10/12/09 - Cebolla monitoring BZ, SV, MS, MJS
Bill Zeedyk (BZ), Steve Vroomman (SV)
Michael Sciallone (MS)
Matthew Schs. H2 (MJS)

Reach 1 & 2

road berm → low water crossing
hi quality H2O clears

intermittent
6-weeks grama

Cebolla Photopoint #1 MJS
10/12/09 @ 1710

on top of knob marked w/ cairn

L. Cebolla Spring 1° #2470

@ Lake Cebolla 49° #2471

GPSed as CBPP1

Furman University

conducts small mammal survey
camera monitoring
bat mist netting

* Get methods & results to include in monitoring report

10/13/09 BZ, MJS

- reconsider mini exclosures
- ~~pattern~~ even if riparian pastures are cattle excluded for part of the year

- willows along Lake Cebolla
  - leave water gaps

- capture
- ~~Gps~~

Fence @ top of ~~[illegible]~~ ~~[illegible]~~
Lake Cebolla
- build delta
- create more hi quality water
  - clearer
  - ducks can't feed currently - can't see underwater
  - currently lots of colloidal clay in suspension

smart meal

Reach 4

mini exclosure GPSed as MER4-1NE
SE
SE2

- catch sediment
- picket structure; rather than rock
  - move upstream?
- lots of deposition → even w/ grazing
  1 ft wrack line

Reach 2

GPSed as
ORD3-R2
ORD4-R2
ORD5-R2
ORD6-R2
3 ORDS
12" x 12" x 1'

grade change in the lower part of reach 2

frequency of erosional features

another mini exclosure GPSed as MER2-2 NE SE NS (north side) NW SW w/ ORD 1/3 of channel to increase overlooking

- starting @ the steeper grade
women were instead of bark were field/shey - even if planned grazing still critical
18"-20" off the ground
  - whatever the max allowed
  trespass cattle cattle from getting trapped
- fill basin
- gap for cattle → more water via trailing

keep meander pattern ↑ bed

built like glides gravel on glides

③

~~another mini exclosure to tie in w/ existing fence~~

add another burritodam further in valley center to direct H_2O to log

Almost no more channel added deposition

~~Weather~~

side channel near tamarisk aggrading

- (Actually fence tie-in exclosure probably not worth it
  - minimal channel
  - coarse material working its way down
  -

Plant bulrushes in residual pools
Reaches 2 → 5

dig up cornus (propagules)

Burrito Dam installation
* Add BURDAM 1 to restoration map

R2 - Mini Exclosure GPSed as MER2-1 SE NE NW

④

ORD Reach 2 GPSed as ORD1-R2

15' x 15' x 2'

8' x 15' x 1' - sill on North edge
cobble size stacks 8"-10"
rewet terrace
farm pond - fed by spring

ORD Reach 2 GPSed as ORD2-R2

15' x 10' x 2'

cobble size 8"-10"
just outside of fence

here
Channel @ crenation w/ sinuous shape

Move Plug N' pond downstream
to new GPS point PNP-R2-REV

- But will dry out some areas
by juniper, but could be
low enough for overbanking

- force spring water valley center

plane off hi-spots and add
to plug

- GPSed as HOTSPOT 1

ORD GPSed as ORD7-R2

4' x 30' x 1'

add road drainage to ephemeral
channel (well vegetated) to
increase wetland character

* Double check road drainage
to make sure this can be done

ORD - GPSed as ORD8-R2

27' x 4' x 1'

ponding water

R4 - Reach 4

- good access to floodplain
- end of fill for dam
- 90' or 58' pickets across w/ rock ⇒ berm
may need backup footer? 1' double footer 2' deep
trench 4' wide
- last chance to fill in before steep grade

anchors ends in bank to prevent
end arounds
- good shoulder
- backfill area where stream could cut
off

backup

use spring water + sediment to create

progression of wetted areas
plant cattail - around Lake Cebolla
plant wettest places w/ bulrush
+3 square → Reach 1 & sandy Echannel areas
↳ spring or brushy?
sandy areas w/ coyote willow
grading willow @ wettest
↳ from lagoon
areas near spring
can grow in saturated
clay soil

Alcaraus taller variety

Rhinoceros rented auger for bobcat
↳ treated not scheduled

ME Mini-exclosures
- corner posts → wood
T-posts in between

Miniexclosures → * extend Reach 2 borders to include exclosure

Reach 2 (willow) - need seed source - lots of browse on extant pop.
GPSed as MER2-3 NE SE
marked w/ wooden stakes NW SW as "2-1"
Photo # 2475
Reach 5 - ponding, allow some water outside for drinking

Reach 2 - Burrito Dam
marked w/ log with blue paint
GPSed as BURDAM 2 & placed on map

Reach 2 - Take Burrito Dam + turn it
or build new
GPSed as BURDAM 3
marked w/ log w/ blue paint
Photo # 2477

Reach 2
(R2) Channel Dimension

12.39 bottom of pool on other side

11.01 top of headcut

10.95. " " upstream flag (US)

10.81 US flag of ditch

10.86 Downstream (DS) flag of ditch (Valley Right (VR) side

12.21 bottom of ditch

10.39 top of levee left of ditch

plug up ditch
don't have to dig out trench too much
dig out just a foot
below top of headcut

plug made of rock so will
leak some, but allows flooding
~~while directing the main channel
to the right~~

144
40
5760 sq ft
5760

control headcut w/ 6" rock
grade control / footer

Measurements

40 ft. across on left side of
b/w flags

Plug: 12' x 20' x 2' footer
↳ Marked as Filter Dam on wooden stake
" on Downstream DS edge
GPSed as FILTEDAM 2

Also marked lower west end of ditch
as "Pond w/ wooden stake

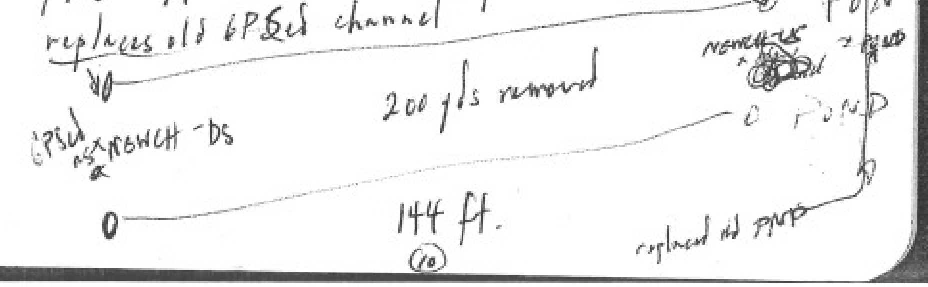
o = wooden stack

10.19 POND o

10.29 POND o

FILTERDAM o 10.57

scalp off sod
lower channel
replace sod
place extra material → in depression on valley left ~~upstream of filter dam~~
replaces old GPSed channel



instead of original plan

→ use permeable fill structure material w/ fabric capped?

→ so flow will still supply existing wetlands, but flood flows will develop valley center

→

- if remove hi spots where to place material?

-

Hi spot flag 10.97

channel riffle 12.36

~~pk~~ side channel 12.20

remove ~~4~~ 40 yds

place in depression above

20ft radius circle 1.3 deep

GPSed as HISPOT1

marked with wooden stake

"Borrow 40 yd."

10/14/09 BZ, MJS / Headcut Meeting Dave Mattern (DM) JJ - BLM engineer

R7 Reach 7

rock low water crossing

- put road back to orig. position
- better grade

20' wide (width at channel)

if use cross vane

7' invert

(2) 21' arms

invert run / lip riffle - se

1 layer of footers

3 ft - rock size for arms + invert

10 boulders per arm

20 " " invert

= 45 - 50 boulders + 12 rocks for sills on sides

½ yd boulders

and 20' x 15' x 1' = 300 sq ft + geotextile fabric 1 big roll

15 yds of gravel for all for tread

- change symbol of grade control to ~~[illegible]~~ cross vane (create new symbol)

- determine length of original road to be renovated from Arc GIS

invert elevation should be 1 foot above current elevation

All scenarios if use current crossing

raise road bed 1.5 ft

armor downstream side 20' long x 15' wide

good base

---

if 2 more crossing, still need to shore up sill

water 4' high when flooding

meander pattern extending out

↓ grade

slows water

meander cut offs

C within F

evolving C/B w/ own meander pattern within constraints of other stream type

hardly any crossovers

---

induced meandering section - only 2 terraces no fill pla

- tough to make rocks stick

~~how make rocks stick~~

move fence to along road (* change map)
replace gate w/ cattleguard

R7 Reach 7
D = 3.5

shallow irrigation ditch
lepase cut down
current channel an artifact of the ditch
abandoned sidechannels - use as reference reach?

BLM Riparian Assessment Protocol
→ emphasizes potential
different potentials / capabilities
planar bottom = what Rosgen channel? type

stream level used to be @ berm level → to feed culvert to Stock pond

road ~~Cross~~ over natural channel
no culverts → post berm

Headcuts
2 branches
VR 15 ft/yr. } 3 migration rates
VL 7.5 ft/yr. }

DM - ~~PDA~~ planar bottom w/ reg.
would prefer not to dewater developing floodplain / stream channel
- natural resource objectives

B2 - one time opportunity
must be self-maintaining, because no maintenance funds
not filled in silt
not cutting thru resource delta
but actually hydric wetland soils
diffuse flow
alluvial fan
no defined bed/bank

BZ - bedrock control - sandstone bench
- hard rock to spill on
- drill / ground penetrating radar to determine extent
- more stable
- less potential energy for scour
- 400 c/s

regional curves → channel dimension
→ determine discharge

- warm ditch → could also develop riparian features
more access to floodplain
- berm the top of the headcute
- built from channel construction / excavation
- designed to accomodate flood flows
- little roughness

DM - too much concentrating of flow
accelerated flow
- diversion berm must be engineered
for 50 year flood
- have to be designed
- 50 mi² watershed → would need to stabilize warm ditch
- [redacted] creating continuing maintenance issues

stabilize gully no matter what option

blend two options?
● → send water @ both ways

DM stabilize what have

BZ -

How to Evaluate Options?

chance of success / risk
impact - comparable both w/ use of heavy equipment in Wilderness
cost & maintenance

both proposals similar work & effort. cost? differences

D.M in place stabilization w/ a drop structure
shape
to darkshell
area

grade: slope ? to ?

- rock / rocked
- turf reinforcement mat (allows veg growth)
- drop structures (NRCS)
- dispersed flow
- swale
- although would be steeper

D.2. valley left - mostly cut off
should be cut off rest of way
- recommend gradual drop
- ↑ sinuosity to ↑ floodplain.

Treat 2nd & 3rd headcuts
with trackhoes
- still capturing ~~D~~ water

B.2. - if approaching headcuts
- accentuate floodplain
- take out sides

BM. - if ↑ floodplain
more dispersal / capacity to absorb water

compare material costs
equipment time / material

plants
shrubs - 4-wing saltbush
grasses - w. wheatgrass
combination of warm + cool season grasses

flood of record
scour mark on clay bank near
Lake Cahalla

4 - ~~D~~ measure

Reach 7 - raising grade key
- depends on the substrate rocks add to riffles
- can use grass for grade control - (3 - sparse)
- include paragraph in design
on potential of each area
objectives
- more narrative ~~of~~ for each task in design

B.2. - need intermediary steps to reach potential
have to go thru all the steps
can't go from gully to planar system
in one shot

D.M - floodplain is the objective

B.2. use Rosgen system + PFC

series of headcuts

not a run

run → pool → glide → riffle → run

not planing out / return to grade

all lowers

need to figure out meander length

10 - 14 x bank full width

Where to go from here

develop plans

cost / benefit analysis

flow splitter?

- scrolling → ~~not~~ levee → plug

-

or turn channel

→ sand dunes for 50 years

dam ditch

- create clear water ponds
- good for waterfowl

plants dug getting covered by sand

drilling for sandstone bedrock

transects

grade - ½ grade of valley

R7 Induced Meandering

190 + 240 Apex to Apex measurements

155

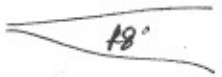
meander length = 190 ft.

of shorter, start bend after apex

If more than 90, start bend before apex

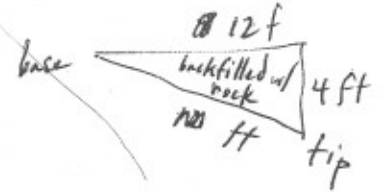
off by 20%. ok

use post vanes instead of baffles
too much stress on baffles w/



to mid channel

~~vane~~ vane 1 - R7



w = 4ft.
base = 12ft

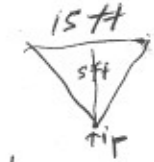
6" posts on 2" ~~c~~ center

typ. 17 x

marked as 7-1 on wooden stake as tip

baffle 1 - R7

30/60



picket baffle

18" tall

marked 7-2 at tip on wooden stake
GPSed as BAF1 - R7

vane 2 - R7

post vane same dimensions as #1

marked as 7-3 on wooden stake
GPSed as VAN2 - R7

Large weasel tracks

look for missing meanders
enough room to accommodate

End of Meander Length
marked as 7-4 ML w/ wooden stake
GPSed as ENDML-R7

transition zone
BAFFLE 2
28 ft upstream of 7-4ML post
5' x 15' x 1.5'
marked as 7-4 BAF RT w/ wooden stake
GPSed as BAF2-R7
B2. width 1st (as in channel)
length 2nd

grade control ?
- widens channel by trying to end run
- max left 6" (=1/3 max depth)

design channel
12-15 ft.

transition zone - overlong meanders
3x
with the Wetland & RERT
could put in structures on both sides and install grade control

use Lobcat to drill holes for posts
construction still by hand

10/15 BZ., MJS

Road crossing
- use bedrock footer

transmission loss upstream (@ RO + R2 (@ just upstream of R2 + 4)
- check flood of record
- test H.
larger channel dimensions

excavator w/ thumb
rocks available on site (but w/ issues arch)

Cross vane Photo 2479
GPSed as XVAN-RO-1
marked as CVANE on wooden stake
arms 20 ft long ea.
invert 10 ft wide
install A-arm to disipate energy
excavate right bank to
install abutment rock

(70) 2' boulders or 140 linear ft of sandstone boulders
bigger better

+ 6 rocks total for sills

cobble for tread
30' x 14' x 1'

(27)

RockSource
GPSed as RKSOURCE + RKSOURCE2
sandstone outcrops within 100' of road
- some crumbly
- marginally enough rock for cross vane
- depends on arch clearances
- middens in area
- may need other rock for footer

not much grade control potential
→ under BLM needs stimulus

RO - Flow splitter
- lack of stream power
- NEPA concerns
- scrolling of river
may negate structure
- too much sand deposited on meadow → ponds by junipers

bottom 1ft lower than meadow VR
max'd @ bankfull = 1.5 ft.
channel - 26 ft wide 60 ft long
GPSed as
taper from 3' → 0' depth

500 yds of material to move

where to put spoil? channel?
marked as DIVERSION on wooden stake

Cross vane - placed where hwy fill is (replaces old pt.)
GPSed as FLOWSPL-RV
10' invert 1.5 above bed

2 30' arms 2 layers deep
w/ geotextile marked as CVANE INVERT on wooden post

(28)

surface of
boulders @ elevation
of diversion ditch channel

control water based on
width of diversion ditch

4 ft/sec = 80 cfs
= 40 acre ft. going into meadow

may not need to dig ditch
as deep

higher flood event @ rabbit droppings & pine cones

harden road crossing if
stays in original location

16 2' boulders for invert
don't have to be big since
not subject to shear stress

put curve in channel for aesthetics
and increased length

Photo # 2488 - terraces to calculate flood of record

* Draw in diversion channel on map from all flow splitter location

* Label other photos

width = 42
REW - 39
BF @ is
max depth
5.5 ft deep

Manning's lowest roughness
sand bank no shrubs
slope from Steve V.'s Data

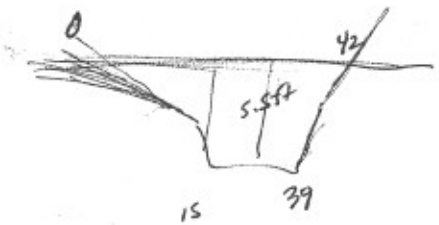


Photo 2484 end of hammer
depth to dig to

Design breach
& drop structure @ end of
road dike

Road Dike

excarate bankfull
bench for flood capacity

~~footer rock revetment along~~
~~left bank~~ let cut - nothing to protect

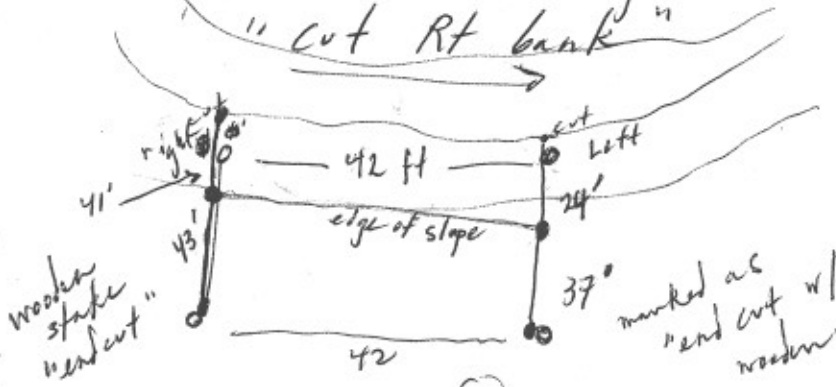
modeled after dimensions from flow splitter area upstream

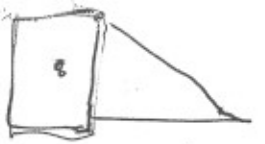
8 ft to top of bank
on left side

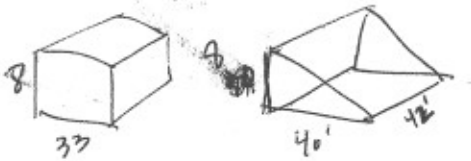
wooden stake @ new Left bank
"Cut Lt bank"

42 ft across ℄ dike breech

wooden stake @ new right bank
"Cut Rt bank"







2'
160
42
320
6400
6,720 ft³

2
33
8
2
264
42
1528
10560
11,088 ft³
11,720
6,593
~600 yds
17,808
17,150
280
270
108

PLUG - marked w/ wooden stake

START PLUG

26 ft width

7.5 high

4 3
26
7.5
130
1820
195.0
÷ 30
6.5

4
7.5
9
22.5

20

~ 30 yds long

~ 90 ft long

staked @ "end plug"

Road crossing

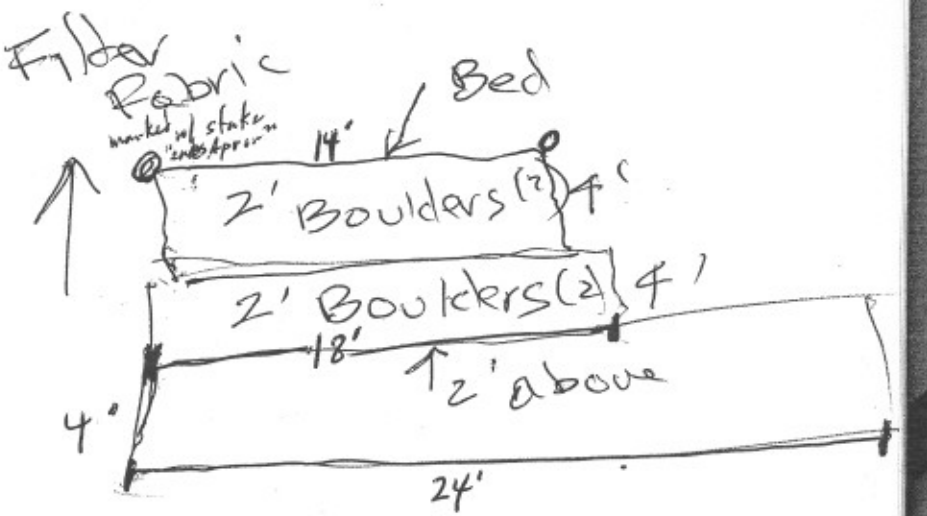
- grade control
  - less rock if go downstream than if use road

- sp

2' boulders
excavated trench 2' below surface

4' wide trend down to

2 rows of 2' boulders on top offset



6PSed as 6ROCON-RO

Across Road

ORD w/ Apron

14' x 14' x 1.5'

create shallow pond upstream

GPSed as ORD1-RO

marked w/ stake "ORD"

ORD

6' x 10' x 1'

GPSed as ORD2-RO

marked w/ stake "ORD w/ dim"

ORD 6' x 10' x 1'

GPSed as ORD3-RO

marked w/ stake "ORD w/ dim"

Hand work for volunteers

sediment plug @ Lake Ceballa

& a wetland cells - restore wetlands below dike → head of L. Ceballa bank to bank

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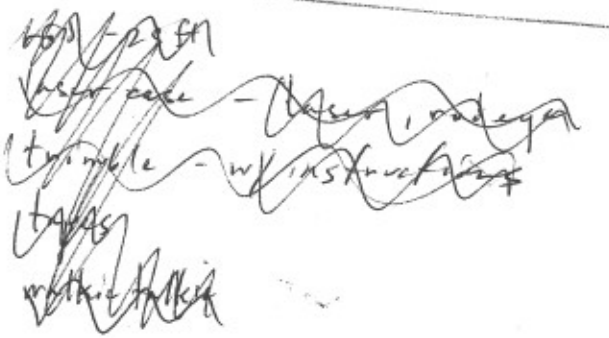

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top of L. Ceballa create lake delta sediment plug create wetlands upstream

reservoir delta

- another dam if it had vegetation

- mini exclosure

- - capture sand

- wouldn't fill Lake Ceb

- wet upstream

- 2 for 1 main channel & side channel

GPSed as

MERO-IN

N2 NEE SE SEE NE(W) SW

Plant Species Revg. List

NM olive
Skunkbush
Current (too dry?)
C. willow
6. willow (water enough?)
4-wing

3-square barberry buffaloberry

from PMC
Plant Material Center

* expand species list from Peddle
wooden post on top & in bottom
RD-1 cable?
32" field wire

potential rabbitbrush circle
in NE #1 in RO

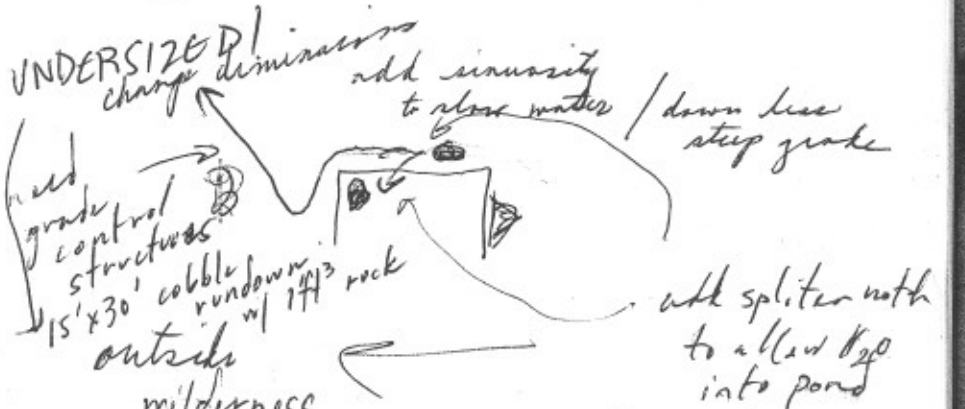
Another mini exclosure
at the bottom of L. Cebolla
to revegetate plug to
secure water for Lake Cebolla

SVR #2 - Side Canyon Valley right #2

Positives of PNP (Plug n' Pond)
- prevent gully forming in VC

- if spill water into old stock pond, prevent headcut situation

- another option
breech stock pond @ corner
& install grade control
to pond water
for permittee
water collecting



~~rocks available valley right~~
need to haul

* 1 acre created around stocktank
add to calc. ½ ac. created inside stock tank

Plug N' Pond near Stock Tank

Pond 20'W 100'L x 1'D

armor end w/ grade control

invert rock

marked w/ stake "POND"

GPSed as NEW PNP → replaces other PNPs in side valley

210 yds for plug

Plug Dimensions

15' across x 30' long x 40' long

marked w/ stake "PLUG"

GPSed as NEW PLUG

artificial ditch - engineered w/ levee on ea. side

- on hillside

chosen alt. since closest to historic valley bottom

3B - steeper; farther away from natural channel

prairie dog holes!

Reach 7 Slope Calculations

15.83
12.62
3.21
1.00
4.21 1250 0.34 % Slope

0 — 1500
12.65
10.75
1.9
1500 = 0.4 % Slope

Not too steep:

Put weirs in @ crossovers

count # of crossovers

Don't need baffles or vanes b/c plenty of sinuousity.

1st terrace - 50 yr. flood

2nd " - 100 yr. flood

Road crossing area

2. Cebolla level won't change
lose sand plug unless
willows estab & capture
organicas

-

ORD -

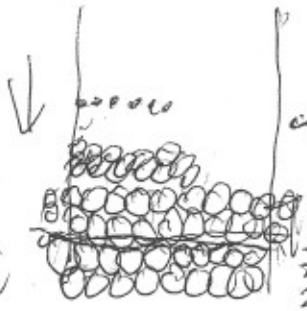
27' x 6' x 1'

-GPSed as ORD4-RO
mark w/ stake "ORD + dim"

dim = dimensions

Filter Dam + ORD (downstream controls scour)

14 x 8 x 1



GPSed as ORD5-RO
marked as "ORD + dim" on stake

18 x 16 x 2

GPSed as FILDAM-RO marked w/ stake "Filter Dam + dim"

* remove plug + new channel + wetlands on old map!!

ORD above road

16' x 8' x 1'

marked stake "ORD + dim"
GPSed as ORD6-RO
lots of hand work

Another ORD above road

10' x 6' x 1'

GPSed as ORD7-RO
marked stake "ORD"

Miniexclosure @ Sediment Plug

- protect sediment plug from wind & stream erosion
- keeps water in the lake

6PSed as MERO-SP SE, SW, NW, NS, NE, NE2, SE2 } extend into lake area for better growing conditions

plant dunes w/ Buffaloberry, 4-wing, NM olive

Plant Scirpus in coves

Missing Polygonum, [Pond weed], Pomomegentan

get references from waterfowl book

Arrowweed

what are clear water SP just have turbid H2O

(43)

Create chart w/

Reach Structure Materials Consequence Funding

R3 @

Rolling dip 6PSed as ROLDIP1

→ Water into tank rather than 30' runoff down road

R3 - ORD & 2Bs

2 channels

6PSed as ORD1-R3 not staked

Rolling Dip - 6PSed as ROLDIP2

direct into burned natural channel

ORD 6PSed as ORD2-R3 not staked

14' x 10' x 1'

Media Luna (horns up) not staked

6PSed as ML1-R3

Speed development of alluvial fan

48' x 4' x @ 1½'

(44)

ORD nest in headcut drainage

4 ORDs GPSed as ORDNEST-R3 (make mult symbols on map)

all 8'x8'x±1' not staked

1 ORD

12'x6'x1' (at outlet)

---

lots of material moving

fill in quickly

4-wing present

---

2 2uni' Bowls GPSed as 2B1-R3 (make mult. symbols on map)

1 yd rock ea.

piping present

jeopardizes rock

R3

3 gullys

5 ORDs upstream of road

4 ORDs downstream of road

(4) 6'x6'x1' → 6"-12"

(1) 12'x6'x1'

(1) 14'x8'x1'

(1) 8'x8'

(2) 4'x4'

(1) 8'x3'

GPSed as ORDNES2-R3

make mult. copies for map

caverns → piping