



February 12, 2021

Mr. Julio Vazquez
Superfund & Emergency Management Division
EPA - Region 2
290 Broadway, 19th Floor
New York, NY 10007-1866

**Re: February Remedial Action Oversight Report
Wallkill Wellfield Site
Phase I Soil Remediation**

Dear Mr. Vazquez,

Henningson, Durham & Richardson, Architecture and Engineering P.C. (HDR) performed Remedial Action Oversight (RA-O) for Soil Remediation ISCO injections from February 3, 2021 to February 9, 2021 at the Wallkill Wellfield Site located at 20 Industrial Place, Middletown, Orange County, New York (the site). A description of the field activities performed during this period, personnel and equipment on site, as well as observed issues and work plan deviations are summarized below. A copy of the field logbook for this time period and photographs taken are included as attachments.

Fieldwork Conducted

Fieldwork during this period included set up of equipment to inject d-limonene solvent, NaOH, and PeroxyChem oxidant as per the RD Phase 1 – Soil Remediation.

- February 3, 2021 – February 9, 2021: Gallagher Bassett Technical Services (GBTS) and MECx took delivery of chemicals needed for soil remediation injections, set up of equipment for injections, and performed ISCO injections into 4 wells within the remediation area: IMW-01, IMW-02, IMW-05, and IMW-06. During injections, MECx used a typhoon pump to remove groundwater from EMW-01 and EMW-02 wells. The groundwater was mixed into the mix tank for re-injection during remediation. During the six days of field work, MECx injected 2644 gallons of d-limonene solvent mix, 548 gallons of NaOH mix, and 1309 gallons of PeroxyChem mix. All chemicals were mixed in batches with tap water provided by the Site and injected into the subsurface through the wells within the remediation area.
- On February 3, 2021, GBTS shut down the SSDS system during the ISCO injection activities.
- February 3, 2021 – February 9, 2021: During the transfer of chemicals to the mix tank, MECx personal donned PPE as per the MECx HASP: safety glasses, goggles, or splash shield; apron; and half-face respirator.

- February 5, 2021: MECx took the EMW-02 groundwater well pump offline and began injection of d-limonene into the well. EMW-02 was used as an injection well for the remainder of the ISCO injection event.
- February 9, 2021: MECx took the EMW-01 groundwater well pump offline and began injection of PeroxyChem into the well. EMW-01 was used as an injection well for the remainder of the ISCO injection event.
- February 3, 2021- February 9, 2021: While MECx conducted ISCO injections, GBTS set up six MiniRAE 3000 PIDs for CAMP. GBTS bump-tested the PIDs each morning with 100ppm Isobutylene Calibration Gas to check calibrations of the instruments. On February 9, 2021, GBTS calibrated three of the six PIDs after bump-tests did not pass. GBTS set PIDs up at two perimeters around the work area two distances away for the work area to monitor for VOCs. GBTS took manual readings from each unit on an approximate 15-minute interval.

Field Personnel and Equipment

Field personnel on-site between February 3, 2021 and February 9, 2021 included staff from HDR, GBTS, and MECx (Table 1).

Table 1. Field Personnel

Name	Company/ Affiliation	Days on Site	Roles
Edward Brandt	HDR	6	USEPA Oversight
Erick Salazar	Gallagher Bassett	2	Environmental scientist
Dan Petras	Gallagher Bassett	5	Environmental scientist
Larry Rader	MECx	6	ISCO Specialist
Michael Cherny	MECx	5	ISCO Specialist

Equipment on-site during this reporting period for use during RA activities included:

- ISCO Injection equipment: Pump, Mix Tank, Manifold, Flow meters, Hoses, Wellheads, Drum pumps, Groundwater well pumps and tubing, Containment area for chemicals, Pallet Jack, Miscellaneous hand tools.
- ISCO injection chemicals: Eight 55-gallon Drums, and two 5-gallon carboys (460-gallons) of citrus based, biodegradable d-limonene solvent. One 2500-pound tote of 25% NaOH solution. And fifty-two 55-pound bags (2850 pounds) of PeroxyChem Kloxur® SP oxidant.
- MiniRAE 3000 Photoionization Detectors (PIDs) – 6 units for CAMP stations.

Sampling Conducted

No samples were collected during fieldwork activities.

Problems Encountered

- Occasionally during the day, a PID would run low on battery, and be taken offline. If the PID was at the perimeter of the work area, it would be swapped out with a PID from the outer perimeter set of PIDs.
- PIDs did not data log each day; the data was collected manually by the GBTS technician.
- On February 9, 2021, GBTS calibrated three of the six PIDs after bump-tests did not pass. After calibration, the instruments were put into service with no issues.

Deviations from the Approved Work Plan

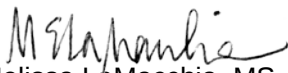
- CAMP PID readings were not logged by the instruments at 15-minute as-per the NYSDEC DER-10 Technical Guidance in Appendix H of the RDD.

Recommendations

HDR has no recommendations based on the observations listed above.

If you have any questions or require further information, please feel free to contact me at (201) 335-9391 or melissa.lamacchia@hdrinc.com.

Sincerely,
Henningson, Durham & Richardson
Architecture and Engineering P.C.
In Association with HDR Engineering, Inc.



Melissa LaMacchia, MS, PG (NY)

Associate | Senior Project Manager



Attachment A. Photographs

Photographs from February 3, 2021



Photograph 1. Remedial action area during setup of ISCO injection equipment, view toward the southwest.



Photograph 2. PeroxyChem Klozur® SP staged.



Photograph 3. ISCO injection equipment staged within containment.



Photograph 4. NaOH staged within containment.

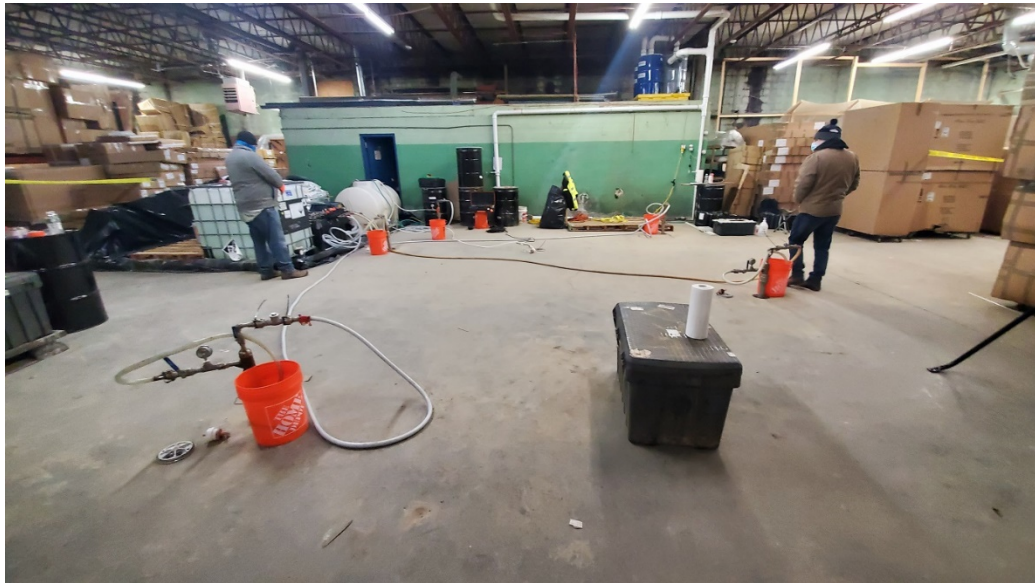


Photograph 5. ISCO wellhead connection detail.

Photographs from February 4, 2021



Photograph 6. Flow meters set up at manifold to monitor flow rates and totals of injections during ISCO injections.



Photograph 7. ISCO injection area during injections at 5 wellheads – photo looking southwest.

Photographs from February 5, 2021



Photograph 8. ISCO injection flowmeters with addition of 5th well.



Photograph 9. MECx transferring d-limonene to mix tank with drum pump.

Photographs from February 7, 2021



Photograph 10. MECx transferring NaOH solution to mix tank for injections.



Photograph 11. MECx changed out totalizer flowmeter because original unit stopped working.

Photographs from February 8, 2021



Photograph 12. MECx begins to mix PeroxyChem Klozur® SP in mix tank for injections.



Photograph 13. Work area looking South during ISCO injections.

Photographs from February 9, 2021



Photograph 14. Overview of RA area with ISCO injections running at all 6 wellheads.



Photograph 15. Containment area cleared of empty containers and equipment during the injection of the last batch of PeroxyChem Klozur® SP.

Attachment B. Daily field notes

Enforcement Confidential

USEPA



Rite in the Rain
ALL-WEATHER
OUTDOOR JOURNAL

No 1773

walkin wellfield

Feb 2021

HDR

Leave No Trace



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HAZARDS of the back country



Black bear
Slender and fast
long neck, short claws



Grizzly bear
Shorter but slower
longer back, long claws

Bear

Make yourself known on trail by talking or waving a bear bell. If encountered, avoid eye contact and back away slowly while speaking calmly but audibly. If attacked by grizzly, play dead, lying flat on the ground covering back of neck and head. If attacked by a black bear, fight back!



Elk & Moose

Maintain 50-foot distance, and avoid any noise or motions that may surprise the animal. Walk around animal in wide circle if seen. If encountered, back away slowly and avoid eye contact. Get behind a tree if charged.



Cougar

Mountain Lion or Puma
Enlarge yourself with arms or back. Yell loudly and confidently. Pick up small children but do not bend, crouch, or turn your back. Maintain eye contact and confidence. Fight back if attacked.



Snake

Stay on established trail and do not disturb rocks, brush. Create distance immediately if encountered. Do not cut, tourniquet, squeeze, ice or stick venoms from bite - simply dress wound and get medical attention.

Slitted eyes typically indicate a venomous snake.



Spider

Wear long pants and sleeves in brush. If bitten, wash area with soap and water and apply ice. Signs of poor pain, nausea, fever, trouble breathing, abdominal pain - all signs of a dangerous bite.



Mosquito

Keep tent closed, and use nets in mosquito season. Wear long sleeves and pants treated with EPA-registered insecticide. Beware of fever, headache, rash, joint pain, muscle pain, and red eyes.



Tick

Wear long sleeves and pants treated with EPA-registered insecticide. Remove attached tick as soon as you notice by grasping with tweezers as close to the skin as possible and pulling straight out.



Poison Oak & Poison Ivy

"Leaves of three, let them be" applies to poison oak and poison ivy. Contact with plant's leaves causes rash - immediately wash skin contact area, as well as tools or clothes that may have been in contact, to reduce exposure.

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A Service-Disabled Veteran Owned Small Business

[illegible]

37th 2021

USEPA will kill weevil.

p2

305, 00.

1055 MEC* changing out 1 of the 2 pumps -
- Q very low

1150 ABF arrives w/ last delivery of
down-calls

1210 8 Drums, 2 5gal cans of
Solvent delivered (d-limonene)

1230 MEC* notes waiting for 2 tote of
NaOH before they can start
Note - Personal notes:

Edward Brandt - ~~PHD~~ - Env. Sci.

Erick Salazar - ~~GBTS~~ - Env. Sci.

Dan Petras - GBTS - Safety Consl.

Larry Radu - MEC* - Foreman

Michael Cherry - MEC* - Lab

1330 Equipment set up - filling tank with
water

1400 MEC* starts to pump water through
equipment to test for leaks

Scale: 1 square = _____

p3

1418 MEC* begins to pump water to wells
to test for leaks

1425 No leaks found.

1450 MEC* transfers a drum of Solvent
to water/mix tank

1520 1 Tote of NaOH delivered to site

1530 MEC* begins transfer of Solvent.

1532 MEC* begins to recirculate solvent
and water in tank to mix

1542 MEC* begins to inject solvent @
Total 1gpm, 0.25gpm/well

1547 MEC* notes some reflux @ IMW-02
and IMW-01

- IMW-05 and IMW-06 ok so far

1552 MEC* calculates 0.65gpm per
well. reflux slowed

T - 1.5gpm

1605 MEC* notes 1.5gpm

Scale: 1 square = _____

Rite in the Rain

3 Feb 2021 USEPA walkkill well field.

28F, AL

pt

1625 Mena notes 70 gal injected so far.

1640 Mena starts down pump

IMW - 01	18 gal	
IMW - 02	21 gal	
IMW - 05	14 gal	74 gal
IMW - 06	21 gal	
Total →	87 gal.	

1645 Mena notes water flow started @ 1630.

1700 HDR off site for day

→ mob to Mahanah, NS HDR flm.

1730 Arrive @ HDR Mahanah, NS off.

3 Feb 2021

Scale: 1 square =

7 Feb 2021 USEPA walkkill well field.

28F, A.C.O.G.

pt

0600 Mob to Site

0702 Arrive @ Site.

Crews just arriving.

- Edward Brault - HDR

- Dan Petras - G.B.T.S

- Larry Rader - MEXX

- Michael Cherry - MEXX

0710 Morning Safety Meeting

- Discuss work for day: inject d-limonene all day.

- Discuss Hospital Route.

0715 G.B.T.S sets up 6 PDS on camp

- 3 Set @ 2 separate distances.

- 6 Min Pile 3000 units.

G.B.T.S notes then plan to collect readings from units every 15 min - units will not datalog.

0725 MEXX begins to recirculate water and

solvent to mix prior to inj.

0740 Totals: Totalizer = 103

IMW 01 108 IMW 05 174

IMW 02 61 IMW 06 62

Scale: 1 square =

Rite in the Rain

4 Feb 2021 USEPA Wellkill Nodfill.
30F, MC.

P2

0712 MECx begins to inject d-limonene.

0805 MECx notes 1.6 gpm total.

0.4 gpm per well

0815 Note PED elevation at PED's SW 9

operation $\Rightarrow$ 5.4 gpm; 2.2 gpm

Other PED's read 0.0 gpm.

0820 Note EMW-02 taking solvent slower

0840 MECx turns up rate @ EMW-05 and

EMW-06 to total flow rate of

2.4 gpm.

0915 Note MECx preparing equipment to change
EMW-06 over to ~~SW~~ as injection
well

0928 MECx halts injection to add more
Solvent to mix tank.

0929 MECx starts extraction wells.

0935 MECx notes EMW-01 @ 2 gpm

EMW-02 @ 1.2 gpm

1000 2nd Drum of Solvent to mix tank.

MECx to fill tank and then mix
to resume injection.

1005 Note EX well water contains mostly solvent

Scale: 1 square = _____

P3

1010 MECx shuts off wells, begin to recirculate
to mix.

1025 MECx resumes solvent injections.

1050 GBTS pulls a Dräger tube for

PCE detection in vicinity

of PED w/ elevators to 600 ppm

- Note only strong citrus odor
from solvent in area.

1108 MECx notes total 2.0 gpm

1130 GBTS notes after call w/ Dräger, tubes

are out of temp range and therefore
may produce an inaccurate reading,
if any.

- GBTS notes tube pulled indicated PCE
higher than 1.0 ppm, but result suspect.

1200 Crews begin to take rotatory liner
breaks.

1326 MECx shuts down pump/injections.

< 2nd Drum of Solvent injected >

1331 MECx transfers next drum (3) to mix
tank (solvent).

1356 MECx begin to recirculate mix tank.

1400 MECx notes ~60 gallons of water

was recirculated from EMW wells

Scale: 1 square = _____

Rite in the Rain

4 Feb 2021 USEPA Wellhead Well Field

32F, A.C.

p4

1402 MECx ^{summers} begins to inject solvent.

1530 MECx setting up to inject into EMW-02.

To narrow the injection rate and
to lower pore space.

1540 MECx begins injecting to EMW-02.

Meter @ EMW-02 Start

reading = 36

1547 MECx notes Total flow rate = 2.8 gpm

1630 MECx begins to flush with water.

- Injection done for day.

1642 MECx completes flushing

1644 Totals: 1001 gal = 898 g

IMW-02 223 = 102 g

IMW-01 316 = 148 g

IMW-06 320 = 288 g

IMW-05 591 = 417 g

EMW-02 64 = 28 g

1650 MECx injected 1150 gallons of d-limonene.

1700 MDR/MECx/GBTS off site for day.

- mob to Richmond, VA 11:00 AM.

Scale: 1 square = _____

5 Feb 2021

28F, DC

p1

0600 Mob to St.

0605 Arr @ St - crew arriving.

0710 MECx begins to pump #5 drum into
mix tank.

0715 Safety Meeting.

- Edward Brault HIX

- Dan Petras GBTS

- Larry Radler MECx

- Michael Cherry MECx

0735 MECx begins injecting into 5 wells.

note - GBTS has same 6 PIDs

running in same locations as
yesterday.

0740 Flow meter readings same as end of
day.

Note - GBTS Pump tests PIDs at start
of the day.

0800 MECx notes totalizer flowmeter map
will change out before next batch.

0850 MECx notes IMW-02 seems to be leaking
- crew stops injection to assess.

0910 MECx shuts off pump to mix next batch

0920 MECx completes transfer of next drum to
mix tank.

Scale: 1 square = _____

Rite in the Rain

5 Feb 2021 USEPA wellfill wellfill. p2

30°F, 00, Light Snow

0925 MECx changes out Totalizer flow meter.

New Totalizer start @ 39

0950 MECx resumes injections. (Batch #5)

1048 MECx times flow → Total = 20.7 gpm.

1145 Batch #5 injected - MECx shuts down pump.

1150 MECx transfers next drum of solvent to tank to mix (Batch #6)

1220 MECx begins to mix Batch #6

1225 MECx begins to inject Batch #6

1437 MECx switches over to flush with water for day.

1438 GRTS begin to take down (AMP PIDs).

1440 MECx shuts down Pump, and closes all valves.

1442	Totalizer	627	
	JMW - 02	360	175g
	JMW - 01	587	4.37g 2715
	JMW - 06	515	175g
	JMW - 05	769	175g
	ENDW - 02	243	175g
		(12 1021gal)	

Scale: 1 square = _____

23

1450 Appears MECx pumped ~1021 gallons into 5 wells during the day.

1500 HDR/GRTS/MECx offsite for day.
- met. to HDR Mahwah, NJ office.

1530 of am C Mahwah, NJ HDR office.

5 Feb 2021

5 Feb 2021

Scale: 1 square = _____

Rite in the Rain

7 Feb 2021 10:20 AM Well kill well full
3DF, OK

p1

0600 Move to Site

0710 Arrive C.S.L.

- Crew arriving

E. Brant - HDR

Don Petras - GBS

Larry Radner - MECx

Michael Cherry - MECx

0715 Safety Meeting - S. lps, traps, falls

- Crew begins to fill tank

- Transfer Solvent

0730 MECx begins to circulate batch #7 to mix

- GBS setting up PIDs for tanks

- PIDs set up in same place
as yesterday (2/5).

0743 MECx begins to inject batch #7

- All 5 wells

0830 MECx Notes 2.8 gpm to 5 wells

0938 MECx shuts down pump - batch #7
injection complete

- MECx begins to collect for next/last
batch of solvent

Totalizer @ 913

0945 MECx pump last drum of solvent to
mix tank

Scale: 1 square = _____

p2

0955 MECx adds the 2-gallon canboys
of solvent to batch #8.

1006 MECx begins injection of batch #8

- Final batch of d-limonene solvent

1130 MECx stops injection to IMW-03

and IMW-06 to inject more
into 01, 02 and EMW-02.

- 05, 06 were taking more solvent, MECx
wants to make sure plenty of solvent
upstream of ~~SB~~ input.

1314 MECx stops injection of Batch #8

- d-limonene injections complete

Totalizer - 1265 638g

IMW-02 500 1140g

IMW-01 681 94g

IMW-06 615 100g

IMW-05 583 114g

EMW-02 429 186g

1318 MECx begins transfer of NaOH to mix
tank

1323 MECx transferred a half the tank of
NaOH to mix tank and begins
to circulate to mix.

Scale: 1 square = _____

Rite in the Rain

7 Feb 2021 USEPA Walkoff Well Field.

p.3

30F, α , SNOW

1342 MECx begins injection of NaOH solution
into all 5 inj. wells.

1425 MECx notes the pH of the extraction well
water - (EMW-01) is @ ~12.

1515 MECx notes injection rate is 1.9 gpm.

1612 MECx shuts down injection of NaOH
for day and begins to flush
with water.

1616 MECx shuts down pump - lines all
flushed for day.

1620 Flow Meter Readings

Totalizer	1582	317g
IMW-02	560	60g
IMW-01	760	71g
IMW-06	653	38g
IMW-05	863	80g
EMW-02	510	81g

- MECx injected 638g of Solvent mix.

- MECx injected 317g of NaOH mix.

1630 GBTs begins to take down CAMP PDS.

1635 HDR/GBTs/MECx Affili.

Scale: 1 square =

8 Feb 2021

p1

107F, Clear.

0645 Hob to Sta from Hotel.

0700 from C. Sta - crew arriving.

0710 MECx filling tank w/ Water for
next NaOH batch.

GBTs setting up PDS.

0720 Morning Safety meeting - discuss work plan
and topic: splash shields.

0726 MECx transfers NaOH to next batch.

0745 MECx cleaning out drums w/ water
for disposal.

0746 MECx begins injection of NaOH into
all 5 wells.

0805 MECx notes 1.3 gpm.

0820 MECx loading out empty drums.

- Crew to bring to local recycling
facility.

0932 MECx shuts down pump - NaOH inj
complete.

MECx sets up to begin mixing Perchloric

- Note Semi crew:

EBramlett - HDR

Dan Petras - GBTs

Larry Rader - MECx

Scale: 1 square = Michael Cherry - MECx.

Rite in the Rain.

8 Feb 2021 USEPA Wallkill Wellfield p2
15E, Chem.

0935 MECx begins to fill tank with water
for PeroxiChem mix.

10 bags per batch

0936 Flow Meter Readings:

Totalizer 1813 (2365)

IMV-02 591

IMV-01 808

IMV-06 686

IMV-05 896

EMV-02 559

0940 MECx begins to mix PeroxiChem into
mix tank.

- MECx worker wearing correct PPE
including full face respirator, tyvek
suits, face shield, and chemical
gloves per MECx hosp.

1017 MECx begins PeroxiChem batch #1
injection. <2.3 gpm>

1130 Crew takes lunch break (half the
crew).

1233 MECx stops injections - 1st batch complete.
begin to mix batch #2.

Scale: 1 square = _____

1240 MECx begins to mix up Batch
#2 of PeroxiChem.

1310 MECx begins injection of batch
#2.

1330 MECx notes 2.2 gpm Inj Rate

1517 MECx shuts down injection of
Batch #2. Batch #2 injection
complete.

1522 MECx sets up to begin mixing batch
#3 of PeroxiChem.

1525 MECx mixing Batch #3 of PeroxiChem

1555 Mix of Batch #3 complete.

1557 MECx begins injection of Batch #3.

1638 MECx shuts off injection for day.
begin to flush w/ water.

1640 GBTS pulls CAMP meters.

1642 MECx notes Flow meter (Totalizer)

Persulfate → 2440 gal → <627 gal>

NaOH 231 gal.

- Totals for Day. -

1655 HDR/GBTS/MECx offsite for day.

mob to HDR Mahwah, NJ office.

1740 Arrive HDR Mahwah, NJ office.

Scale: 1 square = _____

8 Feb 2021
Rite in the Rain

9 Feb 2021 USEPA Walkhill Wellfield.
25F, 0C, Snow.

p1

0550 Mob to Site

0735 Arrive @ Site

- MECx Foreman arrive, remainder of
crew in Rock

0740 GBTS arrive

0755 MECx starts PeroxyChem injection start
time = 0718.

- currently running @ 2.5 gpm.

0800 Safety Meeting - sign in - cold start.

- E. Brault HSE

- Frank Salazar - GBTS

- Larry Rader - MECx

0805 GBTS working to set up CAMP PJD's

- GBTS note 3 PJD's need calibrate
after bump tests.

0844 MECx shuts down injection of
PeroxyChem - Batch #3 complete.

0848 MECx to transfer remaining NaOH to
mix tank

0852 MECx complete transfer of NaOH to
mix tank

0857 MECx pulls Typhoon pump from EMW-01
and uses it to transfer remaining

Scale: 1 square = _____

0857 (cont) NaOH to mix tank.

- Note MECx to set up to inject into
EMW-01 with remaining PeroxyChem.

0915 MECx completes transfer of NaOH to
mix tank.

- NaOH tank empty - ready for pickup.

- MECx flushes pump w/ clean tap water.

0929 MECx begins to mix in PeroxyChem into
mix tank for Batch #4.

0938 MECx mixing Batch #4.

1000 MECx begins injection of Batch #4.

1015 MECx setting up to install wellhead

@ EMW-01 for additional injection point.

1045 MECx notes flow rate = 1.7 gpm

1100 MECx hooking up wellhead @ EMW-01

1107 MECx begins to inject into EMW-01.

1146 MECx shuts off pump - Batch #4 injection
complete.

1155 MECx adds last 6 bags of PeroxyChem
to mix tank.

1225 MECx continues to recirculate mix tank
to mix solution.

1238 MECx begins to inject Batch #5
into all 6 wells.

Scale: 1 square = _____

Rate in the Rain

p2

9 Feb 2021 USEPA Wallkill well field.

255, 01, Snow

1245 MECx has NADH tote picked up.

1410 MECx works to spray down side of mix tank.

1416 MECx shuts down pump - Batch #5

- all injections complete. -

MECx working to clean at tank.

1430 MECx continues to flush system w/ water to clear out any oxidizer or NADH from lines.

1450 Totalizes -> 3122

(Total for day => 682 gallons.)

1515 HDR offsite

- Mob. to Mahwah, NJ HDR office.

1530 Ann @ HDR Mahwah, NJ office.

Scale: 1 square = _____

Scale: 1 square = _____

Retire in the Rain