hg
Set up for BSDP-02-350
w/ Summa A8597, lab ID 1214
Train no. 1004006090

1301 Pump on, flow rate drops to
0.
Multiple attempts made to
get flow rate up & constant
by a hose, a flow meter, look
through w/ connecting pieces.
Each time, flow drops to 0
w/in 30 seconds of vac-pump
on. Unable to purge BSDP-02-350.
Clean site, will re-think manifold

Rite in the Rain.

3/4/13

Soil Sampling BSL

MB-VN7

1345

On site SS-BSL-03 for

soil sample. Collect 2 jars.

1355

On site SS-BSL-04 for soil

sample. Collect 2 jars.

~~NOTE~~ Decon Shovel w/ Alcorox

+ Distilled water between collections.

- Use new gloves per sample.

- All jars re-packed in bubble wrap

⊗ placed on ice.

- All soil samples collected @ 3-6" depth

1405

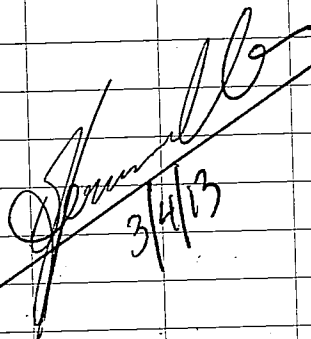
On site SS-BSL-05. Collect 2 jars.

1415

On site SS-BSL-06. Collect 2 jars.

- 1500 Collect SS-BSL-06 → 10

1600

Return to TUC CCA office, COC,
pack, courier
3/4/13

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3/5/13 - 3/15/13



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BP LOU RI

Soil Gas Sampling

Book 2 of 3

[illegible]

MB + VNH Soil Gas Sampling, BNL 3/5/13

0720 VNH on site BNL, DP-7 to begin setting up. MB is getting more clear tubing @ Lowes.

- * Weather is clear, 50's, slight breeze.
- * PPE is hard-toe boots, safety vest, sun pro, ear pro, and gloves.
- * Safety topics: inhalation of fumes from generator, dehydration, stray dogs, wildlife
- * Set-up for soil gas sampling requires:
 - Dedicated: connections, tubing, Summa canister + train
 - Common: air sampling manifold w/ vacuum gauge, flow meters, pump (Stinger Shop vac WD2025 or GAST MOA-P122-AA mini-pump), gas meter (LANTECH rental 2043), and generator.

0745 MB on site w/ Summas + tubing. Dedicate Summa A7615, Lab ID 785 to sample DP-7-150.

- * Note * DP-7 has no lock

Rite in the Rain.

2
3/5/13 Soil Gas Sampling BNL MB+VNH

0752 Vac-pump on @ 1.0 cfm,
Ø in H₂O vacuum
NOTE Moisture in dedicated
tubing + common tubing

0759 Vac pump off after 7.0 cf
purge, Summa A7615 open
@ -27 in Hg

0805 Summa A7615 closed @
-1 in Hg. Set up for
DP-7-250 w/ Dedicated
Summa A8597, lab ID 1214,
Train no. 1004006090.

0810 Vac pump on @ 1.0 cfm, Ø in H₂O
vacuum.
*Moisture in dedicated

0818 Vac-pump off after 8.0 cf
purge open Summa A8597
@ -28 in Hg.
NOTE pipe/probe labels are
poorly written, also, '200' probe
is broken, needs new connections.

0825 Summa A8597 closed @
-1 in Hg. Begin setting up
for sample DP-7-300

3
AB+VNH Soil Gas Sampling BNL 3/5/13

0828 Sample DP-7-300 has
dedicated Summa A7958,
lab ID 927,

0830 Vac-pump on @ 1.0 cfm, 4 in H₂O
vacuum. Moisture in dedicated.
Note MB notices vacuum
gauge on train shows -1 in Hg
reading even w/ Summa closed.
Will pay close attention
when sample time comes.

0843 Vac pump off after 13.0 cf
purge. Open Summa A7958
@ -28 in Hg

0850 Close Summa A7958 @ -1 in Hg
Set up for sample DP-7-200
w/ Dedicated Summa A8236,
lab ID 10761.

0852 Vac pump on @ 1.0 cfm,
Ø in H₂O vacuum

0900 Vac-pump off after 8.0 cf purge
Summa A8236 open @ -27 in Hg.

0909 Summa A8236 closed @ -1 in Hg.
Begin cleaning site.
NOTE all samples taken w/ leak detector

Rite in the Rain.

4

3/5/13 Soil Gas Sampling BNL MB+VNH

* NOTE * DP-7-200/250 both required

fixing w/ 1" threaded coupler +

1" x 1/2" threaded bushing + 1/2" x 3/8"

threaded bushing + 3/8" barbed valve.

0920 MB+VNH on site DP-2. Well + Probe
stick up ~ 3 ft. Hinge on cap
is broken. Valves are covered indust. Dedicate Summa #2868, lab #352, Train ¹⁰⁰ 22340931 Vac-pump on @ 0.5 cfm, ~ 1 in H₂O
vacuum0934 Vac pump off after 1.5 cf purge
Summa 2868 open @ -28 in Hg0941 Summa 2868 closed @ -1 in Hg
Set up for DP-2-100 w/
dedicated Summa #2660, lab ID
310, Train no 8.0943 Vac-pump on @ 0.3 cfm, 31
in H₂O vacuum0949 Vac-pump off after 1.8 cf purge
Summa 2660 open @ -27 in Hg0955 Summa 2660 closed @ -1 in Hg
Set up sample DP-2-150 (sample)
w/ Summa A8238, lab 1039

DP-2-1500 Summa A7593, lab 792 (dup)

5

MB+VNH Soil Gas Sampling BNL 3/5/13

0955 Vac pump on @ 0.6 cfm, 10 in
H₂O vacuum1000 Vac pump off after 1.2 cf
purge.Open Summa A8238 @ -27
in Hg for sample DP-2-150Open Summa A7593 @ -28 in
Hg for Dup DP-2-1500

1009 Close Summa A8238 @ -1 in Hg

Close Summa A7593 @ -1 in Hg

Det up for Sample

DP-2-200 w/ dedicated

Summa 5522, lab ID 610

1013 Vac pump on @ ~ 0.1 cfm,
34 in H₂O vacuum.

Will watch purge closely

1029 Vac pump off after ~ 1.6 cf
purge. Open Summa 5522
@ -27 in Hg

Begin cleaning site.

1036 Summa 5522 closed @ -1 in Hg.
Clean site1045 VNH + MB on site DP-5
Begin setting up.

Rite in the Rain.

6
3/5/13 Soil Gas Sampling BNL MB+VNH

1050 Notice 5 of 6 probes ready to go.
Vault has no locks, is being used
as library in lot of books inside
Dedicate Summa A8228, lab
ID 1072 to Sample DP-5-50

1100 Vac-pump on @ 1.0 cfm, 8 in
H₂O vacuum

1105 Vac pump off after 5.0 cf purge
Open Summa A8228 @ -28 in Hg

1111 Close Summa A8228 @ -1 in Hg
Set up for sample DP-5-100
w/ dedicated A6612 Summa,
lab ID #741, Train no 1007002119

1114 Vac-pump on @ 1.0 cfm, 8 in
H₂O

1120 Vac-pump off after 6.0 cf purge
Summa A6612 open @ -26 in Hg

1126 Summa A6612 closed @ -1 in Hg
Set up for DP-5-150 sample
w/ Summa A7962, lab ID 921

1130 Vac pump on @ 1.0 cfm, 8 in
H₂O vacuum

1137 Vac pump off after 7.0 cf purge
Summa A7962 open @ -27 in Hg

MB+VNH Soil Gas Sampling BNL 3/5/13

1143 Summa A7962 closed @ -1 in Hg
Set up for sample DP-5-200
w/ Dedicated Summa A8205
lab ID 1083.

1145 Vac-pump on @ 1.0 cfm, 8 in
H₂O vacuum.

1153 Vac-pump off after 8.0 cf
purge. Open Summa A8205
@ -28 in Hg.

1201 Close summa A8205 @
-1 in Hg. Set up for
sample DP-5-250 w/
dedicated A7953, lab #907

1206 Vac-pump on @ 1.0 cfm, 6 in
H₂O vacuum.

1215 Vac-pump off after 9.0 cf purge.
Open summa A7953 @ -26 in Hg

1223 Close Summa A7953 @ -1 in Hg
Set up for sample DP-5-300
w/ Dedicated Summa 5495,
lab ID 580

1225 Vac-pump on @ 1.0 cfm, 1 in H₂O
vacuum.

* NOTE* generator down - wind of sampler

Rite in the Rain.

8 3/5/13 Soil Gas Sampling BNL MB+VNI

Note Added threaded, barbed valve in order to sample DP-5-300.

1236 Vac-pump off after 11.0 cf purge
Open Summa 5495 @ -26 in Hg.

1243 Summa 5495 closed @ 0 in Hg

Begin cleaning site

1305 VNI & MB on site DP-4.

Begin setting up for sample
DP-4-50 @ Duplicate w/
Summa A7602, lab ID 782 (sample)
Summa 5517, lab ID 595 (Dup)

1325 Vac-pump on @ 1.0 cfm, 0 in H₂O vacuum.

1330 Vac-pump off after 5.0 cf purge
Open Summa A7602 @ -28 in Hg
Open Summa 5517 @ -29 in Hg

1337 Close Summa A7602 @ -1 in Hg

1338 Close Summa 5517 @ -1 in Hg

Set up for sample DP-4-300
w/ Dedicated Summa A6026
lab ID 750

1341 Vac pump on @ 1.0 cfm, 0 in H₂O vacuum.

1352 Vac pump off after 11 cf purge

MB+VNI Soil Gas Sampling BNL 3/5/13 9

1352 Open Summa A6026 @ -28 in Hg

1400 Close Summa A6026 @ -1 in Hg

Set up for sample DP-4-100
w/ Dedicated Summa A6010,
lab ID 739

1402 Vac-pump on @ 1.0 cfm, 0 in H₂O vacuum

1408 Vac pump off after 6.0 cf purge.
Open Summa A6010 @ -28 in Hg.

1416 Summa A6010 closed @ -1 in Hg
Set up for sample DP-4-150
w/ Dedicated Summa A8242,
lab ID 1061

1418 Vac-pump on @ 1.0 cfm, 0 in H₂O vacuum

1425 Vac-pump off after 7.0 cf purge
Open Summa A8242 @ -28 in Hg

1431 Close Summa A8242 @ -1 in Hg
Set up for sample DP-4-200
w/ Dedicated Summa 5458, lab ID 551.

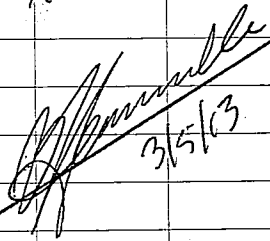
1432 Vac-pump on @ 1.0 cfm, 0 in H₂O vacuum

Rite in the Rain.

3/5/13 Soil Gas Sampling BNL MB+VH

1440 Vac pump off after 8.0 cf
purge. Open Summa 5458
@ -29 in Hg1448 Summa 5458 closed @ -1 in Hg
Set up for sample DP-4-250
w/ Dedicated Summa 5504
lab ID 5891450 Vac pump on @ 1.0cfm, 8 in H₂O
vacuum1459 Vac pump off after 9.0 cf purge
Open Summa 5504 @ -27 in Hg.1505 ~~Vac pump~~ Summa 5504 closed
@ -1 in Hg. Begin cleaning
site1600 VH + MB @ CCA TUL office
Pack 2 boxes: 1 w/ Summas,
(with trains.

1615 Hand off to Carrier


 3/5/13

MB+VH Soil Gas Sampling - BSL

3/11/13

0730 VH+MB on site BSL to continue
soil gas sampling.* Weather is clear, sunny, 60's,
should get up to ~72°. Little
to no chance of precip* Safety topics: pinch points, sharp
points, dehydration, slip/trip/fall.* PPE = Orange safety vests, sun pro,
ear pro, steel-toe boots

★ Soil Gas sampling requires:

- Dedicated fittings, tubing, Summa
canister, and sampling train.- CCA-constructed air sampling
manifold with intake valves,
vacuum gauge, flow meters in
cc/min & scfm measurements,
tubing, air flow diverter w/
connection to gas meter (LANTECH)
(serial no. 2048), bleed valve,
and vacuum pump. Vacuum
pump is either Stinger Shop-Vac
WD2025 or GAST MOA-P122-AA
mini-pump.

Use portable gas generator also.

Rite in the Rain.

3/11/13 Soil Gas Sampling - BSC VNT+MB
 0745 Set up to sample MW-9
 w/ dedicated Summa A8583,
 lab ID 1258
 0800 Vac-pump on @ 1.0 cfm, 8 in
 H₂O vacuum
 0810 Vac-pump off after 10.0 cf purge
 Open Summa A8583 @ -27 in Hg.
 0816 Close Summa A8583 @ -1 in Hg
 Begin cleaning site.
 0830 VNT + MB on site BP-22
 Begin setting up for sample
 BP-22-350, the 4" dia
 well.
 Will use 4" X 2" PVC reducer,
 2" X 1 1/2" reducer bushing, and
 1 1/2" X 1" reducer bushing with
 1" PVC (sched 40) section + 1" X 1"
 threaded/flush coupler. Screw
 in 1" X 1" threaded barb (plastic)
 - Connect 1" clear tubing to
 larger manifold
 - Calc. larger dedicated Dead Vol
 $(.005454 \times 1" \text{ dia}) \times (3.14 \text{ L} \times 28316.9 \frac{\text{mL}}{\text{L}})$
 $= 463.32 \text{ mL or } 0.02 \text{ cf Negligible}$

MB + VNT Soil Gas Sampling BSC - Large 3/11/13
 0924 Multiple attempts made to
 pull gas from well. Realized
 SWL is above top of screen,
 thereby preventing soil gas
 from entering well. Break
 down site.
 0940 MB + VNT on site BSDP-1
 Begin setting up for BSDP-1-100.
 Dedicate Summa A7964, lab
 ID "912 to sample. (Train 1007002101)
 * Fittings = 1" coupler + 1" X 1/2" reducer
 bushing + 1/2" X 3/8" threaded barb
 1000 Vac pump on @ 0.9 cfm, 11 in
 H₂O vacuum
 1013 Vac-pump off after 10.8 cf
 purge
 Open Summa A7964 @ -27 in
 Hg.
 1022 Close Summa A7964 @ -1 in Hg
 Set up for sample BSDP-1-150
 Dedicate Summa A8590,
 lab ID 1246 to sample
 1023 Vac pump on @ 1.0 cfm, ~2
 in H₂O vacuum

14
3/11/13 BSL Soil Gas Sampling MB+VH#

1034 Vac-pump off after 11 cf purge.
Open Summa @ -28 in Hg.

1041 Close Summa A8590 @ -1 in Hg
Set up for BSDP-1-200
w/ dedicated Summa A8822
lab ID 1315.

1043 Vac pump on @ 1.0 cfm, ~
2 in H₂O vacuum

1055 Vac pump off after 12 cf purge
Open A8822 @ -26 in Hg.

1100 Close Summa A8822 @ -1
in Hg Set up for sample
BSDP-1-248 w/ Summa
A8806, lab ID 1316
Q DUP BSDP-1-2480 w/ Summa
A8825, lab ID 1303

1103 Vac-pump on @ 1.0 cfm, ~6 in
H₂O water

1116 Vac-pump off after 13.0 cf purge
Summa A8806 open @ -26 in Hg (BSDP-1-248)
Summa A8825 open @ -27 in Hg (DUP)

1122 Close Summa A8806 @ -1 in Hg
Close Summa A8825 @ -2 in Hg
Set up for BSDP-1-300

15
3/11/13 MB+VH# Soil Gas Sampling-BNL

Dedicate Summa 6635, lab ID
296.

1123 Vac-pump on, Flow rate slowly
decreases to 0 cfm. Vacuum stays
high. Multiple attempts made,
unable to maintain any flow
rate.
Check SWL of WR-367A
to screen interval, shouldnt
have any interference.
Break down site.
No sample BSDP-1-300.

1215 VNH + MB on site R-069A
Begin setting up for sample
R-069A-50 w/ dedicated
Summa 6635, lab 296
Train no. 1007002223

1228 Vac-pump on @ 0.9 cfm, 10 in
H₂O vacuum

1235 Vac pump off @ 7.0 cf purge.
Open Summa 6635 @ -25 in Hg

1241 Close Summa 6635 @ -1 in Hg
Begin setting up for sample
R-069A-100.

Rite in the Rain.

3/11/13

Soil Gas Sampling - BNC

MB-VN4

1241

For sample R-069A-100,
dedicate A8828 Summa, lab ID
1307.

1242

Vac-pump on @ 0.9 cfm, 10 in
H₂O vacuum

1250

Vac pump off after 7.2 cf purge

1251

Open Summa A8828 @ -27 in Hg

1258

Close Summa A8828 @ -1 in Hg
Begin setting up for R-069A-150
w/dedicated Summa A8237,
lab ID 1082.

1300

Vac-pump on @ 0.9 cfm, 10 in
H₂O vacuum

1309

Vac-pump off after 8.1 cf purge
Summa A8237 open @ -26 in Hg

1314

Summa A8237 closed @ -1 in Hg
Begin setting up for R-069A-200

* Turned on vac-pump, unable
to get consistent flow rate →
it would drop to '0' each
time. Multiple attempts made.
Break down site.

* Add new lock (Master)
w/ Key X2057

MB-VN4 Soil Gas Sampling - BNC 3/11/13

1405

VN4 + MB on site R-075A after
looking for a while.

Underneath large concrete cover,
which is very heavy.

No signs, or indications, but is
only well in vicinity.

Begin setting up to sample
R-075A-50 w/ dedicated
Summa 2860, lab ID 356

1426

Vac pump on @ 0.8 cfm,
15 in H₂O vacuum.

1435

Vac pump off after 7.2 cf purge
Summa 2860 open @ 28 in Hg

1441

Summa 2860 closed @ -1 in Hg
Set up for sample R-075A-100
w/dedicated A7620, lab 799 Summa
Train no. 6.

1445

Vac pump on @ 0.8 cfm, 11
in H₂O vacuum

1454

Vac-pump off after 7.2 cf
purge. Open Summa A7620
@ -26 in Hg

1500

Summa A7620 closed @
-1 in Hg

3/11/13 Soil Gas Sampling - BNL MB+VNH

1500 Set up for R-073A-WH
with dedicated Summa #5445
lab ID 562.

* Remove well head cap, replace
w/ CCA (MB) constructed,
dedicated fittings: 4"x2"
PVC reducer, 2" x 1 1/2" reducer
bushing, 1 1/2" x 1" reducer, 1" PVC,
1" x 1" threaded coupling, 1" x 1"
threaded barb.

* Requires larger common manifold.
Flow meter up to 50 scfm.

1512 Vac pump on @ 200cfm, 2 in
H₂O vacuum

1522 Vac pump off after 200cf purge.
Open Summa 5445 @ -28 in Hg.

1530 Close Summa 5445 @ -1 in Hg

Begin cleaning site

1620 Courier hand-off, headed to
office.

[Signature]
3/11/13

MB+VNH Soil Gas Sampling - BNL 3/12/13

0730 - VNH on site BNL for soil gas
sampling. MB picking up
more supplies.

* Weather is clear, sunny, 50's.

* Safety topics: dehydration, proper
lifting techniques, tool caution.

* PPE = Safety vest, steel-toes,
sun pro, ear pro.

☆ Soil gas sampling requires

- Dedicated fittings, tubing, Summa
canister, and sampling train.

- Common CCA-constructed air
sampling manifold with intake
valves, vacuum gauge, flow meters in
cfm & scfm measurements, tubing,
air flow diverter w/ connection to
gas meter (LANTech Meter, rental no.
2043), bleed valve, and vacuum pump.
Vacuum pump is either Slinger Shop:
vac WD 2025 or GAST MOA-PR22-AA
mini-pump depending on volume
to be purged.

Power supplied by portable
generator.

Rite in the Rain.

3/12/13 Soil Gas Sampling, BNL VNL+MB
 0745 Begin setting up for WR-273A.
 Requires 2007 Key to open vault.
 Dedicate Summa # 2682, lab ID 40
 to sample WR-273A-50
 0815 Vac pump on @ 0.8 cfm, 8 in
 H₂O vacuum
 0822 Vac pump off after 5.4 cf purge
 Open Summa 2682 @ -28 in Hg
 0828 Close Summa 2682 @ -1 in Hg
 Set up for Sample WR-273A-135
 w/ dedicated Summa A8580, lab ID 1227.
 Train no. 1004006086. And DUP
 WR-273A-1350 w/ Summa serial
 A6622, lab ID 755.
 0830 Vac pump on @ 0.8 cfm, 14 in
 H₂O vacuum
 0837 Vac pump off after 5.4 cf purge
 Open Summa A8580 @ -26 in Hg (sample)
 Open Summa A6622 @ -26 in Hg (DUP)
 0843 Close Summa A8580 @ -1 in Hg (sample)
 Close Summa A6622 @ -1 in Hg (DUP)
 Set up for sample WR-273A-220
 w/ dedicated Summa A8233, lab
 ID 1089, Train no. 1007002268.

UB+VNH Soil Gas Sampling, BNL 3/12/13
 0851 Vac pump on @ 0.8 cfm, 12 in
 H₂O vacuum
 0900 Vac pump off after 7.2 cf
 purge. Open Summa A8233
 @ -28 in Hg.
 0907 Close Summa A8233 @ -1 in Hg.
 Set up for sample WR-273A-300
 * Use 4" X 2" reducer PVC, 2" X 1 1/2"
 reducer bushing, 1 1/2" X 1" reducer
 bushing, 1" PVC, 1" X 1" threaded
 coupler, 1" X 1" threaded barb
 * Calculate for 4,034,868 mL / 142.5 cf
 purge.
 * attach wire to fitting (which is
 on inside of metal pipe) to
 prevent fitting from falling
 down well, & secure w/
 duct tape.
 * Attach larger dedicated tubing
 + common manifold
 * Dedicate Summa 2739, lab ID
 414.
 1000 Vac pump on @ 15 cfm, 12 in H₂O
 vacuum

- 3/12/13 Soil Gas Sampling - BNC VNH + MB
- 1010 Vac pump off after 150cf purge.
Open Summa 2739 @ -27 in Hg.
- 1016 Close Summa 2739 @ -1 in Hg.
Begin cleaning site.
- *NOTE* for WR-273A-360, pulled transducer, & re-lowered to same depth.
Also kept 30ft 1/2" probe closed during purge, so all soil gas could flow through 5" well.
- 1100 VNH + MB on site WR-275A.
Set up for sample WR-275A-300.
* Use 4" X 2" PVC Reducer, 2" X 1 1/2" reducer bushing, 1 1/2" X 1" reducer bushing, 1" PVC, 1" threaded coupler, 1" X 1" threaded barb.
- * Safety line fitting w/ available cable
- * Duct tape to seal.
- * Dedicate Summa 2433, lab ID 118. Train no 10
- * Calculate purge vol 4,636,404 mL or 165cf.
- 1130 Vac pump on @ 4cfm, 10 in H₂O vacuum

- MB + VNH Soil Gas Sampling - BNC 3/12/13
- 1128 Increase flow to 15cfm, 16 in H₂O.
NOTE Gas meter is reading ambient air values. Concern over seal.
- 1147 Vac-pump off. Try different port from well with new tubing.
→ Trying to get accurate sample ←
- 1208 Vac-pump on again @ 7cfm, 27 in H₂O vacuum.
*Dropped to, & held @ 6cfm
- 1214 Flow rate @ 5cfm, held for remainder of purge
- 1241 Vac-pump off after 165cf purge.
Open Summa 2433 @ -27 in Hg.
- 1247 Close Summa 2433 @ -1 in Hg.
Set up for sample WR-275A-50 w/ Summa A6614, lab ID 740.
- 1258 Vac-pump on @ 0.9cfm, 10 in H₂O vacuum
- 1304 Vac-pump off after 5.4cf purge
- 1305 Open Summa A6614 @ -27 in Hg.

- 2/12/13 Soil Gas Sampling - BNL VNH + MB
- 1313 Close Summa A6614 @ -2 in Hg. Set up for sample WR-275A-130 with dedicated Summa A7600, lab ID 789
- 1316 Vac-pump ~~vacuater~~ on @ 0.8 cfm, 12 in H₂O vacuum
- 1324 Vac-pump off after 6.4 cf purge
Open Summa A7600 @ -28 in Hg.
- 1331 Close Summa A7600 @ -1 in Hg. Set up for sample WR-275A-220 w/summa A8561, lab ID 1240
- 1334 Vac-pump on @ 0.8 cfm, 11 in H₂O vacuum
- 1342 Vac-pump off after 6.4 cf purge
Open Summa A8551 @ -29 in Hg.
- 1352 Close summa A8551 @ -1 in Hg.
Begin cleaning site.
- 1400 On site DP-3, Begin setting up for DP-3-50 w/ Dedicated Summa A8556, lab ID 1238 for sample & Summa A8245, lab ID 1105 for DUP

- MB + VNH Soil Gas Sampling - BNL 3/12/13
- 1430 Vac pump on, no flow.
Set up for DP-3-106 w/ Dedicated Summa A8563, lab ID 1250, train no. 1007002234
- 1441 Vac pump on @ 0.2 cfm, 34 in H₂O vacuum.
- 1447 Vac-pump off after 1.2 cf purge
open summa A8563 @ -27 in Hg.
- 1455 Close summa A8563 @ -1 in Hg. set up for sample DP-3-150 w/ dedicated Summa A8549, lab ID 1237.
- 1457 Vac pump on @ 0.6 cfm, 6 in H₂O vacuum
- 1500 Vac pump off after 1.8 cf purge. Open summa A8549 @ -27 in Hg.
- 1506 Close Summa A8549 @ -1 in Hg.
Set up for sample DP-3-193 w/ dedicated Summa 2646, lab ID 299.
- 1510 Vac pump on @ 0.6 cfm, 12 in H₂O

²⁶
3/12/13 Soil Gas Sampling - BNL MB+VNH

1513 Vac-pump off after 1.8cf
purge. Open Summa 2646, lab
ID 299 @ -27 in Hg.

1523 Summa 2646 closed @ -1
in Hg.

Start prepping DP-3-50
again

* will require Mini-pump @
250 mL/min for 90 min.

No time today, will return.
Clean site

1645 MB + VNH @ CCA office
Unpack

~~Summa~~
3/12/13

²⁷
MB+VNH Soil Gas Sampling - BNL 3/13/13

0730 VNH + MB on site BNL for
soil gas sampling.

* Weather is clear, sunny, 60's

* Safety topics are: exhaust &
fume inhalation, dehydration,
proper lifting technique.

* PPE is safety vest, steel-toes,
sun pro, ear pro

* Soil gas sampling requires:
Dedicated: fittings to well/probe,
tubing, Summa canister &
sampling train

Common: Air sampling manifold
with intake valves, vacuum gauge,
flow meters in c/min & scfm
measurements, a vacuum pump
(Stinger shop-vac WD2025, or Gast
MOA-PI22-AA mini pump), an air
flow diverter w/ connections to
a gas meter (LANTECH, rental no
2043, lab-calibrated) a bleed
valve, and the vacuum pump.
Energy supplied by portable
generator.

Rite in the Rain.

3/13/13 Soil Gas Sampling-BNL MB+VNH

0750 Mini-pump on @ 250 mL, 2 in
H₂O to purge DP-3-50
w/ dedicated Summa A8556
lab ID 1238 for the sample,
and Summa A8245, lab ID 1105
for the Duplicate.

0921 Mini-pump off after 22,750 mL
purge. Open Summa A8556 @
-29 in Hg for sample.
Open Summa A8245 @ -28
in Hg for DUP.

see later note *Note* Speculation over accuracy
& validity of purge & samples.
Summas are filling SLOWLY;
purge was long & difficult,
and parameters were not
unlike ambient air. Probe
may be trashed.

1012 Close Summa A8556 @ -7 in Hg
Close Summa A8245 @ -7 in Hg
Clean site

1020 On site R-070A. Underneath
large, heavy, concrete cover.
Was very difficult to open.

MB+VNH Soil Gas Sampling-BNL 3/13/13

1045 Begin setting up for
R-070A-50 with dedicated
Summa A7614, lab ID 776,
1056 Vac pump on @ 0.8 cfm, 12
in H₂O vacuum.

1106 Vac pump off after 8.0 cf
purge. Open Summa A7614
@ -26 in Hg

1111 Close Summa A7614 @ -1 in Hg
Set up for sample R-070A-100
w/ dedicated Summa A7954,
lab ID 930.

1114 Vac-pump on @ 0.9 cfm, 10 in
H₂O vacuum

1121 Vac-pump off after 6.3 cf purge.
Open Summa A7954 @ -29 in
Hg

1129 Close Summa A7954 @ -3 in Hg.
Set up for Sample R-070A-WH
w/ dedicated Summa A8829,
lab ID 1306

1204 Vac pump on @ 20 cfm, 3 in
H₂O vacuum. Used 4"x2" PVC
reducers, 2"x1 1/2" bushing, 1 1/2"x1" bushing, 1" PVC,

30/3/13/13 Soil Gas Sampling, BNL. WNT+MB
 1" coupler, 1" X 1" threaded barb, 1" tubing, large manifold
 1214 Vac pump off after 200cf purge, open Summa A8829 @ -29 in Hg
 1223 Close Summa A8829 @ -3 in Hg, clean site
 1230 On site WR-274A. Use Key-2007 key to access. Begin setting up for sample WR-274A-300 w/ dedicated Summa A8584, lab ID 1251, Train no. 1004006101.
 1313 Vac pump on @ 9.0 cfm, 26 in H₂O vacuum.
 Note Dedicated tubing from diversion pipe off well.
 1331 Vac-pump off after 162cf purge. Open Summa A8584 @ -26 in Hg
 1336 Close Summa A8584 @ -1 in Hg. Begin setting up for sample WR-274A-50 w/ dedicated Summa A8831, lab ID 1304 and regular manifold

31 MB+VMT Soil Gas Sampling-BNL 3/13/13
 1400 There was an oil leak from the generator. MB called tech support, cleaned it up. Now generator won't turn over. Waiting a few moments to let things settle. Check oil, check gas;
 1415 MB calling Don Hanson re: generator.
 1430 Check fuel chamber, check spark plugs, owl tech support.
 1444 Vac-pump on @ 0.6 cfm, 4 in H₂O vacuum.
 1445 Up flow to 0.9 cfm, 8 in H₂O vacuum
 1450 Vac-pump off after 5.1cf purge, open Summa A8831 @ -28 in Hg
 1459 Summa A8831 closed @ -3 in Hg. Set up for WR-274A-100 sample w/ Summa A8585, lab ID 1260, Train no. 1007002119.
 1501 Vac-pump on @ 0.8 cfm, 10 in H₂O vacuum

3/13/13 Soil Gas sampling - BNL MB/VH

1508 Vac pump off after 5.6cf purge.

Open Summa A8585 @ -26 in Hg

1514 Close Summa A8585 @ -1 in Hg

Set up for WR-274A-220

w/ dedicated Summa A8832,

lab ID 1312.

1516 Vac pump on @ 0.8 cfm,

10 in H₂O vacuum

1524 Vac pump off after 6.4cf purge

Open Summa A8832 @ -26 in Hg

1529 Close Summa A8832 @ -1 in Hg

Begin cleaning site.

* WR-274A-220 pulled from probe labelled '300', but parameters different from large well *

1615 VH @ office, MB w/ courier.

[Signature]
3/13/13

MB/VH Soil Gas Sampling - BNL 3/14/13

0650 VH & MB on site BNL for

soil gas sampling

* Weather is clear, sunny, 60's, slight breeze

* Safety Topics: dehydration, heat injury,

proper lifting, plants (spiky)

* PPE: safety vest, steel-toes, sun-pro, ear-pro

★ Soil Gas Sampling requires

- Dedicated fittings, tubing, Summa canister, and sampling train

- Common CCA-constructed air sampling manifold w/ intake valves, vacuum gauge, flow meters in c/min & SCFM measurements, tubing, air flow diverter w/ connections to gas meter (LANTECH meter, Cootech rental no 2043, lab-calibrated), a bleed valve, and vacuum pump (Stinger shop vac WD 2025, or Gast MOA-P122-AA mini-pump) Power supplied by portable generator, parked down wind of soil-gas probes.

0700 Begin setting up for sample

DP-1-50 w/ dedicated Summa

A8784, lab ID 1305.

Rite in the Rain.

3/14/13 Soil Gas Sampling - BNL VM+VNH

0723 Vac-pump on @ 0.5 cfm, 14 in H₂O vacuum

0725 Vac-pump off after 1.0 cf purge, open Summa A8784 @ -27 in Hg

0732 Close Summa A8784 @ -1 in Hg
Set up for sample DP-1-125 w/ Summa A8827, lab ID 1324, train no. 8. Q DP-1-1250 w/ Summa A8823, lab ID 1313.

0736 Vac-pump on @ 0.7 cfm, 6 in H₂O

0739 Vac-pump off after 2.1 cf purge, Open Summa A8827 @ -27 in Hg (sample)
Open Summa A8823 @ -28 in Hg (dup)

0746 Close Summa A8827 @ -1 in Hg (sample)
Close Summa A8823 @ -1 in Hg (DUP)
Set up for sample DP-1-150 w/ Summa A8558, lab ID 1233

0751 Vac-pump on @ 0.5 cfm, 7 in H₂O vacuum

0754 Vac-pump off after 1.5 cf purge, Open Summa A8558 @ -27 in Hg

0804 Close Summa A8558 @ -1 in Hg

MB+VNH Soil Gas Sampling - BNL 3/14/13

0804 Begin setting up for sample DP-1-193 w/ dedicated Summa A8589, lab ID 1255

0807 Vac pump on @ 0.6 cfm, 12 in H₂O vacuum

0810 Vac-pump off after 1.8 cf purge off^W

0811 Open Summa A8589 @ -27 in Hg.

0816 Close Summa A8589 @ -1 in Hg
Begin cleaning site

0835 On site R-073A, begin setting up for sample R-073A-50 w/ dedicated summa A8801, lab ID 1317, Train no. 1007002274

0851 Vac-pump on @ 0.8 cfm, 12 in H₂O

0859 Vac-pump off after 6.4 cf purge, Open Summa A8801 @ -27 in Hg

0909 Close Summa A8801 @ -1 in Hg
Set up for sample R-073A-100 w/ dedicated summa A6604, lab ID 736.

0914 Vac pump on @ 0.9 cfm, 9 in H₂O vacuum

36
3/14/13 Soil Gas Sampling - BNL MB+VNH

0921 Vac-pump off after 6.3 cf purge. Open Summa A6604 @ -27 in Hg.

0928 Close Summa A6604 @ -1 in Hg. Begin setting up for sample R-073A-WH w/ dedicated summa A8803, lab ID 1319

0954 Vac-pump on @ 20 cfm, 4 in H₂O vacuum

1004 Vac-pump off after 200 cf purge. Open Summa A8803 @ -27 in Hg.

1009 Close Summa A8803 @ -1 in Hg. Begin cleaning site.

1030 VNH + MB on site R-068A. Large well w/ threaded 4" cap. will look @ other wells before sampling

1105 On site R-072A. Begin setting up for R-072A-WH (157 ft) w/ dedicated Summa A8196, lab ID 1096

1136 Vac-pump on @ 20 cfm, 4 in H₂O vacuum.

1146 Vac-pump off after 200 cf purge

37
MB+VNH Soil Gas Sampling - BNL 3/14/13

1146 Open Summa A8196 @ -28 in Hg.

1202 Close Summa A8196 @ -1 in Hg. Begin setting up for R-072A-500 w/ Summa A8565, lab ID 1247

1202 Close Summa A8565, lab ID 1247

1202 Close Summa A8804 @ -29 in Hg (DUP)

1251 Close Summa A8565 @ -1 in Hg (sample)

1251 Close Summa A8804 @ -3 in Hg (DUP)

Set up for sample R-072A-100 w/ dedicated summa A7985, lab ID 951

1253 Vac pump on @ 0.9 cfm, 8 in H₂O

1300 Vac-pump off after 6.3 cf purge. Open Summa A7985 @ -28 in Hg

1307 Close Summa A7985 @ -1 in Hg. Begin cleaning site

* One more well for today

Rite in the Rain.

3/14/13 Soil Gas Sampling - BNL MB+VNH

1325 VNH + MB on site R-068A. Begin setting up for R-068A-200 w/ dedicated summa A7961, lab ID 926

1342 Vac-pump on @ 0.9 cfm, 10 in H₂O vacuum

1350 Vac pump off after 8.1 cf purge, open Summa A7961 @ -28 in Hg

1357 Close Summa A7961 @ -1 in Hg Set up for R-068A-50 w/ Summa A7622, lab ID 804

NOTE When attaching tubing, water came into tube in splatters, noise was like water draining from clogged y-pipe, robt like rotten trash + rubber.

1401 Vac-pump on @ 0.8 cfm, 9 in H₂O vacuum

1410 Vac-pump off after 7.2 cf purge.

1411 Summa A7622 open @ -26 in Hg

1417 Summa A7622 closed @ -1 in Hg Set up for sample R-068A-100 w/ summa 2842, lab ID 367

1420 Vac pump on @ 0.8 cfm, 8 in H₂O vacuum

MB+VNH Soil Gas Sampling-BNL 3/14/13

1431 Vac-pump off after 8.8 cf purge Open Summa 2842 @ -27 in Hg

1437 Close Summa 2842 @ 0 in Hg Set up for sample R-068A-50 w/ Dedicated Summa A8807, lab ID 1325

1441 Vac-pump on @ 0.9 cfm, 2 in H₂O vacuum

1450 Vac-pump off after 8.1 cf purge. Open Summa A8807 @ -29 in Hg

1500 Close Summa A8807 @ -3 in Hg Begin cleanings site. Will check on other 2 wells to confirm fittings.

NOTE For sample R-068A-50, used 1/2" x 3/8" bushing, 3/8" barb w/ valve as probe had no fittings. Teflon tape @ ea. joint.

1600 VNH on site CCA Tucson

[Signature]
3/14/13

3/15/13 Soil Gas Sampling - BNL MB/VNH

0700 VNH + MB on site BNL for soil gas sampling.

* weather is clear, sunny, 60's

* Safety topics: fume + biohazard inhalation, dehydration, heat injury, lifting technique

* PPE = safety vests, steel-toes, ear pro, sun pro

* Soil Gas sampling requires:

Dedicated fittings for probe, tubing, Summa canister + sampling train.

Common ECA-constructed air sampling manifold with intake valves, vacuum gauge, flow meters in c/min (a SCFM measurements, an air flow diverter with connections to a gas meter (LANTECH, rental no 2043), a bleed valve, and a vacuum pump (Either a Stinger shop vac, WD2025, or a GAST MOA-P122-AA mini pump). Power supplied by portable generator, parked downwind of probes.

0715 After removing VERY HEAVY well cover, begin setting up for sample, R-074A-50 w/ dedicated Summa A8808, lab

MB + VNH Soil Gas Sampling - BNL 3/15/13

ID 1320, Train no 1007002227

0740 Vac-pump on @ 0.9 cfm, 8 in H₂O vacuum.

0748 Vac-pump off after 7.2 cf purge. Open Summa A8808 @ -28 in Hg

0759 Close Summa A8808 @ -1 in Hg. Set up for sample R-074A-100

w/ Summa A8717, lab ID 1322, train no 1004006313

0801 Vac pump on @ 0.4 cfm, 29 in H₂O vacuum0807 Change in flow to 0.9 cfm, and 9 in H₂O. Unknown cause.

Adjust purge time appropriately.

0814 Vac pump off after 9.2 cf purge. Open Summa A8797 @ -30 in Hg

0824 Close Summa A8797 @ -1 in Hg. Set up for R-074A-WH w/ dedicated Summa A8804, lab ID 1323 @ R-074A-WHO (DUP) w/ Summa A6617, lab ID 729.

0857 Vac-pump on @ 20 cfm, 4 in H₂O vacuum

* Note: use 4"x2" PVC redu, 2"x1 1/2" x 1 1/2"x1" bushings, 1"x1" ports

Rite in the Rain.

3/15/13 Soil Gas Sampling - BNL VNH+MB

0907 Vac - pump off after 200 cf purge

Open Summa A8205 @ -27 in Hg (sample)

Open Summa A6617 @ -25 in Hg (DUP)

0914 Close Summa A8205 @ -4 in Hg (sample)

Close Summa A6617 @ -1 in Hg (DUP)

Clean site

0940 On site DP-6 to add lock to

vault. Master lock w/keys

3267

0950 VNH + MB on site R-071A.

Begin setting up for R-071A-VNH

w/ Summa A8204, Lab ID 1070

1020 Vac. pump on @ 20 cfm, 6 in H₂O

vacuum

1030 Vac pump off after 200 cf purge.

Open Summa A8204 @ -27 in Hg

1039 Close Summa A8204 @ -1 in Hg

Set up for sample R-071A-50.

w/ Summa A7617, Lab ID

787, train no. 1007002250

1101 Vac - pump on @ 0.8 cfm, 12 in

H₂O vacuum

1111 Vac pump off after 800 cf purge

Open Summa A7617 @ -28 in Hg

VNH+VNH Soil Gas Sampling - BNL 3/15/13

1117 Summa A7617 closed @ 0 in Hg

Set up for sample R-071A-100

w/ Summa A8821, Lab ID

1310

1120 Vac pump on @ 0.8 cfm, 11 in

H₂O vacuum

1130 Vac - pump off after 8.0 cf purge

Open Summa A8821 @ -28 in Hg

1137 Close Summa A8821 @ -1 in Hg

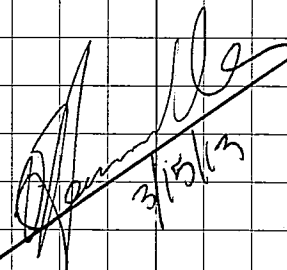
Clean site

★ ★ NOTE ★ ★

★ ★ DP-5, 6, 7 have key 3267 ★

★ ★ for new locks ★

1430 VNH @ CCA office, unload



- 5/10/13 Measuring Prob. Depth MID
- 1005 Arrive @ PRUD-6 Mike & Gretchen
- 1008 Lower Sounder down PRUD-6
- Feel slight block @ 3.9'
- bottom of probe 29.7' b/s
- 1 1/4" O.D. 5/16" I.D. PVC, Soft bottom
- Flush lid w/ only 1 of 2 bolts 1/16"
- No lock, No rubber gasket.
- 1030 @ PRUD-5, 2007 Master lock
- Valved bar barb reduces and
- inside dia @ top to 5 1/8" I.D.
- couldn't get sounder down probe
- 1045 @ PRUD-4, key 2007 Master
- lock, barb valve pops off flush
- No threads on pvc, 7/8" O.D. 5/16" I.D.
- Valve has 15 written on it.
- 2.3' below top of probe obstructed
- enough that ~1/2" sounder can't
- get passed
- Probe is 1/2' below top of
- surface casing. Top of surface
- casing 2.3' above land surface
- 1140 After a Home Depot run back
- @ PRUD-5.
- Obstruction @ 2.9' below top

- 5/10/13 Measuring Probe Depth MWB
- of probe - using rope w/ screw
- as a wt @ the end
- Cleared obstruction w/ thin
- metal rod then lowered
- wire down. T.O @ 32.8' below
- top of probe. ~1/2" I.D. 15 written on Probe
- Top of probe 0.3' below top
- of surface casing. Surface
- casing 2.3' above land surface
- = bottom of probe 30.5' b/s
- 1200 At PRUD-4, cleared block
- w/ metal rod, lowered wire
- to 11.6' below top of probe
- see previous entry for probe ht
- above ground. 15 written on valve
- 1217 @ PRUD-3, lowered wire
- obstructed or T.O @ 4.5 ft b/s
- ~1" I.D.
- 1230 @ PRUD-2 5/16" I.D. can get
- metal rod past obstruction but
- can't get wire past to measure
- dept
- Heading to MW-7

5/10/13 Measuring Probe Depth MBS

1240 @ MW-7 - TD = 18.7' below
land surface top of casing
~ 18.5' below land surface

1300 @ MW-8 TD = 18.7' below
TOC = 18.5' f.b.s

1310 @ ~~MW~~ MW-9 TD = 19.4' b.s

1340 @ MW-5 TD = 14.6' f.b.s

located ~ 7.5' f.d. due south
of the corner of sidewalk and
street in the grass. No surface
casing - Headed back to office

MBS

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2/21/13 - 2/25/13



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BP LOU RI

Soil Gas Sampling
New Probes

Book 3 of 3



Name _____

Address _____

Phone _____

Project contains all bot 2/20/13
See Gallows - 2013 - 1/2
See book 1, pg 14-18

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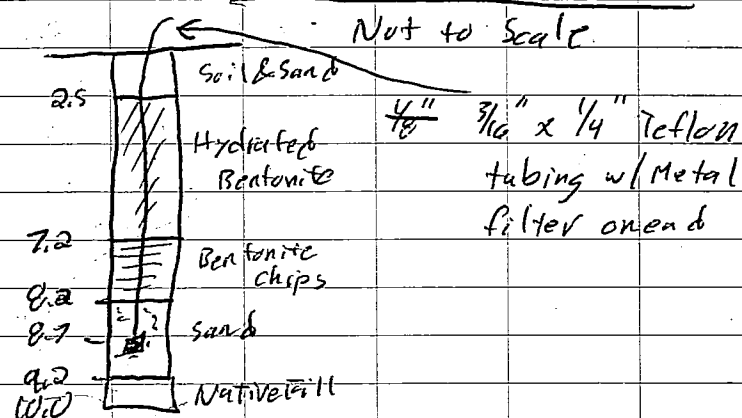
2/21/13 Gollob Park - Geo probe MWB

0828 from 9' to 10' cobbly sand.
 0830 Temporarily insert 10' piece of pvc as guide for soil gas teflon tube w/ metal filter to slide down to bottom of borehole.

0832 Some material sluffed into hole
 TD now 9.2 ft bls

0835 Turn from ECC onsite, insert 6" sand, then lowered teflon tube then another 6" sand, added dry bentonite and then a bentonite slurry

Gollob-2013-3 Asbuilt



0840 Mob to Gollob-2013-4

0900 Pushing 1st joint 4 ft long, 3' recover x
 0905

2/21/13 Gollob Park - Geo probe MWB

0910 pushing 2nd joint, 4 ft long 2.7' recover

0918 pushing 3rd joint, 4 ft long 2.5' recovery
 Really hard ~8.5 to 10.5 ft bls. - Cobbles
 Bottom of tube ~11 to 12 ft bls has black material, cardboard - start of trash

0920 4th joint 4 ft long 2 ft recovery,
 landfill material - glass, plastic bags
 black oily sand drilled deeper later

0928 5th joint hit refusal after pushing in 2.3' = 18.3' bls, 2' refusal (MWB)
 recovery of 2.3' installed. Black sand on top 1.2' ft, brown brick looking material, crushed rock, bottom has weathered plywood

0932 MWB requested they try to go deeper since not through landfill material.

0935 Crew was able to push an additional 1.7 ft from original 20 ft of pipe then added 5 ft joint inserted 3.3 ft

0945 of 4th installed 4 ft installed since initial refusal. 3.5' recovery
 MWB

2/21/13 Gollob-2013-4 MWB

Cont. Top 1 ft of 3.5 ft recovered is landfill material including $\frac{1}{8}$ " thick plastic like material that forms disks in the sampling tube

1040 Refusal @ 25' b/s, recovered 1 ft from 23 to 25'

1045 Went to install soil gas probe but discovered hole collapsed/blocked at ~12 ft b/s = top of trash.

1200 Crew pushed through blockage and now back down to 25 ft b/s w/ dual wall casing

1220 Tripped back out

1225 Discovered hole collapsed/blocked again @ ~12 ft b/s.

1235 Decided to try a new hole and stepped out ~1' from original hole.

1240 Crew is using a solid tip at the end of the dual wall casing rather than a hollow recovery tip. No soil samples will be collected.

1300 Refusal @ 23.7' b/s

1315 Pulled out inner rod and installing

2/21/13 Gollob-2013-4 MWB

Cont. pvc inside dual wall casing as a guide for the soil probe tube

1330 Double checked depth @ 23.5'

1335 Started pulling out dual wall tube and realized the tube had sheared off and 13 ft of $2\frac{1}{8}$ " ^{steel} pipe is downhole ~23 ft of pvc is also stuck down hole

1340 MWB called Alison to inform her of the issue and that we are going to break the pvc off ~4 ft below land surface and abandon both hole w/ hydrated bentonite to top of pvc (~4' b/s) then top holes off w/ sand

1430 Mob rig down to BSL-2013-01 located in the field east of Broadway Proper. Southern most 5 ft deep soil boring

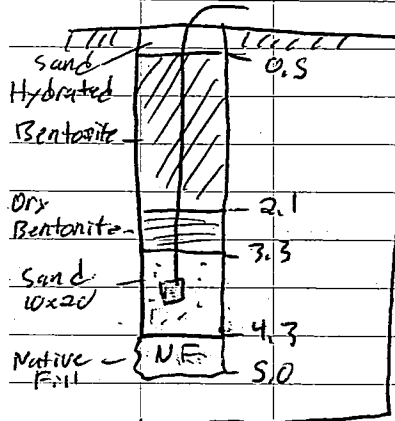
1435 2.7 ft recovery from 0 to 5', trash on bottom foot

2/21/13

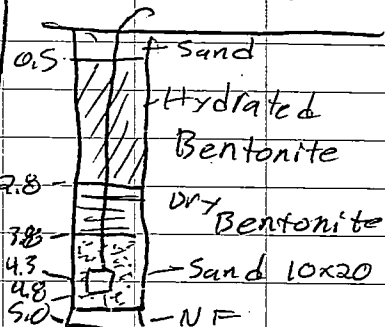
Geo Probs

MB

1440 BSL-2013-01 As-Built



BSL-2013-02 As-Built



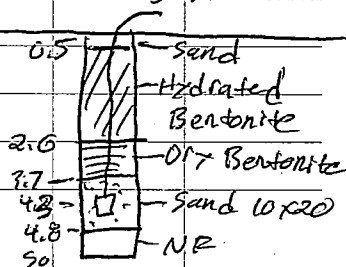
1450 Mob to BSL-2013-02 located in the middle of the empty lot south of the Hilton and NE of Broadway Proper

1500 Arrive @ BSL-2013-02

1505 4 ft recovery from 0'-5', Uniform Gravelly Sand w/ lenses of clay
No trash observed

1520 Mob to BSL-2013-03 located on the North end of the empty lot south of the Hilton.

BSL-2013-03 As-Built



1525 4 ft recovery
No trash, Gravelly sand

2/21/13

Geo Probs

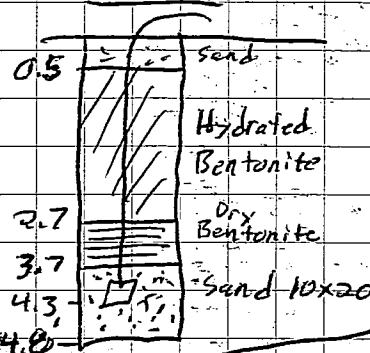
MB

1545 Mob to BSL-2013-04 located in empty lot west of the Hilton on the northern half.

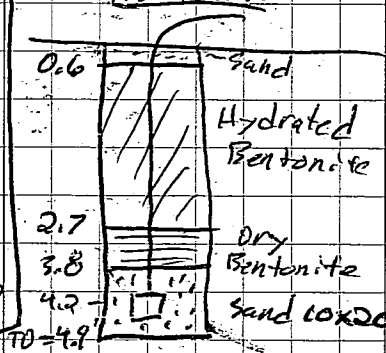
1555 4.5' Recovery from 0'-5'

Silty Sand w/ gravel, increased gravel and dry below 1'. Silty Sand w/ gravel, increased gravel & dry below 1'. No trash observed

BSL-2013-04 As-Built



BSL-2013-05 As-Built



1610 Mob to BSL-2013-05, located on south end of empty lot west of Hilton

1615 4.5' recovery 0' to 5', Silty Sand, slight increase in gravel w/ depth.
No trash observed.

1645 Mobbing offsite.

Rite in the Rain

2/22/13

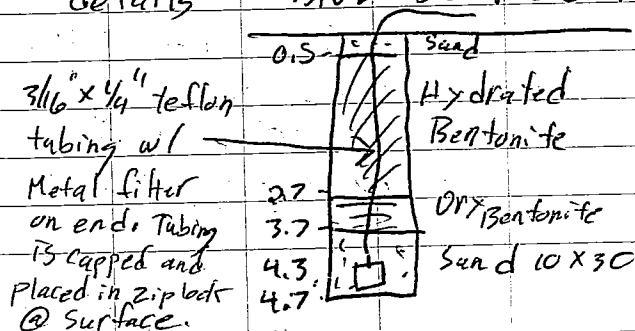
GeoProbe

MW13

0745 Arrive @ Broadway North Landfill
and drive to BNL-2013-06, the
Northern most Geoprobe, located ~30'
(M13) Slightly North of DP-7. Geomechanics
and their Geoprobe also on site.
0800 Safety topic, random people walk
through site, uneven terrain, Don't
rush

0820 All locations in BSL and the
entire BNL have been blue staked
and cleared by all appropriate
utility & cable companies

0825 Start pushing BNL-2013-06
3.5' recovery 0-5'. All BSL &
BNL Geoprobe & soil gas wells
are only ~5 ft bls. Sample is
Gravelly Sand No trash observed.
See Soil Gas Field sheet for more
details - BNL-2013-06 As-built

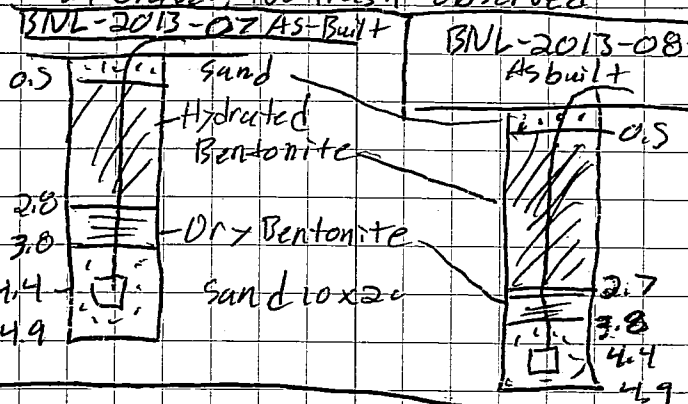


2/22/13

GeoProbe

MW13

845 Mob to BNL-2013-07 located
~100 ft north of DP-2,
850 3.5' recovery from 0-5' Silty Sand
w/ Gravel. No trash observed



910 Arrive @ BNL-2013-08

915 3.0' recovery from 0 to 5'
Silty Sand w/ gravel, @ ~2 ft
Glass @ 2.5 ft + trash ~70% wood,
glass, plastic + organic smell

920 Finish construction see as-built
above

0935 Arrive @ BNL-2013-09

0937 Started pushing then after ~4 ft
the stricker bar broke. Remove probe
Abandon hole w/ hydrated bentonite,
Inform Alison - Mob offsite

2/25/13 Geoprobe MWB

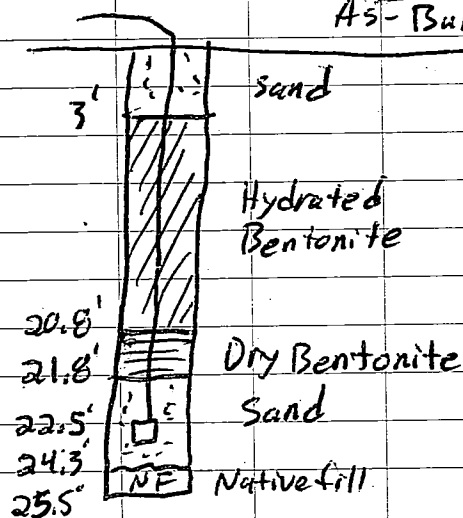
0930 MWB and Geomechanics onsite

@ Collob-2013-4. Using geoprobe to re attempt temporary soil gas probe installation. Health Safety tailgate meeting - pinch pts and working on uneven surfaces

0940 Start pushing, Tom w/ ECC onsite

0945 Refusal @ 25.5 ft bls, Trash

from ~11.7' to 20' includes newspaper, glass, plastic bags, rubber, oily sand (5.2 ppm w/ PID) wood & sand w/ oily odor ~50% trash. A few pieces of glass below 20 ft.

Collob-2013-4As-Built

2/25/13 Geoprob MWB

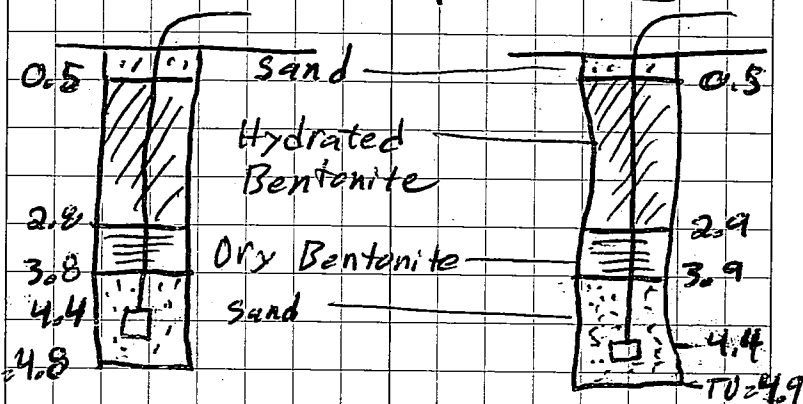
1050 Had some difficulty getting tubing to stay down hole and ended up installing ~2 ft of sand below probe and ~0.75 ft above probe

1130 Finished construction of temp soil gas probe. Cleaning up and mobbing to BNL

1225 Arrive @ BNL-2013-09

3 ft recovery 0-5 ft, trash

1.5 to 4 ft, silty sand w/ gravel

BNL-2013-09As-BuiltBNL-2013-10As-Built

1245 Arrive @ BNL-2013-10

4 ft recovery 0 to 5', Glass @ ~4'

Rite in the Rain

2/25/13 Geoprobe

MWB

1255 Arrive @ BNL-2013-13

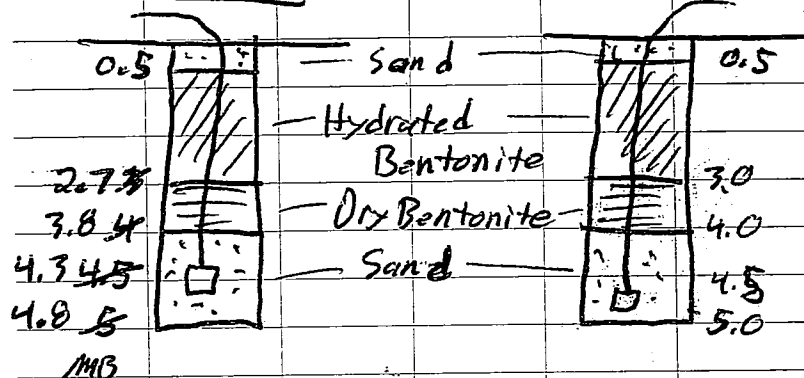
Hit refusal after ~2.5 ft. Stepped
out. Hard to push through 3 ft.
3 ft recovery 0-5 ft, plastic
bags, rubber w/ tire tread @
~2 ft.

BNL-2013-13

As-Built

BNL-2013-11

As-Built



1330 Arrive @ BNL-2013-11,

4 ft recovery 0 to 5' No trash
observed

1340 Finished Construction

1350 Arrive @ BNL-2013-12

4.5' recovery 0-5' No trash
observed

2/25/13 Geoprobe

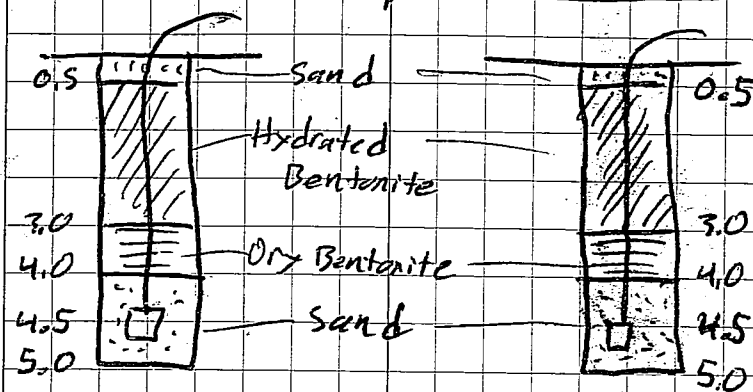
MWB

BNL-2013-12

As-Built

BNL-2013-14

As-Built



1400 Arrive @ BNL-2013-14

4.5' recovery from 0 to 5'

1410 No trash Observation

1430 Arrived @ BNL-2013-15

4.7' recovery from 0 to 5'

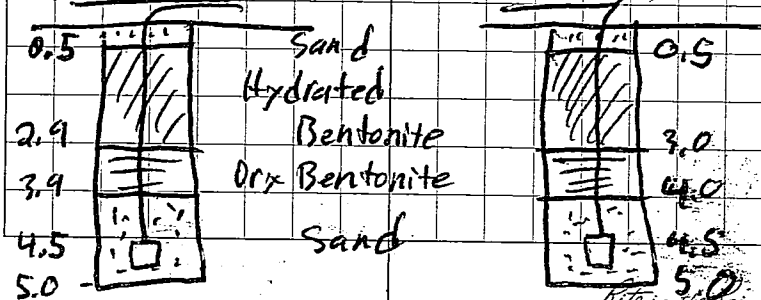
No trash Observed

BNL-2013-15

As-Built

BNL-2013-16

As-Built



Hole in the rain.

2/25/13

Geoprobe

MB

1445 Arrive @ BNL-2013-16

3 ft recovery from 0 to 5'

No trash Observed

1455 Arrive @ BNL-2013-18

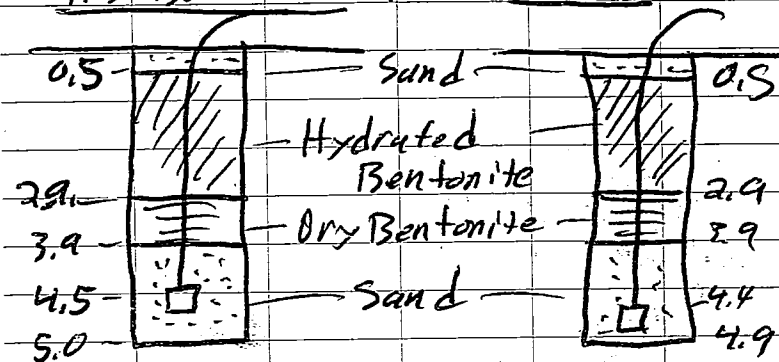
4.3' recovery 0-5' No trash
Observed.

BNL-2013-18

As-Built

BNL-2013-17

As-Built



1525 Arrive @ BNL-2013-17

3.0 ft recovery 0 to 5 ft Trash

including wood, rubber, and newspaper

1540 Arrive @ BNL-2013-19

4.5 ft recovery No trash
Observed

2/25/13

Geo Probe

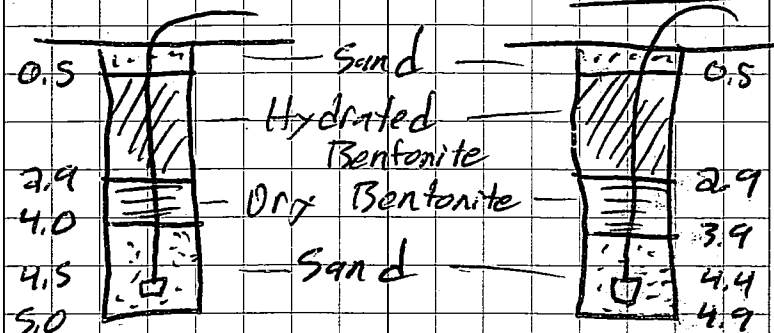
MW13

BNL-2013-19

As-Built

BNL-2013-20

As-Built



1600 Arrive @ BNL-2013-20

3 ft recovery 0 to 5' trash,
including glass, newspaper and
plastic @ ~3 ft1615 Finished all construction
loading equipment for
demob

1630 Mob offsite