ecology and environment, inc.

International Specialists in the Environment

Job Number

Keizer Hg

ecology and environment, inc.

Recycled Paper/569129

E & E Job Number _____

Telephone Code Number _____

Site Name KEIZER MERCURY RESPONSE

City/State Keizer, Marion Co., Oregon

TDD _____

PAN _____

SSID _____

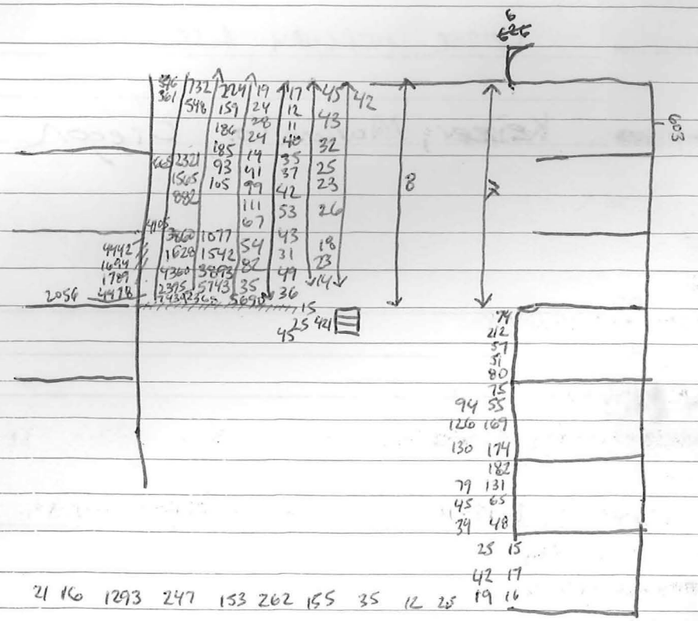
Start / Finish Date 8-12-16 / _____

Book 1 of _____

E & E Emergency Response Center: (716) 684-8940
E & E Corporate Center: (716) 684-8060
MEDTOX Hotline: (501) 370-8263
E & E Safety Director (Home): (716) 655-1260

1010 AUGUST 13, 2016 Keizer Hg 8/23/16

2 - CAR AMBIENT BACKGROUND
4 - CAR CARPET AVERAGE
6 - AMBIENT AIR

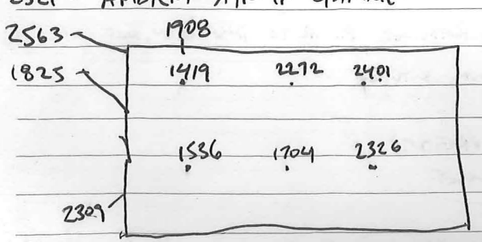


AUGUST 13, 2016 Keizer Hg 8/23/16

603: (b) (6) - FEMALE, (b) (6) [redacted], GAVE US ACCESS TO (b) (6) [redacted]
- VEHICLE PARKED PREVIOUSLY IN LOT SPACE 603 INSIDE INITIAL SPILL EXCLUSION AREA. FD ASKED HER TO MOVE VEHICLE LAST NIGHT
2, 4 - (b) (6) [redacted] SEAT
23 - [redacted] DRIVER SIDE CARPET
7 - [redacted] DRIVER SIDE PEDALS
27 - [redacted] REAR PASS. CARPETS
6 - (b) (6) [redacted] PASS SEAT
2, 6, 7, 2 - (b) (6) [redacted] TIRES
1132 - 603 INTERNAL INSPECTION
2 - FRONT DOORMAT
3 - FRONT CARPET
1 - AMBIENT AIR
4 - KITCHEN AMBIENT AIR, 1 - KITCHEN FLOOR
3 - BEDROOM CARPET
2 - VACUUM
0 - HALL CARPET
2 - (b) (6) [redacted] SHOES
3 - (b) (6) [redacted] AMBIENT AIR IN BEDROOM
0 - PORCH DOOR
1142 - 603 INTERNAL INSPECTION COMPLETED.
60-93 - FIRST 3 SIDEWALK BLOCKS TO RIGHT OF 603, REMAINING BLOCKS LESS THAN 20 ng/m3
1150 - 611 INSPECTION, PREVIOUS TENANT AND OCCUPANT OF GARAGE SPACE, SPILL SITE
8, 2, 6, 5, - FRONT SIDEWALK EXTERIOR
22 - UNDER DOORMAT EXTERIOR
29 - WOODEN FRONT FOYER
10 - INTERIOR STAIRS
10, 11, 12, - CONCRETE FLOOR FIRST FLOOR, CARPET REMOVED PRIOR TO INSPECTION, NOT SITE HG RELATED. (LIVING ROOM, DINING ROOM, KITCHEN
64 - SWEPT DUST
19 - KITCHEN DRAINS (NO GARBAGE RAIL PRESENT)
10 - AMBIENT AIR IN WASHER/DRYER CLOSET
6, 8 - WASHER/DRYER VENT IN CLOSET
4 - BATHROOM FLOOR, 5 - SINK DRAIN, 3 - TOILET BOWL

AUGUST 13, 2016 Keizer Hg 8/23/16

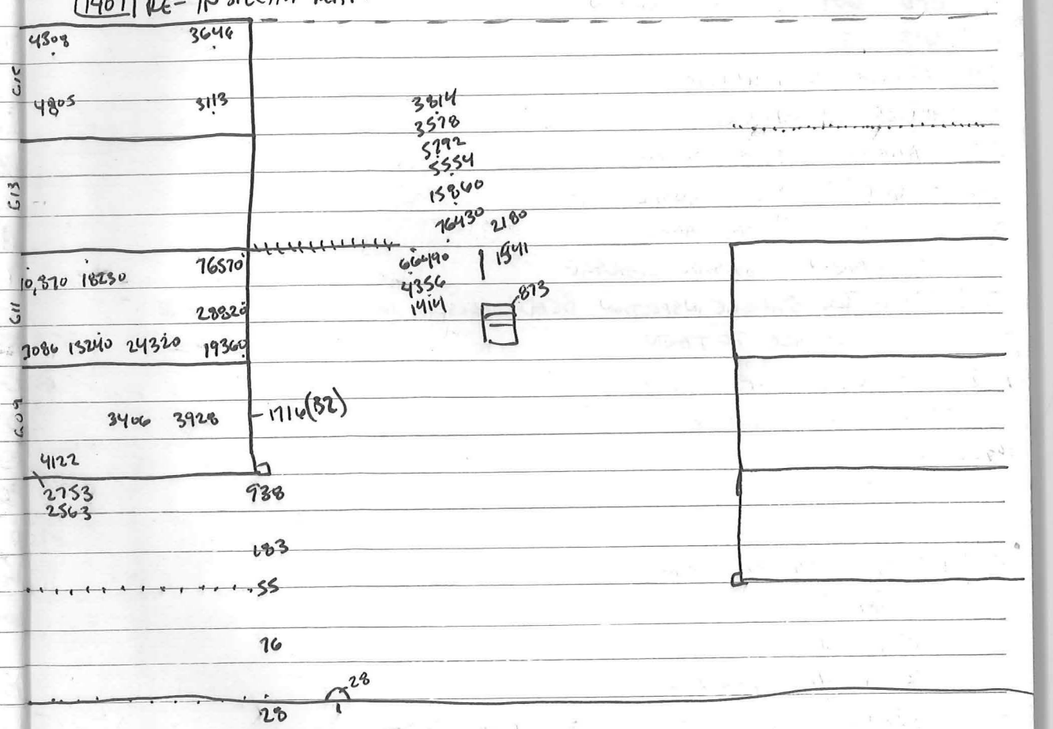
9- AIR VENT IN LIVING ROOM
4- STAIRS TO SECOND FLOOR
2- 2nd FLOOR BATHROOM FLOOR
8- 2nd FLOOR BATHROOM TOILET
3- " " SINK DRAIN
4- " " TUB DRAIN
2- 2nd FLOOR AMBIENT AIR
8 - MASTER BEDROOM FLOOR (CARPET REMOVED)
7- MASTER " CLOSET
7- MASTER " AMBIENT
5- " " WALL VENT
8- 2nd FLOOR CABINETS (LINENS)
5- 2nd BEDROOM FLOOR (CARPET REMOVED)
3- " " AMBIENT AIR
609 - (b) (6) [redacted]
76- FRONT STOOP EXTERNAL 2nd STAIR
42- FRONT FOYER
52- LIVINGROOM CARPET
76- 1st STAIR TO 2nd FLOOR
14- 2nd STAIR TO 2nd FLOOR
12,14 - SHOES
17- PORCH DOOR
853- FRONT RUG EXTERIOR
15,32- SIDEWALK LEADING TO HOUSE FROM MAIN SIDEWALK
13,12,17 - MAIN SIDEWALK FROM 609 TO SITE LOCATION PARKING LOT
695 - GARAGE INSPECTION
2321 - AMBIENT AIR IN GARAGE



1138- LIGHT SWITCH

AUGUST 13, 2016 Keizer Hg 8/23/16

2637- 5' AMBIENT AIR
2084- 6' "
2716- 7' "
1240 / PARKING LOT ## = Hg BEADS VISIBLE - - - = EXCLUSION
1407 RE-INSPECTION MAP:



1254 NRC STARTED MERCURY VAC AND BEGAN REMOVING MERCURY (VISIBLE) FROM SITE PARKING LOT. G11 GARAGE BAY ENTRY.

1407

695- AMBIENT INTERNAL GARAGE
82- AMBIENT EXTERNAL
1716- FLOOR INTERNAL GARAGE
4014- AMBIENT INTERNAL
3447- TRIKE TIRE, 2879 - TRIKE TIRE
2893- BIKE TIRE
2405- BIKE TIRE, 2190 BIKE TIRE, 3102- BIKE TIRE, 3221 - BIKE TIRE

AUGUST 13, 2016 Keizer Hg RW 8/25/16

973- BREATHING ZONE
429- DUST BROOM
591- BREATHING ZONE - AMBIENT
1528- GREEN TRIKE, 1256 - GREEN TRIKE, 1105 ""
1416 END 609 GARAGE INSPECTION,
1416 613 RE-INSPECTION
2745- AMBIENT AIR IN GARAGE
3113- FLOOR IN GARAGE
4788 - AMBIENT AIR IN GARAGE
1430 - 611 GARAGE INSPECTION
9,889 - AMBIENT IN GARAGE
2,820 - AMBIENT OUTSIDE GARAGE
1446 - END 611 GARAGE INSPECTION. BEADS PRESENT IN GARAGE. GARAGE SWEPT BY NRC TO THEN
1512 - R. Whitchurch takes over log. E. Cafferty running Lumex

RW pen wouldn't write in these line (sunscreen smudge)?

1519 - entry mat @ #605 Apt = 20 ng/m³
Foyer = 200
Carpet to LR = 161
First stair tread carpet = 150
2nd " " " = 162
Ambient air LR = 83
Child's shoes = 136/128
Adult's shoes = 103/100
Ambient outside Apt #605 = 7 ng/m³
Jeff Fowlow briefs residents.

AUGUST 13, 2016 Keizer Hg RW 8/23/16

1526 At Apt 639
- Concrete walk outside = 3
- Foyer parquet floor = 1
- Ambient air = 0
- Shoes = 2 (adult)
- LR Carpet = 7
- Jeff Fowlow briefed residents on results.

1532 At Apt 635
- Ambient outside = 6
- Welcome mat = 80
- Foyer rug = 6
- LR Carpet = 6
- Adult shoes = 5
- First stair tread = 4
- Sidewalk = 1
- Jeff briefs resident.

1535 At Apt 633.
- No one answers
- Sidewalk = 13
- Ambient outside = 30

1537 At Apt 631/629
- no one home
- Ambient Outside = 4
- Sidewalk = 5

1539 At Apt 627
- Outside ambient = 1
- Sidewalk = 1
- Welcome mat = 6
- Foyer parquet = Ø, LR Carpet = 0
- Stair - first tread = 1
- Adult shoes = 3, Child shoes = 1

AUGUST 13, 2016 Keizer Hg RW 8/23/16

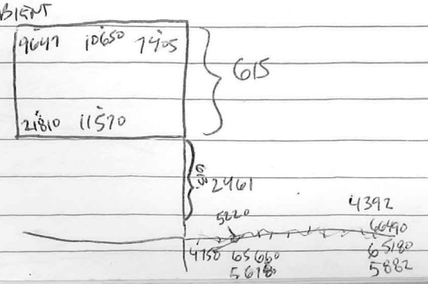
1542 At Apt 625
- Ambient outside = 4
- Sidewalk = 14
- No one home.

1543 At Apt 615
- Welcome 11
- Foyer = 4
- LR Carpet = 2
- Adult shoes = 5, 15
- Child shoes = 25
- First stairtread carpet = 26
- 2nd " " = 28
- Ambient behind curtain = 10
- LR Ambient = 37
- Sidewalk = 13
- Concrete steps = 11
- Ambient outside =

1552 At Apt 631/629
- Still no answer.

609 BIKE ASSESSMENT AFTER SUN/THERMAL TREATMENT

1,000 - AMBIENT AIR NEAR PERT (50 ft from LOT)
3378 - " " (40 ft from LOT)
3,000 - PURPLE BIKE TIRE
7922 - PINK BIKE TIRE / 6757
18790 - RED BIKE
1645 - 615
8279 - AMBIENT
7405 -



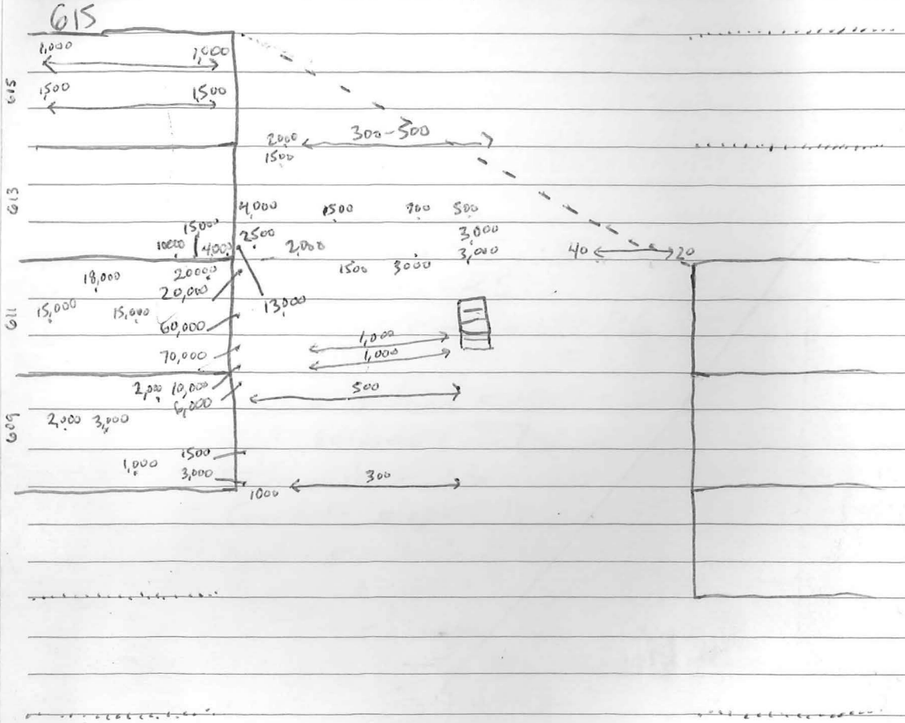
AUGUST 13, 2016 Keizer Hg RW 8/23/16

4936 - AMBIENT AIR NEAR DRAIN
2535 - INSIDE DRAIN BASIN

AUGUST 14, 2016 Keizer Hg 8/23/16

0954 LUMEX FIRED UP RSD = 1%.

DUKE SCANNING PARKING LOT AREA --- = EXCLUSION



609 GARAGE

1500 - BIKE TIRE AVERAGE ; 1,000 AMBIENT AIR

611 GARAGE

15,000-18,000 AMBIENT AIR IN 611 GARAGE

615 GARAGE

1,000- AMBIENT AIR IN GARAGE

603 GARAGE

4,000- AMBIENT AIR IN GARAGE

R. Whitchurch 8/23/16

CAR SYNCRINILATION TOOL - SOURCE OF CONTAMINENT

AUGUST 14, 2016 JULY 28th DATE OF SPILL - Keizer Hg 8/23/16

2220 2960 RESIDENCE (NEW) OF PRP

70- AMBIENT OUTSIDE

4700- AMBIENT LIVINGROOM ; 500- AMBIENT LIVINGROOM

800- LIVINGROOM CARPET ; 2000 - LIVINGROOM CARPET NEAR COFFEE TABLE

800- AMBIENT AIR LIVINGROOM

35,000- FAMILY VACUUM DYSON (DC14) MODEL 177-US A-108603

100 - GARAGE AMBIENT

~~6,000~~ 15,000 GARAGE GARBAGE

~~1,000~~ 1,200 SHOES (MALE, OWNERS) IN GARAGE

1200- VEHICLE IN GARAGE

80 - BABY SCOOTER

2,000 - GARAGE FLOOR

700 - (b) (6) BEDROOM AMBIENT + CARPET + BED

800 - MASTER BEDROOM AMBIENT + CARPET

2,000 - MASTER CLOSET SHOES

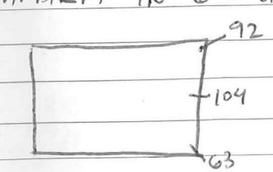
15,000 - WASHING MACHINE

500- DINING ROOM AMBIENT

1428 603 GARAGE INSPECTION

64- AMBIENT OUTSIDE THE GARAGE

82- AMBIENT IN 603 GARAGE



1430 SEWER DRAIN CENTRAL TO SPILL PARKING LOT SAMPLED

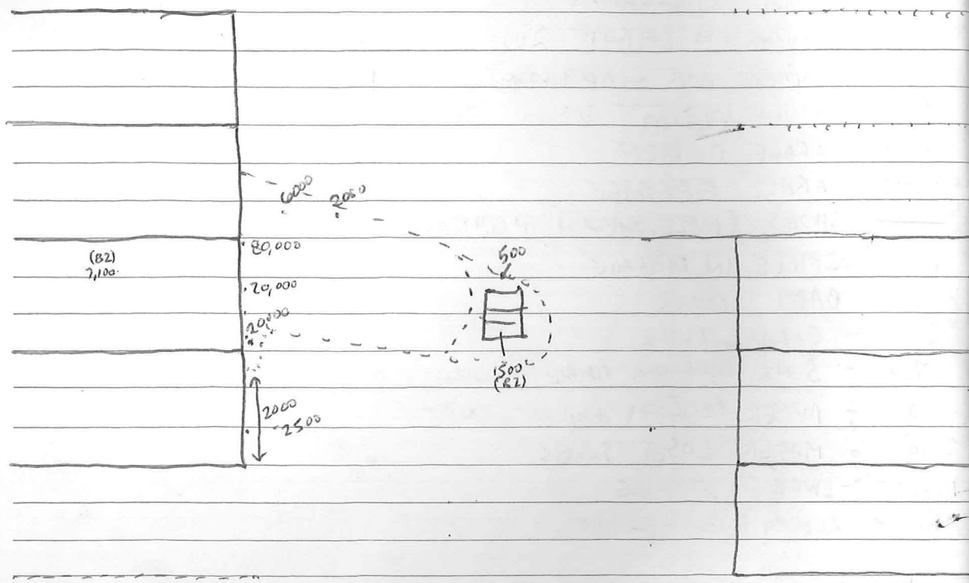
47,000 : SEWER DRAIN (NEAREST TO SPILL SITE)

120 : SEWER DRAIN TOWN HOME RESIDENTIAL ROAD

R. Whitchurch 8/23/16

AUGUST 15, 2016 Keizer Hg @ 8/23/16

900 START NUCHIMS + CAFFERTY SURVEYED PARKING LOT AREA TO DETERMINE EXTENT OF CONTAMINATION



1000 ~~SEWER~~/STORM DRAIN INSPECTION FOR FREE MERCURY
1,000 AMBIENT AIR IN STORM DRAIN BASIN
NUCHIMS INVESTIGATED DRAIN TO LOOK FOR SUSPECT MATERIAL
SOME MATERIAL WAS EXTRACTED BUT NOT TESTED. DRAIN WILL BE CLEANED.

1215 NRC LIFTED STORM DRAIN 1,000 AMBIENT AIR IN DRAIN.
NRC SCRAPED AND USED MERC VAC ON 611 GARAGE SEAM
ALSO SCRAPED STORM DRAIN INNER METAL FRAME TO REMOVE ANY POTENTIALLY CONTAMINATED DEBRIS. ALL MATERIAL WILL BE REMOVED FROM STORM DRAIN. 1"x1" DRAIN W/ 1-2" Sediment

1400 NRC COMPLETED FIRST PASS OF SCRAPE + MERC VAC TO REMOVE MOST DEBRIS FROM 611 SEAM CRACKS. R. Whitchurch 8/23/16

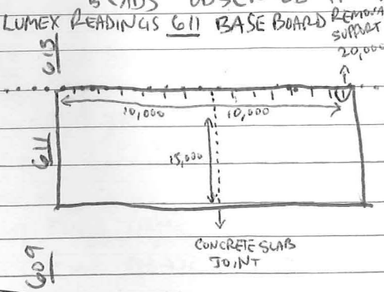
AUGUST 15, 2016 Keizer Hg @ 8/23/16

1412 START SCREENED CRACKS OF 611 GARAGE SEAM, AMBIENT AIR OUTSIDE GARAGES, AMBIENT AIR INSIDE 611 GARAGE AND STORM DRAIN SEE BELOW.
96 - AMBIENT AIR OUTSIDE EXCLUSION ZONE
1500 - STORM DRAIN (NEAREST TO SPILL LOCATION)
7,100 - AMBIENT AIR INSIDE 611 GARAGE
20,000 - 80,000 (100,000 PEAK) - 611 GARAGE SEAM (SEE MAP ON PREVIOUS PAGE FOR LOCALIZED READINGS)

1500 NRC REMOVED BASE 1' ~~POLY~~ PARTICLE BOARD WOOD WALLS ALONG 611 BASE (613 ON OPPOSITE SIDE). READINGS BELOW - SEE DRAWING BELOW.
10,000 - ALONG PARTICLE BOARD SEAM (INSIDE 611 CONNECTING TO 613 GARAGE)
15,000 - CONCRETE SLAB JOINT INSIDE 611
20,000 - SUPPORT BEAM BASE IN 611 NEAREST TO 613 ON OPPOSITE SIDE (SEE MAP BELOW)

1645 START RW + OSC FRANKLIN WENT TO PRP'S NEW RESIDENCE TO SCAN VEHICLE USED TO TRANSPORT MOVING BOXES, START RYANS READINGS:
70-80,000 - CAR INTERIOR ~~AIRS~~ AMBIENT
24-76,000 - CAR MATS
4-7,000 - AMBIENT IN CAR → REMOVED MATS AIRED OUT
50-76,000 - BACKSEAT BENCH
60-83,000 - BACK SEAT OF VEHICLE FLOOR
2-9,000 - FRONT SEATS
1400 - CAR PETALS
2-9,000 - FRONT CARPET
BEADS OBSERVED IN REAR VEHICLE FLOOR

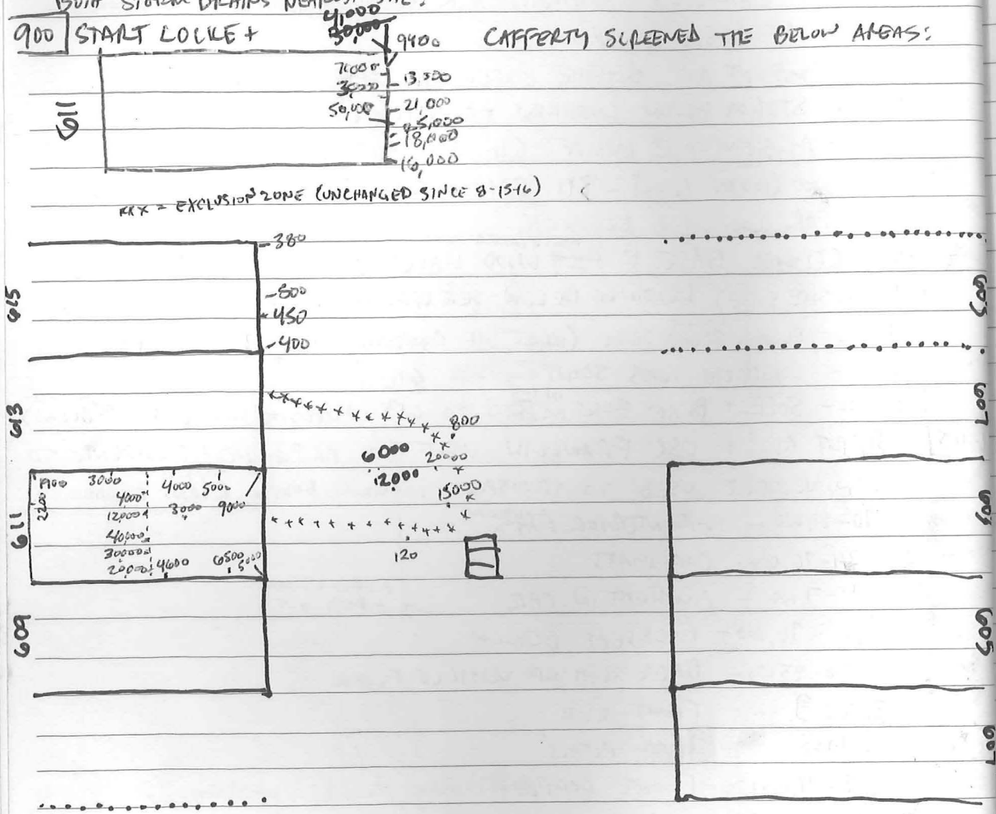
1500 LUMEX READINGS 611 BASE BOARD



R. Whitchurch 8/23/16

830 NRC USED INDUSTRIAL FAN TO DRY STORM DRAIN. START LOCKE + CAFFERTY SCREENED BOTH STORM DRAINS NEAREST SITE.

900 START LOCKE + CAFFERTY SCREENED THE BELOW AREAS:



XXX = EXCLUSION ZONE (UNCHANGED SINCE 8-15-16)

READINGS HAULTED OF PARKING LOT SPILL SITE DUE TO REMAINING VISIBLE BEADS.

1600 – AMBIENT IN 611

200 – AMBIENT AIR OUTSIDE GARAGES

1100 NRC USED MERCURY VACUUM TO SUCTION REMAINING SMALL BEADS IN PARKING LOT. A WIRE BRUSH WAS FIRST USED TO SCRAPE SMALL SPACES BETWEEN PAVEMENT IN ATTEMPTS TO COLLECT SMALL BEADS. THE SUCTION HOSE ADAPTER WAS 1" X 2-3 cm

R. Whitchurch 8/23/16

700 EPA JUDY SMITH, START WHITCHURCH + CAFFERTY LUMEX SCREENED HOUSING FOR THOSE WE WERE GRANTED ACCESS.

APARTMENT 579

14 – STAIRS
12 – FRONT DOOR MAT
23 – WOODEN FLOORS
35 – FRONT AREA RUG
5 – KITCHEN LENOLEUM
8 – DINING ROOM AREA RUG
17 – HALL CARPET
8 – SIDEWALK LEADING TO APARTMENT FROM PARKING AREA

TENANT BELIVED BELOW NEIGHBOR IN 589 MAY HAVE TRACKED IN Hg IN STAIRWELL

589 APARTMENT – RHONDA KEUSCHER (SON RIDING BIKE DISCOVERED MERCURY)

26 – DOOR ENTRYWAY
31 – METAL THRESHOLD
7 – WOOD FLOOR
19 – KITCHEN FLOOR
16 – HALLWAY ~~PARK~~ CARPET
21 – BIKE (USED WHILE DISCOVERING MERCURY)
10 – SHOES

597 APARTMENT

4 – DOOR MAT
7 – METAL THRESHOLD
24 – FRONT ENTRY MAT
34 – FRONT LENOLEUM HALLWAY
23 – KIDS SHOES

633 APARTMENT

78 – FRONT STOOP
92-128 – FRONT DOOR MAT
74 – THRESHOLD
62 – WOOD FLOOR (FRONT)
70 – AREA RUG (FRONT)
44 – LIVINGROOM CARPET
51 – LIVINGROOM RUNNER CARPET
18-25 – KITCHEN LENOLEUM
44 – LIVINGROOM CARPET

R. Whitchurch 8/23/16

AUGUST 16, 2016 Keizer Hg @ 8/23/16

629 APARTMENT

31- FRONT DOOR MAT
116- WOODEN FLOOR (FRONT)
11- METAL THRESHOLD
153- LIVINGROOM RUG RUNNER
285- LIVING ROOM CARPET
325- FIRST STAIR
373- FOURTH STAIR
104- SHOES (ADULT MALE)
175- SHOES (CHILD)
167- LIVINGROOM AREA RUG
102- DINING ROOM
61- AMBIENT AIR
167- KITCHEN RUG

354- 8th STAIR TREAD
318- 11th STAIR TREAD
388- TOP LANDING
148- AMBIENT AIR
254- VACUUM HEAD
148- FILTER VACUUM
1804- VACUUM PEAK EXHAUST
96- VACUUM AVG. EXHAUST

631 APARTMENT

32- WELCOME MAT
46- METAL THRESHOLD
21- WOODEN FLOOR
51- FIRST STAIR
45- LIVINGROOM CARPET
115- VACUUM BAG
143- VACUUM HEAD

1300 START WHITCHURCH AND LOCKE RE-ASSESSING POST MICRO BEAD REMOVAL OF SPILL LOCATION IN PARKING LOT. NRC HAD USED SMALL WIRE BRUSH AND CONCENTRATIONS STILL EXCEEDED 100,000. MERC-X WAS APPLIED TO AREA AFTER BRUSHING + USE OF MERCURY VACUUM. MERC-X APPLICATION IN GARAGE 615 RESULTED IN ELEVATED (VMA) RESULTS AFTER APPLICATION, RE-SCREENING AFTER 1 DAY POST MERC-X APPLICATION REVEALED READINGS BELOW CLEAN-UP LEVELS. SEE PAGE 10 FOR 615 RESULTS.

1500 NRC USED CIRCULAR SAW TO CUT INTO THE SECTION OF THE ASPHALT INFRONT OF 611 GARAGE. USED MIST / PESTICIDE APPLICATOR BOTTLE TO COOL SAW BLADE. TWO DATARAMS WERE USED ON SITE ONE ~~NORTH~~ UPWIND / DOWNWIND ~~SOUTH~~ OF SITE ACTIVITY. DOWNWIND TWA = 49 mg/m3, UPWIND TWA = 20 mg/m3 R. Whitchurch 8/23/16

AUGUST 16, 2016 Keizer Hg @ 8/23/16

600 APARTMENT GARBAGE SCREENED WITH LUMEX. BIN CLOSEST TO BACK OF GARAGE 613 VMA READ 15,000 ng/m³; BIN CLOSEST TO BACK OF 615 GARAGE READ 286 ng/m³

615 GARAGE 609 WAS RE-SCREENED BY REQUEST OF OWNER TO DETERMINE IF BIKE TIRES WERE STILL ABOVE CLEAN-UP ACTION LEVEL. SEE START LOCKE'S LOGBOOK FOR ALL READINGS. 609 OWNER SPOKE WITH BOTH JUDY SMITH AND OSC FRANKLIN WITH REGARD TO MERCURY CONTAMINATION PATHWAYS / PRECAUTIONS. 609 HOME WAS SCREENED 8-18-16. SEE PAGE 4 FOR RESULTS.

1620 TENANT OF 605 WAS INTERESTED IN GARAGE SCREENING WHILE GETTING BAGS FROM GARAGE UNIT. SEE START LOCKE'S LOGBOOK FOR READINGS. 605 HOUSE WAS SCREENED PREVIOUSLY.

1700 GARBAGE BEHIND 613 GARAGE UNIT WAS TAPED OFF WITH CAUTION TAPE PREVENTING RESIDENTS FROM ADDING MATERIALS TO BIN. GARBAGE BAGS WILL BE INDIVIDUALLY ASSESSED TOMORROW TO LOCALIZE CONTAMINATION SOURCE.

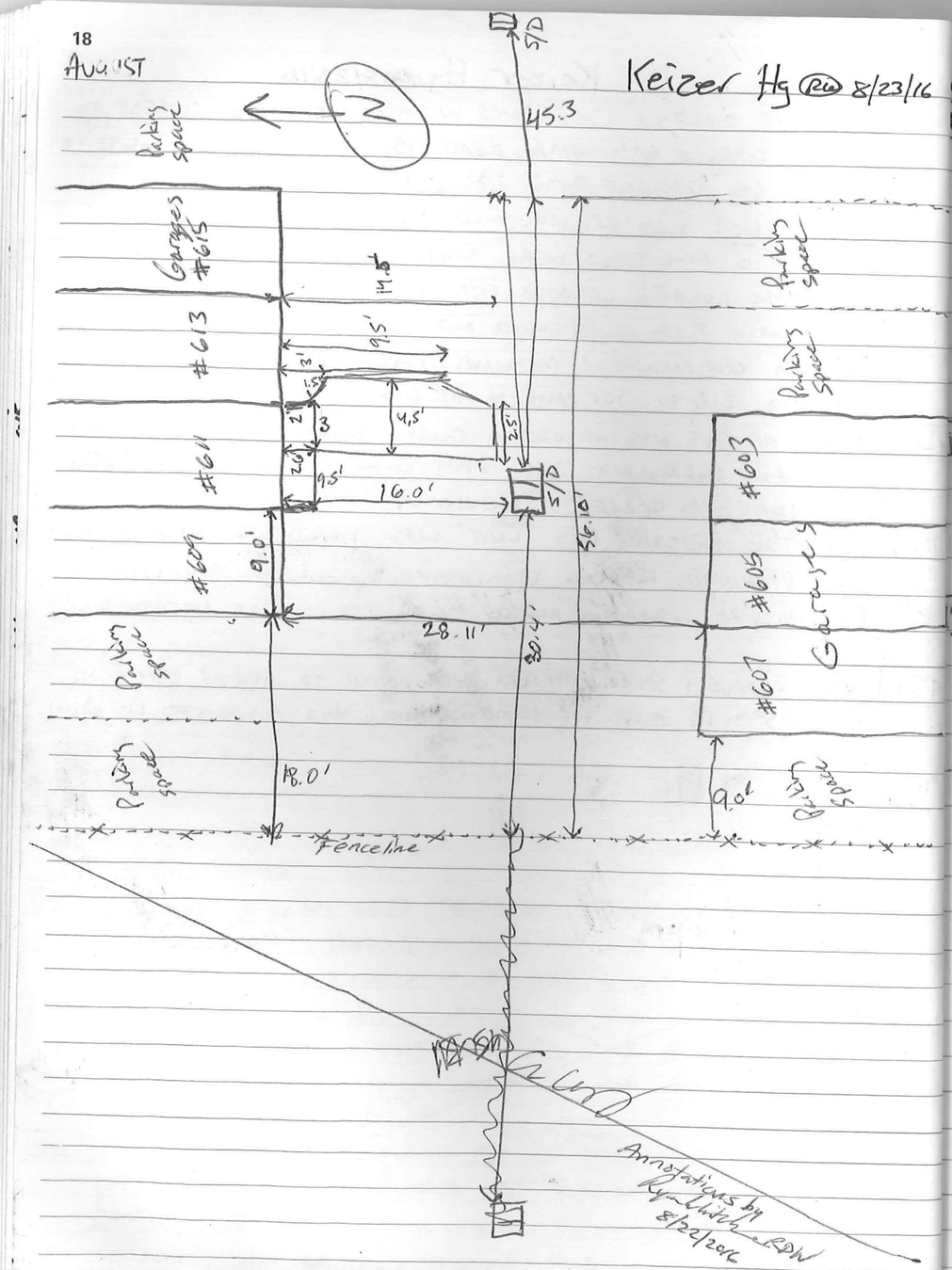
1730 START CAFFERTY SPOKE WITH EPA JUDY SMITH TO REVIEW REMAINING RESIDENTS TO BE ASKED FOR HOME / CAR / MISC. VMA ASSESSMENT. LIST BELOW.

583
593
595
621
623
613 - AFTER 4:30 PM

E Caffe

AUGUST

Keizer Hg RW 8/23/16



AUGUST 17, 2016 Keizer Hg RW 8/23/16

1723 PREVIOUS 611 TENANT'S TRUCK DECONTAMINATION START. START LOGGING RECORDED INITIAL READINGS, START EMC'S POST CARPET + FABRIC REMOVAL.

3607 - AMBIENT INSIDE TRUCK CAB

12,150 - FOAM ON FLOOR OF REAR PASSENGER SEAT (UNDER CARPET; POST CARPET REMOVAL).

9348 - REAR PASSENGER SEAT

20190 - REAR CAVITY DOOR (PRIOR TO OPEN)

48510 - REAR CAVITY ONCE OPENED

8767 - REAR FOAM PIECE PASSENGER SEAT (FABRIC REMOVED)

1915 OSC FRANKLIN OPTED TO USE SULFUR POWDER ON ALL AREAS WHERE CARPET WAS REMOVED AND CAVITY IN REAR PASSENGER SEAT. REAR PASSENGER SEAT FABRIC WAS REMOVED FROM FOAM BACKING BUT READINGS ABOVE ~9,000, FRANKLIN OPTED TO ALSO REMOVE FOAM BACKING.

1943 POST SULFER POWDER APPLICATION

2136 - REAR PASSENGER SEAT FLOOR (CARPET REMOVED)

1577 - REAR PASSENGER SEAT (CARPET REMOVED)

12570 - RIM OF CAVITY DOOR (DOOR REMOVED)

14670 - CAVITY SURFACE/AMBIENT

BELOW ITEMS NOT SULFERED/ CARPET REMOVED HEPA VACUUM

9,490 - DRIVERSIDE PASSENGER SEAT (CARPET REMAINING)

300 - AMPLIFIER IN REAR DRIVERSIDE SEAT (CARPETED)

5394 - REAR DRIVERSIDE SEAT

1608 - REAR DRIVERSIDE BACKREST

8422 - REAR DRIVERSIDE CAVITY (AMBIENT IN CAVITY)

4213 - REAR DRIVERSIDE CAVITY RIM (WITH TOP REMOVED)

1576 - REAR DRIVERSIDE FLOOR

609 - REAR DRIVERSIDE SEAT

594 - REAR DRIVERSIDE BACKREST

295 - AMBIENT INSIDE CAB

470 - DRIVERSIDE FLOOR (FRONT)

290 - DRIVER SEAT

342 - DRIVERSIDE RETALS

2641 - REAR PASSENGERSIDE FLOOR

1626 - REAR PASSENGERSIDE SEATS

Ryan Whitchurch 8/23/16

AUGUST 17, 2016 Keizer Hg RW 8/23/16

798 - SEATBELT BUCKLES (ALL REAR)
2887 - REAR PASSENGERSIDE CAVITY RIM (2ND SULFOR TREATMENT)
9055 - " " INSIDE CAVITY
4,300 - " " DOOR FRAME
2460 - " "
399 - " " SEAT
" " FLOOR
760 - PASSENGERSIDE FLOOR
750 - AMBIENT INSIDE CAB
1134 - FLOOR BEHIND PASSENGERSIDE

2115 START CONCLUDES TRUCK IS CLEAN BASED ON ABOVE FINAL READINGS. START DELAYS NEXT DAYS PLAN WITH HOME OWNERS TO EVALUATE WASHER AND SIGN ACCESS/CUSTOD AGREEMENT FOR WASHER AND CONTRACT FOR REPLACEMENTS.

2130 START DEPARTS SITE FOR DAY

AUGUST 18 Keizer Hg RW 8/23/16

00 START ARRIVES ON SITE. SEE START WHITCHURCH AND LOCKE NOTES FOR TODAY'S ACTIVITIES AND READINGS.