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Email a photo of your *Rite In The Rain* book in action to

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Rite in the Rain[®]
ALL-WEATHER WRITING PAPER

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Project GCMRC

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2/10/14

Missing all notes from May 2013-Nov 2013
(first few months at GCMRC).

This includes preliminary LCR scouting,
June 2013 mainstem emergence trip, and
May/Aug/Nov ADCP sampling.

Old book lost (thrown out by janitors?)
after Nov 2013 HFE.

Scale: 1 square = _____

Glen Canyon Monitoring

Jeff, Josh Smith, Adam Capp

First official Glen Canyon adult emergence & insect monitoring trip.
Also compare to Nov 13 post HFE trip sticky trap array.

Traps both banks as follows. Started ~11:30 AM, finished
~4:30 PM. Removed next day (2/13) in same order, starting
~12:30 PM & finishing ~3:30 PM.

All by boat, except 2 sites on Paria (0.8, 0.9), which were
deployed by foot from parking pullout & were also only on RB.

Sites: -15, -14, -13.3*, -12.9, -12, -11.5, -11, -10.5*, -10, -9,
-8, -7.5*, -7, -6.5*, -6, -5.5*, -4.9, -4, -3.5, -2.6*,
-2.1, -1, 0, 0.8, 0.9

*For next trip, cut starred sites, add -22 (Josh) (Jeff) (Adam)

Also light traps night of 2/12 @ RM -8, -4, 0

Also took drift samples, deployed sondes, looked into mounting zone
at gage house (Adam)

Also tested whether pheromones affect catch rates using an
experiment where blackflag was sprayed on 4 traps (1 pole) while another
was not sprayed. Positioned traps ~100m away from one another
at RM -15(RB), -11.5(LB), -8(LB).

Also used -10(RB), -4(RB), -2.1(LB) as controls, w/ same
design only neither pole had blackflag.

Scale: 1 square = _____

Rite in the Rain.

Oak Creek Sticky Trapping

Jeff & Josh

4/19/14

Testing traps for pheromone attraction experiment
in Oak Creek. For comparison to experiment in Glen
in a stream with bugs other than midges & blackflies

Parked just below switchbacks (~1 mile)

Set up 6 sets of traps between parking spot &
confluence of Oak Creek with Pinonhouse wash upstream.

Josh has confluence coordinates

3 replicates trt (permethrin sprayed) vs. control

3 replicates ctrl vs ctrl

Set traps out ~2-3:30 PM 4/8, retrieved ~1-2 AM 4/9.

Observed plenty of bugs flying, but caught few
on sticky traps (~5 per trap). Good diversity though.

Observed several bugs still alive even on trt (sprayed)
traps

Scale: 1 square = _____

4/15/14

LCR April trip

Jeff & Josh

Set out sticky traps @ Salt Camp @ 1:00 PM

(MS)	RKM	Bank
4800	10.4	RB e 1PM 4/15 Temp/SPC/DO sonde @ 1:30 PM
4880	11	RB
5090	12	RB
4850	13	RB
4550	14	LB
4750	15	LB e 5:30 4/15 SPC/DO sonde @ 5:30 PM
4600	16	RB e 7PM 4/15
5000	17	RB e 9AM 4/16 Light trap @ 16.2 (chute camp) ID: 50229
4950	18	RB
4550	19	LB
4600	20	RB
4400	21	RB e 12PM 4/16
20.75		Contents: 8 CHIA, 1 Caddis, 1 leafhopper (exuviae), 2 Bombiliidae

Stashed RKM 21 boat, anchor, & pole @ RKM 20.7

(Just downstream of Blue Spring, LB, above just upstream of
site canyon, on ledge ~10 ft up)

Camped 4/15 e translocation camp (RKM 16.2) Put up remaining
traps (RKM 17-21) on 4/16. Camped @ Salt 4/16, took down poles 4/17 9:30 AM
(still 81°F)
Put up Blue Spring b/p at 4/16 ~noon, took down 4/17 ~2PM
(still 81°F) Chute boat 4/16 ~5 PM, took down 4/17 ~5 PM.
Salt boat 4/17 w/ 8 AM, took down 4/18 ~9 AM

Scale: 1 square = _____

Rite in the Rain

LCR April trip (cont)

4/15/14

Jeff & Josh

Took light trap samples & translocation camp 4/15 & 4/17
 (RKM 16.2) 4/15 & 4/17
 4/15: LB, cloudy, wind <10 mph down canyon, sandy, 22°C, 7:30-8:30 PM ID 502229
 4/17: LB, clear, calm up canyon, sand, 25°C, 7:30-8:30 PM, ID 502261

Took 2 D-net samples (pool & riffle) & Blue Spring. Need to put a barcode on the pool sample -- Done: B00251.

Took only 1 D-net sample @ Chute & Salt (in riffle)
 - Stick w/ only 1 for the future, bring wider 500µm sieve too

Left light trap 502260 @ Salt for FNS to use on 4/18

Started Chute boat & poles 15-20 @ translocation camp,
 1 @ Blue Spring (w/ boat), rest @ Salt

Chute boat / infill actually @ RKM 14.75 (pole c. 15)

Scale: 1 square = _____

5/13/14

Jeff & Tom Q

LCR May Trip

Pole Deployment

Started @ Salt Camp @ 10AM 10:30 AM

Finished @ Blue Spring @ 5:30 PM

All poles, RKM 10.4-20.75

Had to go to Chute Camp (16.2), then paddle back to do 15 & 16.

For next time, leave 15 pole @ Salt Camp, do 16 pole @ 16.2, ^{Leave 20.75} @ Blue Spring.
 Back @ Camp first night @ 7 PM.

Sonde Deployment

5/13
 Salt @ 10 AM 5/14 Chute @ 6:30 AM 5/14

Boat Deployment

@ Next time, deploy Blue Spring boat first day. Take boat down 3rd day-with poles (no time to go back up there on 4th day).
 This time Blue Spring boat was deployed @ 12:15PM on Day 2 (5/14), removed @ 2 PM on Day 3 (5/15).

Blue Spring infill deployed @ 12PM on 5/14

D-net ~10 min post/bankfaffle ~11:45 AM

Salt infill, D-net, Boat deployed @ 6:15PM 5/14

Chute Infill & boat @ 3 PM on 5/14 Removed @ 4PM on 5/15

Chute D-net @ 4 PM on 5/14

BNC @ Chute miniDOT did not record during this trip.

-Forgot to turn on, maybe? Also check batteries.

Scale: 1 square = _____

Rite in the Rain

LCR May trip (cont)			
Inventory	Cite Camp	Salt Creek	
544	Instruction (T-20)	Parachute Creek (10+ feet)	
4 sticksies	Tons of light trap bottles		
7 float bottles	N 200 sticksies	Light float light trap	
	boat assembly	light trap boat & floats	
	2 Park rackets		
Bike inventory	Poles for 16.2-20		
Dock			
1 pole, 1 full boat assembly, 1 pole			
water pipe, 1 full trap box			
in anchor bag			
Cond	Temp	R/XM	
4150	22	17	Chute needs 1 ACE bandage for Amaro can 10' air
4850	21.5	18	Took down 10.4 pole
4450	22.5	19	@ 6:15AM on 5/15
4400	23.5	20	11 Km pole @ 8:15 AM on 5/15
4300	22.0	20.75	20.75 pole @ 2 PM
4850	17.5	10.4	
5350	18	11	Move pole to 16.2 instead
4850	18	12	of 16 in future (pole left at chute)
5000	18	13	
5050	18.5	14	A poles & salt for 10.4-15
5050	19.5	15	& 2 small holes in front bottom
4900	21.0	16	of big packraft; fly these out in June.

Scale: 1 square = _____

Fibutary River Trip			
Crew:	Jeff, Ted, Josh, Adam, Eric, Ali, Ingain, Jacques, Martin, Dave Herasimchuk	Leaving 6/17	Arriving 6/17
Ferry	6/17-6/19 trip	Bentinen Eric Christensen Carolyn Dennis	
14 Day trip LF-Pearce			
Set out Light traps on timers ~5:30-7:30PM. e Paria			
Set to go off c 8:30AM-9:30 PM. Used 50:50 propylene glycol/water			
(goal to set c 0' (confluence), plus 400, 800, 1600 m MSWS, MSDS, UP Trib			
(upstream) (downstream)			
At Paria, ^{skipped} light traps @ 400 MSDS & 1600 MSDS			
(Paria) (too difficult to access re float)			
Launch day!			6/11/14
Took down Paria light traps, took tentacles @ 0, 400, 800, 1600 up trib			
In morning ~8AM			
Reefills! 0 I00021 10 min Dinet, 15 min picking			
400 TRIB I00022 9 14			
800 TRIB I00023 10 27			
1600 TRIB I00024 10 32			
Camped @ Frog Island ~RM 19. Main sled today & Badger RM 19			
Set up sticky traps c North Canyon ~RM 20.			
Did not set any up on trib b/c it is dry. Did not setup c 1600 MSDS			
b/c runs into 20 mile rapids. All traps on RB. TK & me set them out			
~5:30 PM-6:30 PM. (on timers)			

Scale: 1 square = _____ Rite in the Rain.

North Canyon

1600 MSUS light red light out on timer. So no samples.
Others OK. Done ~841 6/2 (pulled)

Northcreek

(me & Eric drive & set them)

TK & SO 5h hike up. AJ & Adam do 0-200m on confluence side
Decided to only set traps on side going upstream.
Except for lateral segment 0-200m, which still got traps
both sides (one ID, one 4D)

Set out stickies starting ~5:00 PM finished ~8:30 PM

boat stickies starting RB MSDS 1600 503025

Louis had 30 MSDS 3200 (below another rapid) Reset @ 88MSDS 400 5030

Then zig-zag & back upstream (RB → LB → RB, etc.)

Northcreek layover

[6/13/14]

Today, need to: Enter data, rinse propylene vials, sample benthics,
take down stickies, sample blackflies, set up boats?
Charge batteries?

Sticky trap removal

Very windy. Many poles & traps fell over.

Fell over: 503103, 503104, 503089-92, 3040
Upright, but tilted and: 503081-3084, 503092, 503094-95, 503033
Trap lost: 503068, 503015, 16, 19, 20, lat 200m msds c. 5m 503031

Pole flipped Water = land upstream = downstream

for 503065-3068 & 73-76

Scale: 1 square = _____

Left Nankoo camp ~9 AM

Hit LCR fish camp ~11:30 AM

Started setting out traps ~12:30 PM

TK & Giv up traps. will also give Kate & Colleen stuff for
blackfly metals (special light traps),
will set out light traps but not fill them (worried
about evaporation)

José & Ali on island & doing most laterals
Me & Adam on sport boat.

First stickies e 3200 MSDS LB starting 503167, then...
3200 MSDS RB, 1600 MSDS LB, RB, 800 MSDS LB, RB,
then skipped 400 MSDS LB (José & Ali set up)

MSDS 400 RB starting @ 503191, then...

200 MSDS RB, 120 MSDS RB, 50 MSDS RB, 0 MSUS RB, 50 MSUS RB,
100 MSUS RB, 0, 50, 100 MSUS LB, 200 MSUS LB & 2, 5, 10, 25, 50 lats (LB)
200 MSUS RB @ 503240, 400 MSUS LB, RB, 800 MSUS LB, RB
1600 MSUS LB, RB, 3200 MSUS LB, RB

[6/15/14]

Pulled stickies & lights starting ~10 AM. Finished ~12:30 PM

Lost LCR 32: timer was reset

Reset lights for another night, but very windy today.

Adam got blackflies for his project & for Ft. Collins folks from LCR

Got benthics today too, low catches

Scale: 1 square = _____

Rite in the Rain.

LCL

Ran 2 night traps in morning, then motored to Clear Creek

L02640-L02642 1600, 800, 400 up trib

L02636: Tupperware blew away. No sample

DMH & L02638, L02634

Clear Creek

Camping C 200m aster

D-set benthics starting c 3:30 PM

1000 44: Confluence. 5 min kick, 10 min pick 2 groups of 20pp/2
1000 45: 400m up trib - 5 min kick, 20 min pick 7/11
5000 46: 800m up trib 5 min kick, 10 min pick 11/11

Light traps set at only intrib & @ camp

Trib: 400m RB, Grass >10 mph L02643

800m LB Grass >10 L02644

MSUS On MSUS RB Rock >10 L02645

(6/17/14)

Bright Angel/Hermits

Retrieved Clear Creek samples ~7 AM. All OK.

Sampled BA ~10 AM Martin, Jaquie, Fritz, Dave Hairer ~11 AM

0m I00048 6 min kick, 30 min pick, 3 pp

400 I00049 4 25

I00050 S 17 Did not do 1600 (ran out of time)

Scale: 1 square = _____

Trib Trip (cont)

On 6/17:

Hermits (cont)

Set out light traps in regular array, except + MSUS b/c sport boat could not upriver hermit.

Jacque & set out 400 MSUS on foot; 800 & 1600 MSUS inaccessible. Benthics up trib. Martin, Ted, Sam CO, 400, 800

AK & Eric c 1600. Also got blackflies for Adam

On 6/18: Dark wants to set up underwater photography @ Hermit, so staying later. Still very windy.

Shinumo

Arrived c camp ~11 AM

Started benthics ~1:30 PM

TRIB 400m:	I00055	5 min kick	13 min pick	4 pp
800m	I00056	5	20	4
1600	I00057	5	17	5

Set out light traps up trib & MSUS 400, 800, 1600. Could not get 1600 b/c of Ball Rapid, & could not get any MSUS b/c of another rapid. TK & Martin collected light traps at night.

Tapeats

(6/19/14)

TRIB 400m	I00060	5 min kick, 15 pick, 5 pp
0m	I00059	5 20 2

Could not do 800 & 1600 b/c gradient was too steep.

Scale: 1 square = _____

Rite in the Rain

Trib + trib (cont)

6/20/14

15

Kanab

Spent too long @ Tropic's on 6/19, so unable to set up sticky traps & Kanab on that day. Setting up today instead. Will take down tomorrow AM & motor after that. (Delay of ~6 hr, probably)

Started setting out stickies & lights ~9:30.

Had to change sport boat molds.

Jacque & I in sport boat, everyone else in or near confluence.

MSDS 3200 RB: starting @ 503600

Zigzags) RB → LB 3200, 1600, 800, 400 MSDS.

Then 200, 100, 50, 0, 50, 100, 200 MSDS → MSUS

Then zigzag MSUS RB 400 → 3800

6/21/14

Kanab Teardown

Started pulling traps ~9AM

TK up trib, Eric/Josh/Mt. Shrub ~confluence

Me & Martin MSUS & MSDS

LO2664 did not turn on; no sample. Suspect fire? Batt & C

Havasu

Stopped in ~3:00

I00065: Mt. Martin/JK

I00066: Me/Jacque/Josh 10 min kick, 29 min pick

Camped @ Tropic just below lava. Martin's birthday!

Scale: 1 square = _____

Spencer

Full day of boating (~65 miles). Left Tequila Beach ~8:45 AM

Arrived @ camp ~800 m downstream of Spencer Creek ~4:30 PM.

Tour West group camped @ mouth of Spencer; limited our ability to collect traps & benthics today. Did set out:

TRIB: 400, 800, MSUS: 0, 400, 800, MSDS: 800.

6/23/14

Spencer Teardown

Collected benthics up trib, removed light traps;

MSDS 800 LB, Sand. <10, Clear & hot: LO2675 (at camp)

LO2679: 400 LB MSUS Rocky.

LO2680: 800 LB MSUS Rocky

TK & Martin go upstream for benthics.

Al & Eric get blackflies.

Me, Josh, Jacque get OM benthic

I00067: 0m 5 min kick, 20 min pick 3 ppf

I00068 5 15 3

Batt LO2676: 0 LB MSUS Rocky

LO2677: 400 RB TRIB Shrub

LO2678 800 RB TRIB Shrub

Scale: 1 square = _____

Rite in the Rain.

LGR June Sampling

6/26/14

Jeff & Eric

Helicopter drop-off @ Salt ~ 9 AM

First pole & sonde placed @ 9:30 AM

Josh & Adam do lower (coyote - confidence)

Eric took notes, get from him.

Scale: 1 square = _____

Diamond Creek

7/21/14

Jeff, David, DCSP Interns

Sampling Diamond for benthics & light traps. Similar scheme

to Trib mountain trip in June '14. (missed Diamond on that trip
due to time constraints).

Also setting up insecticide experiment sticky traps @ 6 locations.

L02875 Started ~ noon @ Trib 400 m. Walked: 5 min. picked: 20 min 4 sps 83

L02876

T1

T2

T3

T4

T5

T6

800

1600

O

5

15

5

16

4

82

79

MSDS 400

Finished ~ 4:30 PM

14 Light Mainstem MJUS 400

MSDS 200

Could not get any further
upstream or downstream on foot
(cliffs out!).

Scale: 1 square = _____

Rite in the Rain.

LCR Sept. Sampling

Jeff & TK

9/23/14

On upper reach today. Eric & Josh on lower reach.

Weather clear & calm. ~90 high, 70 low,

Water brown, but only ~20 cfs about baseflow.

Day 1: Set up traps, boats, infalls, sondes at all sites.

Also took D-net @ Blue Spring. Almost nothing in there: combination of brown water, post-flood, & time-of-year?

Started ~11 AM, finished back to camp at 7 PM, just as light ran out. Last sticky trap up ~4:30 pm.

Light trap @ chute camp.

Blue Spring Inventory: Boat, anchor, cotter pins x4, infall trap box, sticky trap pole.

* Consider bringing up extra D-net, sieve, funnel, squirt bottle, forceps & catching tree for next time?

Chute Camp Inventory: D-net, 1 light trap + box, 1 boat + anchor, velcro, boat 8 AA batteries, ~20ft parachute cord, 10 bottles EtOH + sample L, sieve, funnel, 3x forceps, light trap notebook w/ 3 data sheets, TP, soap, scissors, 5 cans spam, PB, stretchy jelly, big bag granola mix, squirt bottle, Donerade, 2 crafts big bag granola bars, yellow tape, 110 sticks, 6 poles
D-Need infall box, crackers, beans, pencil

Salt Camp Inventory: D-net, 1 light trap box, infall box, velcro, 12 AA batteries, 12 bottles EtOH, extra 2L EtOH, sieve, funnel, 2x forceps, boat, boat fix-it

Scale: 1 square = _____

LCR Sept. Sampling (cont)

Salt Inventory (cont): 20 sm clay traps, 10 poles, extra cotter pins, yellow tape, rice bag, map book for upper reach

* Need light trap notebook & sheets, pencil, more sticky traps

9/24/14

Day 2: D-nets @ Chute camp & Salt. Low catches, but catches in both and a few mayflies @ Chute.

Started ~8:30, done ~1:30

9/25/14

Day 3: Retrieving traps. Started ~6:45. Downward

~~Backward~~ forgot to set out light trap (L03117). No sample.

Infall trap @ Salt (I0031) empty. No sample taken. D-Net I0030

RKM	SPC	Temp	I0029 left @ Blue Spring.
10.4	5800	21.0 °C	
11	6500	21.0	River started flooding
12	6000	21.5	~8 AM. (we were at RKM 13)
13	5850	21.5	Not able to get to poles & traps
14	3450	21.5	above Chute camp.
15	Stopped taking measurements		Chute boat flipped, traps lost
16, 17	here due to flooding.		Last trap (16, 17) pulled ~11 AM
17			
18	* Left upright: anchor @ Chute, 17-20.8 poles, Blue Spring pole, boat, infall		
19			
20			
20.8			

Scale: 1 square = _____

Rite in the Rain.

LCR Oct. Sampling JEFF & Anya
10/21/14

Landed @ Salt ~9:30. Hit trail ~10:15 AM

Eric & Konner doing lower reach

RKM	SPK	%	Chocolate milk bottom
12.4	4200	20	water, but near base flow
11	5000	20.5	
12	4050	22	
13	4350	21	
14	4500	21.5	
16.2	4,650	20.5	
17	4650	21.5	
18	4550	21.0	
19	4250	20.5	
20.8	3900	21.0	

Forgot traps for 15 km pole (no pole as a result)

Did not deploy boats @ 16.2 & 20.8 because boats/anchors were gone. Found boat @ 20.8, anchor @ 16.2 probably buried.

Ran out of day light on 10/21 @ 19 Km, so no 20 or 20.8 poles

10/22/14

Woke up to Blue Spring & took a bath there. Also took bath there @ Chute & Salt Camps. Lots of caddis @ Salt, lots of exuvia @ Chute & adults everywhere. Water level dropping a bit

Scale: 1 square = _____

LCR Oct Sampling (Cont)
10/23/14

Chute Camp Inventory: 1 ziploc of granola bars, 2 bags trail mix, 1 bag granola, PB, 4 cans Spam, Powerade, Instant coffee, 1 can beans, hot sauce, 1 box triscuit \$8 Need cheese, candy
100+ sticky traps, 8 bottles EtOH + 1 liter light trap + box + notebook, 1 boat assembly + cauldron pins, 20' P-cord, ruler, anchor sieve, squirt bottle, funnel, 8 AA Batt, 3 pairs crappy forceps, extra cauldron pins, velcro, vinyl tape, soap, D-net, 6 ST poles, 2 packrafts + paddles, 1 rice bag

* need: picking tray, better forceps

Cached @ Blue: 1 pole Chute/Blue - Also try to retrieve buried anchors

Cached @ RKM 19: 1 boat, anchor, 4 cutter pins (to bring to Blue) + inc crack in wall

Salt Camp Inventory: 1 ammons can of food for ~8 ppl for 2 days (in jilly Nut camp) ~12 gallons H2O (across river under rock w/ cave like a horse cave)

In box/boat: 6 poles, D-net, 8 rice bags, sieve, boat + anchor + many cutter pins, 45 sticky traps, map book, light trap + notebook, pencils, sharpie, many AA batts, lots of vinyl tape, TP, scissors, squirt bottle, funnel, crappy & good forceps, velcro, boat fix-it, 11 bottles EtOH + 1 L

Day 3: Took down traps starting ~7AM. Done (@ 19 Km) ~11AM.

Bach @ Salt Camp ~3:15 PM: Cached a boat + anchor in wall crack @

RKM 19 for bringing up to Blue. Next time. Brought a new anchor to Chute Camp too. Cached food in ravine. Not salt camp & later across river

Scale: 1 square = _____

Rite in the Rain.

LCR June (Summer) Sampling

Doing lower reach. Easy & quick helicopter in.
Metas Hades; High ~110F.

RKM	Time Deployed (6/25)	Time Recovered (6/27)
9	9:30	6:00
8	10:05	7:30
7	10:23	7:45
6	10:55	8:05
5	11:10	8:20
4.4 (right sensor)	11:30	8:30
4	11:40	8:45
2.9	12:00	9:00
2.9 (sensor)	12:20 ← Forgot to update, 13:00	9:00
1.0	13:10 had to walk back	9:20
1.0	14:15	
O Boat	14:45	
O Pole	14:55	
+200	15:00	
0 light sensor	15:15	
+420	15:25	
1.0 right sensor	17:00	

6/25/15
Jeff & Anya

Scale: 1 square = _____

LCR June (Cont)

6/26/15

Boulders Inventory: 18 stickies, light trap setup w/ 2 lamps, light sensor apparatus (pipes), sieve, seivity, crappy forceps, 2 boats, 2 anchors, velcro, ~~map~~, funnel, tape, 4 AAs, jug off OR, D-net, bunch of light trap batches, 3 Eton bottles
Boulders Needs: Good forceps, light sensor array bobber, cotter pins or new design boat

Boulders Benthics: 5 min kick, 15 min pick (2nd) ~7 AM

Low diversity: Chiro, CERAS, and maybe Tabanidae?

B00564 ← note: these are the real #s (Not the data sheet!)

Confluence Benthics: 5 min kick, 15 min pick (2nd)

Hardly found anything. B00564 Small Tabanidae?

Coyote Benthics: 10 min kick, 35 min pick (2nd)

Good diversity of Hydrophilidae (probably), Baetis (probably), plus Diptera. Found long, orange worms. Diplo, or annelid?!

B00566

Ran into Coyote fish crew on trail. Derek not doing well.

Grumpy & tired, but drinking 2+ gallons of water?!

Possible heat exhaustion, hypotension, low blood sugar?

6/27/15

Derek threw up this morning. He's taking the day off. Possible evap?

Coyote Inventory: 1 boat w/ wingsuit, anchors, D-net, 7 poles, sieve, crappy forceps, light trap assy, squirt bottle, light sensor apparatus (pipes), 10 sticky traps, 4 lids, funnel, 12 Eton bottles + 2 large bottles, tape, velcro, scissors

Scale: 1 square = _____

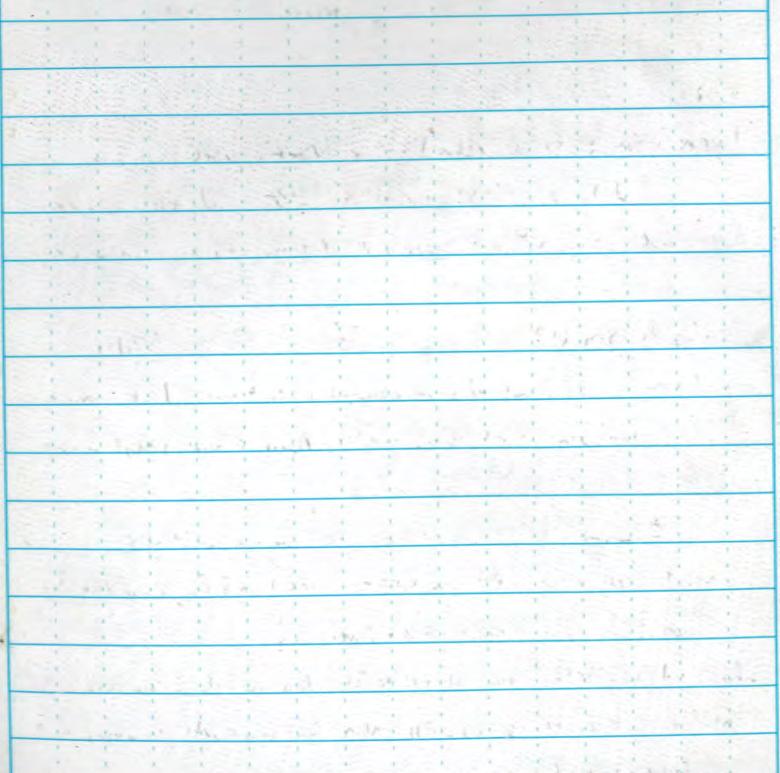
Rite in the Rain

LCR Sone (cont)

Loyote Needs: Spare AA batteries, 2 good forceps

Talked to Derek again. He will hike out with us tomorrow.

Hot night. Hit the trail w/ Derek ~1 AM. Rest of crew caught us just below the rim. Uneventful hike.



6/27/15
(cont)

7/6/15

Self, Adam Copp,
Angametacite,
David Goodenough

25

Upper Basin Drift & Benthic Sampling

Missed 1st (May) sampling on account of paternity leave. This is the second sampling. Throughout dealing with new mapbooks, so mileages are new from last trip. Occasionally requires rev samples in order to maintain protocol of 1 drift every RM plus benthics @ RMs 0, 1, 2, 4, 6, 9, 12, 15.

In theory, 16 drift samples & 40 benthics (8 sites, 5 replicates) per site, for a total of 46 samples per site.

Day 1

Drove from FLG to Seedskadee NWR, with stops in Moab to drop off light trap kits, Vernal, UT for dinner, and Rock Springs, WY for provisions. Arrived ~1 AM. Long day!

Day 2: Fontanelle

7/7/15

Tom Koerner with Seedskadee introduces us to Howard Hart, interested fly fisherman who helps us w/ shuttle. Howard buys us booze & fixes our broken Surber. Great guy.

Put-in @ dam, take-out ~7 miles downstream, on refuge.

Take-out access road: ~MP 36 (dirt road goes N & S from Hwy, take N direction). Just past Chevron field & down hill?

Saw lots of "yellow Sally" stoneflies, plus big may fly & caddisfly hatches. Lots of biting bugs too. Near dam only scuds (*Gammarus*, *Hyalella*) but recovery to EPT only a few miles downstream.

Upper Basin (cont)

7/18/15

Day 3: Fontenelle 2

Kendra (MNR intern) helps w/ shuttle (NWR access dirt rd to take out) and joins us for day's work. Finished early afternoon before rain, then packed and hit the road to Dutch John, stopping at Rock Springs again for more provisions and dinner.

Staying in Brulehouse in Dutch John (USBR contact Roxann at Visitor Center).

7/19/15

Day 4: Flaming Gorge 1

Jeff beached carboat, David goes swimming
Tailrace to Little Hole Hole, ~7 miles. Flaming Gorge Resort does shuttle for ~\$40, and taxes/tax-free for CCs.

Busy boating day w/ fishers & school float groups. Saw 20+ boats in sight at 1 point. Guides say a big caddis hatch (*Brachycentrus?*) just happened. Because FG releases colder than Font., the action happens later here. Most of what we saw were scuds, plus a few caddis flying around.

Day 5: Flaming Gorge 2

7/19/15

Little Hole to Indian Crossing, FG Resort does shuttle for ~\$100. Another good sampling day. Avoided rain, packed up, & headed to Dinosaur NP to drop off light traps w/ Tamara. Dinner in Rawlins, CO, then drove to Montrose, CO. Hotels all booked for Jesus-fest, so drove hour back to Grand Junction, CO, arriving in AM. Long day!

Scale: 1 square = _____

Upper Basin (cont)

7/19/15

Day 6: Gunnison

Ate breakfast in Grand Junction, drove back through Montrose, and hit Gunnison NP mid-morning. East Portal Road not conducive to having boat, so ditched at NPS maintenance yard (got permission from Rangers & Visitor Center)

Gunnison R. downstream of Crystal Dam looks very much like a little Glen: Green milky water, cold, fast, deep, rocky shoreline, hydropeaking? But it has a giant stonefly hatch going on (*Pteronarcys?*) Saw exuvia everywhere, plus adults flying around.

Sampled qualitative benthics b/c furthers ineffective for the rocky banks. Site ~2 mi downstream of dam, ~0.5 mi downstream of diversion tunnel (above this river looks impounded).

Site just downstream of USGS cableway

Anya D-nets for ~30 min, Adam & David take 3 replicate 5-min drift tows. Lost hammer @ FG day 2, so just holding poles & assuming no clogging in 5 min. (stopped taking ambient/bomb measurements for comparison).

* Consider spending more time sampling here in the future.

Physical surveys as well?

Left NP mid-afternoon, dinner @ SKA Brewery w/ Jacques & family. Arrived at Navajo Dam, NM ~8 PM, stayed @ Abe's Fly Shop.

Scale: 1 square = _____

Rite in the Rain.

Upper Basin (cont)

7/12/15

Day 7 (Navajo)

Did lower part of San Juan first so we could avoid weekend fly fisher traffic on the upper part (today is Sunday).

Pvt. in @ Rainbow ~7mi, took out @ Hammond.

John (# in wall next to register @ Abey's) did shuttle for \$30 CASH

Some caddis flying around, some mayflies in samples, but less active than the other places we visited (lots of sand).

* when floating (dickies are best! Not our boat), make sure to stay left! Right occasionally ends you up in irrigation ditches. Also lots of private property on both sides to avoid.

Finished at a reasonable time, had wine & music @ Wines of the San Juan, then dinner at Sportsman's.

7/13/15

Day 8 (Navajo 2)

Marc Wetherington meets us ~8 AM. Can't get a hold of Jerry at the Inn, so he takes us along a 4WD road running upstream from Fisher put-in. Results in 1st site ~RM 0.7 (rather than 0.3). Oh well. Marc does shuttle for us to take-out @ Rainbow.

Another successful day. Avoided rain all trip while in field!

Drove home via I-40, stopped for dinner in Gallup, back in FLG 1 day early ~11 PM.

Scale: 1 square = _____

Lower Basin Drift & Benthic Sampling

Day 1

Left GLMRC ~6 PM, after dinner. Arrived in Parker ~10 PM.

Stayed at Harbour Inn. Need to request key to access boat launch

7/20/15

Day 2 (Parker)

Hit the water just before daylight, ~5 AM. Took benthic samples in low water, finished ~10 AM. Combination of 3x3 rock scrubs, 3x Hess samples. Too deep/fast/rip-rappy for a Surfer.

Took a morning nap, then back in the field ~2PM for drift at high water. On-board sprayer not working, but otherwise uneventful. Done ~20:00. Could probably start earlier next time. Benthics @ approximately same time steps as in UB, but not as consistent due to paucity of habitat in LB. Drift still every RM, but stops ~RM 12 due to a diversion. Harbour Inn owner says caddis were introduced!?

7/21/15

Day 3

Really easy day. Checked out of hotel & drove to Laughlin. Stayed @ Harrah's for only ~\$10 a night. Best to be here during the week (off-peak rates!). Attempted to fix boat sprayer by replacing PVG assembly, but sprayer still weak. Also greased trailer hubs & taillights, but trailer lights still not working properly.

Scale: 1 square = _____

Rite in the Rain

7/22/15

Day 4 (Davis)

Put in @ the Riverside Casino Public Access ~5 AM. Finished benthics quickly; ~9 AM? Mostly 3x Hess, w/ a few 3x3 rock scrubs. Water rises very quickly here, and boat wakes are terrible. Saw a Baetis drake hatch on RR just across from Riverside Casino. Returned to hotel, then back on the River for high water drift ~noon. Uneventful, and back @ hotel ~18:00.

Saw the blackfly abatement boat, but it was being used as a taxi.

7/23/15

Day 5 (Hoover)

Drove to Boulder City & checked in @ Hoover Dam Lodge. Not as cheap as Laughlin. 25-min drive from there to Willow Beach, got the boat in the water ~noon. Were intending to do drift, but water wasn't at peak yet, so did benthics, then drift immediately after.

Whole reach feels "lakey," and not riverine. Glen-Canyon-like fauna & algae as well. Could only sample first 8-or-so miles downstream of this too much like a lake. Finished ~8, helped tow some stranded tourists' boat, then back @ hotel ~22:00. Long day, but only because of us not working too hard & the extenuating circumstances.

7/24/15

Day 6

Drove home. Back ~14:00. Could definitely cut a day next time, & probably make do w/ only 3 people.

Scale: 1 square = _____

7/22/15 31
Jeff & TomSept LCR

Eric & Laura in Upper, touch down ~8:45 am
me & Tom in Lower, touch down ~9:30 am (10 am?)

Worried about flooding; NWS calling for 1-2.5" rain in next 24 hr from a tropical depression. Sky mostly clear today, but worried about elsewhere in watershed.

Mostly uneventful day. Coyote pole & boat deployed ~10:00 am, Boulders ~1:00 pm, Confluence ~2 pm. Boat ~3 pm (thought we forgot the anchor for a little while). Talked to a citizen scientist private boater @ Confluence, took 1 h break back @ Boulder ~4 pm. Light trap @ Boulders 1840-1947, ~25°, Confluence emergence boat was missing 1 piece of water-facing netting, so didn't deploy SOT169.

7/23/15

Could not find Boulders D-net pole. Cleaned out Boulders box well

Boulders Needs: Thermometer, Pencils, D-net pole, Eton batteries (3 min)

Sticky traps (x 17 min), light sensor bottles

Benthics @ Confluence 10:30-10:35, 15 min pick w/ set-up rigged pole B00865

" Boulders 11:45-11:50, 5 min pick B00866, in cylindrical bottle

Ran into ND techs, as well as Scott Jernigan

Benthics @ Coyote 3:00-3:05, 15 min pick B00867

Coyote Inventory: Light sensor assembly, boat assembly, 2L+9 bottles Eton, funnel, split bottle, light trap assembly w/ plenty of notebook pages + thermometer, pens, map book x 2, 6 sticky traps, 2 gauze + bias forceps, pipettes x 2, tape, Velcro, scissors, wing nuts, screw

Scale: 1 square = D-net, 7 poles

Rite in the Rain

9/24/15

- 1st - Orange R rear dorsal } VIE info to pass
 2nd - 60-79 L opercle } on to Rick & Boulderz
 80-99 R opercle
 100-69 mid-head }

Coyote Needs: Internal labels, sticky traps (x30 min)

Temp-down: Coyote @ 7am, started hosing @ 8:30am, @ Boulderz
 @ 10:45, @ Conference @ 11:30, done ~12pm @ Salt & Hwy

Boulder Inventory: 2 boat assemblies, light sensor assembly, light trap assembly including notebook + internal labels, 19 sticky traps, 1 spare lid, D-net (no handle), sieve, 12 AA batteries, spare wing nuts, spare velcro, 1L ethanol bottle + 5 gal EtOH jug, squirt bottle, funnel, scissors, tape, gear forceps x2, pipettes x2, sharpies x2, poles x8

9/25/15

Hiked out Salt (~3 hrs) fast, but otherwise uneventful.

~~XX~~ NOTE: Oct LCR (scheduled for 10/23-26)
 cancelled for 2015 on account of rain & LCR
 flooding to ~1500 cfs

Scale: 1 square = _____

9/28/15

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Lower Basin Fall Sampling

Jeff, Ted, Tom O.

Day 1: Parker: Left FLG previous night @ 5:30, stopped in Lake Havasu for food & dinner, stayed @ Harbour Inn ~10:30pm. Hit boat launch @ 4 am for benthics @ same sites as last time, finishing @ 9:30 (including breakfast @ Roadrunner). Hit boat launch @ 1 pm for drift on 2nd double peak high water (1st peak @ 7, next @ 1). Craig Ellsworth (WAPA) joins @ this time.

Caught some mayflies on truck back @ Harbour Inn that evening (dusk). Also swarmed by Swallowtail throughout the morning starting @ Dawn.

Drove to Laughlin in time for a late dinner.

9/28/15

Day 2: Laughlin. Hit the water ~5 am for benthics, and ~2 pm for drift (actually 1 pm, but had lunch on water first). Mostly uneventful. Back @ hotel early evening.

9/30/15

Day 3: Hoover. Drove from Laughlin, on the water ~10 AM. Took benthics, then did drift. Many rock suckers did not work very well on account of vacuum clogging. Off the water ~6 PM, & drove back to FLG that night. Successful trip. Plus, the government didn't shut down!

Scale: 1 square = _____

Rite in the Rain.

Upper Basin Fall Sampling

Jeff, TK, Eric, Anya

10/13/15

Day 1: Driving left GCMRC ~7:30. Planned for earlier, but delayed while waiting for cars from Jared.
 Took I-15 N up through Kanab & Provo this time. (I-80)
 Lots of trailer/boat issues, but no major losses.
 Stopped @ Wal-Mart in Evanston for groceries, arrived @ Seadskae ~8:30pm
 Too Seadskae, take dirt road running parallel with power line!

Day 2: Fontenelle Day 1

10/14/15

Fixed boat hatch with rivet gun at Seadskae shop, so hit the water late (~11AM). Howard Hart helps us with shuttle. Got to take-out ~7pm, at dark. Successful day, nice weather (fair), Kokanee salmon running. Nothing really eventful bug-wise, but bluewing olive mayflies (baetis?) were flying around.

Day 3: Fontenelle Day 2

10/15/15

2 tires on trailer quite bald, but decided to see how long they last. Tom Koerner gives Anya a bunch of light trap samples he collected this summer. Uneventful sampling day, hit road to Dutch John in late afternoon. Stayed at Flaming Gorge Resort. W/ BoR bunkhouses were booked.

Day 4: Flaming Gorge Day 1

10/16/15

Cold water! Turns out BoR dropped temps 12° from night before. Lots of upset fisherman, nothing to catch & no bugs.

Scale: 1 square = _____

10/13/15

UB (cont)

10/17/15

Day 5: Flaming Gorge Day 2

Water still very cold, still trivial bug catches. Days otherwise uneventful.

Headed South to Montrose in late afternoon, arriving ~10:30pm. Very long day with that drive, consider if there's anything we can do about that. Hotel (Black Canyon Motel) was serviceable

Day 6: Gunnison

10/18/15

Got to Black Canyon ~9:30am. Toured around, then went to sample. Had left boat & motel & forgot net with it, so limited to benthics. No giant stoneflies this time (probably in deeper water), but were mayflies & caddis.

Hit road for NM late morning, arriving in dark @ Abe's.

Day 7: Navajo Day 1

10/19/15

Put in at Texas Hole, on dirt road Mark showed us last time. Lots of fishermen today (and hotels booked!) evidently a good time for the fish. Saw many catching. Some mayflies flying around, but nothing really remarkable visually. Net fell out of Jeff's boat on first riffle, but TK & Anya recovered it.

Met Timmy (Abe's grandson) at restaurant, seems willing to collect light traps.

Day 8: Navajo Day 2

10/20/15

Unremarkable sampling, except for rain just as last sample was finished. Home in FLG ~10pm.

TK collects NZ mud snails ~RM 11? Needs verification

Scale: 1 square = _____

Rite in the Rain

LCR April Sampling

4/19/16
Jeff, Eric K,
Eric Moody,
Erin Abernethy

"LCR Intensive" Sampling op!

Joined by Erin Abernethy (Oregon State U., Lytle PhD student) and Eric Moody (Arizona State U., Elser PhD student)

Moody taking pH readings, algae, and water samples for Alkalinity, Calcium, total N, and total P at every river-KM. Need to keep the latter 3 in ice.

Also taking benthic samples every RKM to fill in gaps in community patterns. (Jeff & Eric K. leading). Plus regular sticky trapping & floating light sensors.

Day 1

Jeff, Eric M. [4/19/16]

Landed @ Coyote ~10 am. Helped Jim set up camp. Set up 9 rkm pole, boat, & light sensor assembly ~11 am, started walking. Eric M. worried about pH changes over day, takes measurements using handheld probe at each site every time we pass by. Also takes SP, dtemp using our probe.

Pole	Install time	Takedown time (4/21/16)
9	11am	7:45
8	11:45 am	8:15
7	12:05 PM (4/20)	8:25
6	12:40 PM (4/20)	8:55
5	13:15 PM (4/20)	9:18
4	14:05 PM (4/20)	9:48
82.9	14:30	10:10
21.95	15:15	11:15
1	16:00	11:55
2	16:30	12:15
Up. 200	16:35	12:15
Down. 400	16:45	12:35

Scale: 1 square = _____

April LCR (cont)

4/19/16 (cont)
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Swapped out Nick's temp loggers @ Rkm 6 ~12:45.

Messed up some light trap barcode. Following is correct:

(US, DS, land, water): 400m DS: SO8145-SO8148

200m DS: SO8141-SO8144

Rkm 1: SO8133-SO8136

Rkm 7.95: SO8129-SO8132

[4/20/16]

Walked up to Salt Camp. Met Eric K & Erin. Did a group benthic @ Rkm 10.4. Going to take 1 sample per dominant habitat type (riffle/run, pool, transverse dam, veg. bank), as available. Storing samples in 250ml bottles, so elutriate in many cases to get detritus out while keeping (hopefully) all bugs. Eric M. goes back upstream w/ Eric K, & Erin joins me.

We collect benthics & RKM 9, 8, 7, then walk back to Coyote for the night. I cleaned the Boulders light sensors @ 7:30 AM, & the Coyote ones @ 10: AM. I also repositioned the Coyote apparatus deeper in the channel & repositioned the sensors, which had been pushed vertically. Used toothbrush & vinegar for sensor cleaning.

Was using Coyote light trap box for benthic elutriation & left it @ RKM 7, so was unable to take the Coyote light trap samples tonight (would have been LO6717)

Scale: 1 square = _____

Rite in the Rain

April 2016 LCR (cont)

Jeff &
Gina A. (4/21/16)

Erin's Birthday! Had poundcake & strawberries tonight to celebrate @ Boulders.

Took down sticky poles & boats (see previous pages). Also collected benthics @ 0, 1, 2 RKM.

(4/22/16)

Collected water & algae for Eric M. @ RKM 0, 1, 2 from 15:00-16:00. Got really windy for these, may have compromised samples. Put on ice @ Boulders camp. Also finished benthics from RKM 3, 4, 5, 6. Noticed that there were pretty much always 3 habitats: travertine dam, veg. bank, & a "runny pool" that was flowing, but more like a pool than a run. Camped @ Boulders. Cleared Boulders light sensors again @ 11:25 AM, removed.

(4/23/16) 16:00

Collected water & algae from RKM 3, 4, 5, 6, 7, 8, 9. Kept in soft cooler on ice, then put in chest cooler @ Coyote, then Salt. Removed Coyote light sensors @ 11:50 AM. Got to Salt camp early afternoon, so took down their light sensor too (~14:00?), plus the Salt DO probe & 10.4 water & algae.

Inventory: Boulders & Coyote: both need looking washers for boats (8 each), & better set up for light sensor attachment (3). Good on sticky traps, bottles, C-tort, light trap gear, forceps, etc.. But fly in enough for the June trip during the May trip, so we can move faster once we hit the ground in June. (Need boxes for flyout too).

Scale: 1 square =

Uneventful hike out! (4/21/16)

May 2016 LCR

Jeff &
Charles
Tackabie
(5/17/16)

Landed @ Salt ~9:45

Salt Pole, boat, light Sensors ~10:30

RKM	Deployed	Removed (S19)	SPL	°C
10.4	10:30	7:00	4800	20
11	11:00	7:40	5600	21
12	11:25	8:15	4850	20.5
13	11:55	8:40	4900	21.5
14	12:25	9:00	4950	23.5
15	13:00	9:30	4950	24.0
16.2	14:30	10:00	5100	23.0
17	15:30		5200	22.0
18	16:00	12:00	5100	22.0
19	16:35	12:30	4650	23.0
20	17:05	13:00	4900	21.0

Miscounted traps, and did not bring enough for Blue Spring pole or boat. Sono sticky traps from there. Did deploy Blue Spring light sensor array, ~18:00. Salt & Chute sensors deployed concurrently w/ respective poles (above).

Also ran out of daylight @ blue spring; decided to try to take the benthic up there in 2 days rather than now. Packrafted back to Chute Camp, arriving ~7:30 am. Landed @ Salt Camp ~9:45 am this morning. David G. & Tom Q. doing the Lower LCR.

Rainy day off & on. Weather ~75°F.

Deployed light trap, but forgot to turn on light. No sample.

Scale: 1 square =

Rite in the Rain

May '16 LCR (Cont)

5/18/16

Day 2: Benthic day. Still cool (~70°F), rained most of
late morning & early afternoon. Water still blue, but seems to be
turning a little more brown.

Took Chute benthic ~9:30 10:30 am. 5 min kick, 15 min pick
Salt benthic ~ 4:00pm (2 ppl).
3 min kick, 10 min pick.

Chute sampling area mostly reduced to travertine falls.
Lots of sand in the area (true for most of Upper - since last fall?)

5/19/16
5Day 3.

Took down Chute Blue Springs light sensor array
~13:45

Forgot to take down RKM 17 trap until later in day
Blue Spring & Salt or Chute (can't recall which) had
a single sensor that got bent to an odd angle on the
light trap array. Be suspicious.

Got back to Salt Camp around 7:45 pm (left at
7AM). Long day.

Also spent w/ hour going above Blue Springs. Lots
of flow up there (~30 ft/s?), which seems to be spring
fed based on color. Saw fish & Hydropsychidae too.

Also saw a distressed dace & dead sucker in water around
boat beach.

5/20/16

Uneventful hike out.

Scale: 1 square = _____

Scale: 1 square = _____

Rite in the Rain.