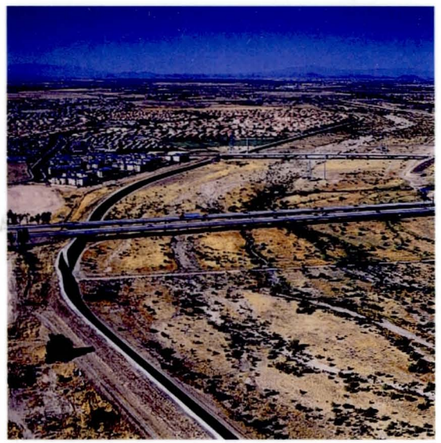

AGUA FRIA
WATERCOURSE MASTER PLAN

Lateral Migration Report
EXHIBIT MAPS BOOK

Prepared for

Flood Control District

A109.208

June 2001

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC.

Kimley-Horn and Associates, Inc.

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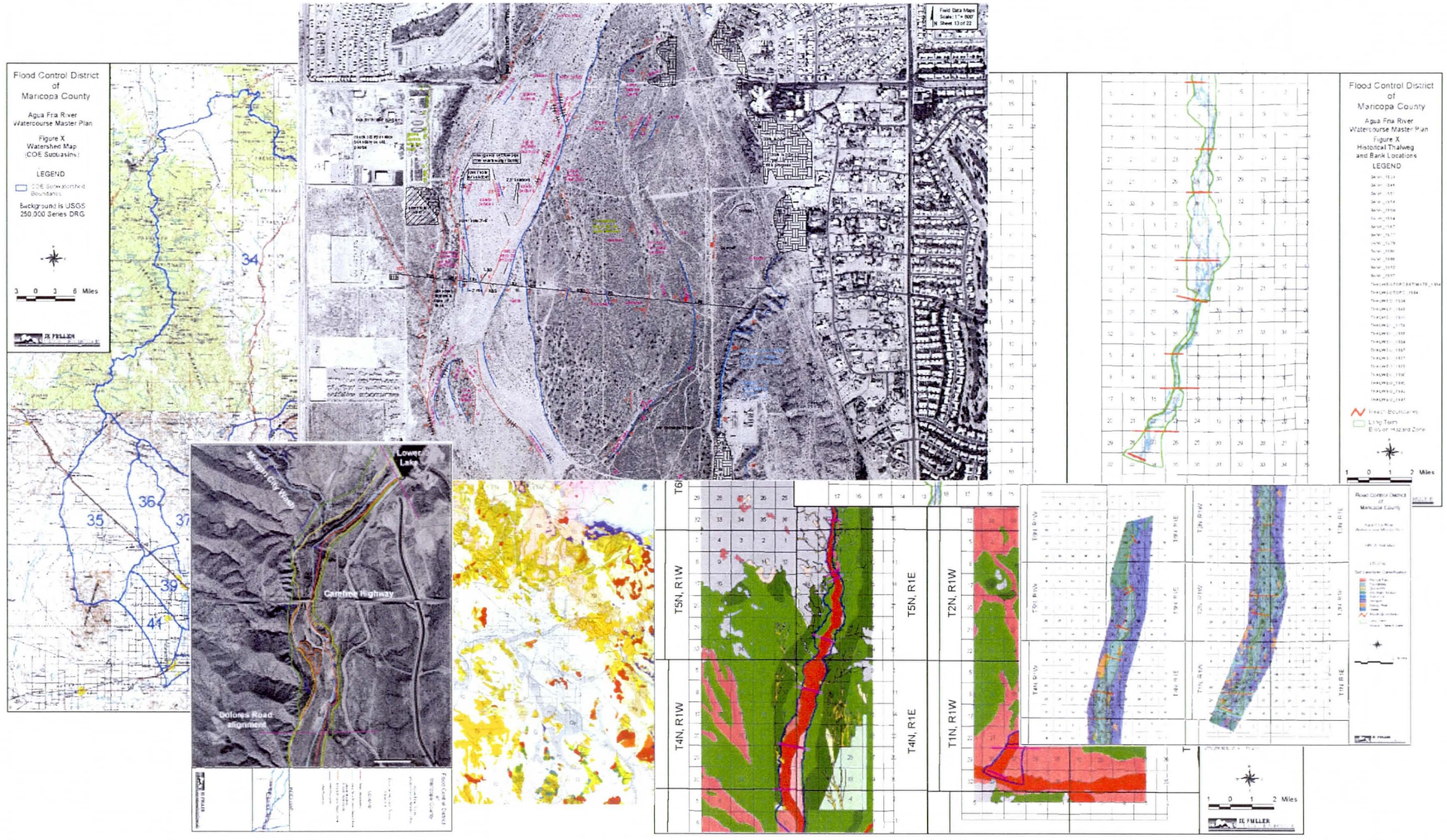

EXHIBIT MAPS BOOK

Registered Professional Engineer
25548
JONATHAN E. FULLER
Date Signed 6-29-01
ARIZONA, U.S.A.

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AGUA FRIA RIVER - LATERAL MIGRATION REPORT

EXHIBIT MAPS BOOK

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Watershed Map

1 Sheet, Entire Reach

Geologic Map (Watershed)

1. Geologic Map
2. Legend for Map

Geologic Map (River)

1 Sheet, Entire Reach

Field Data Maps

22 Sheets Scaled at 1 In = 600 Ft

NRCS Soils Map

1 Sheet, Entire Reach

Historical Photo Comparison

Reach 1 - Lower Lake Dam to Siphon
1. 1895 (GLO), 1981 (TOPO), 1999
2. 1949, 1954
3. 1960
4. 1977
5. 1985, 1992, 1997

Reach 2 - Siphon to CAP Siphon
1. 1895 (GLO), 1981 (TOPO), 1999
2. 1949, 1954
3. 1960
4. 1977
5. 1985, 1992, 1997

Reach 3 - CAP Siphon to Beardsley Canal Flume
1. 1895 (GLO), 1982 (TOPO), 1999
2. 1949, 1954
3. 1960
4. 1977
5. 1985, 1992, 1997

Reach 4 - Beardsley Canal to Dynamite Blvd. Align.
1. 1895 (GLO), 1981 (TOPO), 1999
2. 1949, 1954
3. 1960
4. 1977, 1979
5. 1985, 1992, 1997

Reach 5 - Dynamite Blvd. Align. to Hatfield Rd
1. 1895 (GLO), 1981 (TOPO), 1999
2. 1949, 1954
3. 1960, 1964
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 6 - Hatfield Road to Beardsley Road Alignment
1. 1895 (GLO), 1981 (TOPO), 1999
2. 1949, 1954
3. 1960, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 7 - Beardsley Road Alignment to Bell Road
1. 1895 (GLO), 1981 (TOPO), 1999
2. 1949, 1954
3. 1960, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 8 - Bell Road to Cactus Road Alignment
1. 1896/1870 (GLO), 1982 (TOPO), 1999
2. 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Historical Photo Comparison Continued

Reach 9 - Cactus Road Alignment to Olive Ave
1. 1896/1870 (GLO), 1982 (TOPO), 1999
2. 1934, 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 10 - Olive Ave to New River Confluence
1. 1896/1870/1895 (GLO), 1982 (TOPO), 1999
2. 1934, 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 11 - New River Confluence to Indian School Road
1. 1895 (GLO), 1982 (TOPO), 1999
2. 1934, 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 12 - Indian School Road to Interstate 10
1. 1895 (GLO), 1982 (TOPO), 1999
2. 1934, 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 13 - Interstate 10 to Buckeye Road
1. 1870 (GLO), 1982 (TOPO), 1999
2. 1934, 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 14 - Interstate 10 to Buckeye Road
1. 1870 (GLO), 1982 (TOPO), 1999
2. 1934, 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Reach 15 - Interstate 10 to Buckeye Road
1. 1870 (GLO), 1982 (TOPO), 1999
2. 1934, 1949, 1954
3. 1959, 1964, 1967
4. 1977, 1979, 1980
5. 1985, 1992, 1997

Note:

GLO = General Land Office Survey Map
TOPO = USGS 7.5' Topographic Map

Index to Field Sections

1 Sheet, Entire Reach

Historical Thalweg & Channel Bank Locations

1 Sheet, Entire Reach

Erosion Hazard Zones

Divided by Reach: 1 - 15

Areas of Concern

1 Sheet, Entire Reach

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Flood Control District of Maricopa County

Agua Fria River
Watercourse Master Plan

Watershed Map
COE & Pre-ACDC Subbasins

LEGEND

- COE Subwatershed Boundaries
- Pre-ACDC Subwatershed Boundaries
- ▲ 9513780 - USGS Gage & ID

Background is USGS
250,000 Series DRG

N
W E
S

3 0 3 6 Miles

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34
32
33
36
35
37
31
30
39
20
29
1
19
38
41
40
42

9512500
9512800
9513780
9512280
9512300
9513860
9513835
9513650
9513910
9513970

Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

Geology Map

T6N, R1W | T6N, R1E | T5N, R1W | T5N, R1E | T4N, R1W | T4N, R1E | T3N, R1W | T3N, R1E | T2N, R1W | T2N, R1E | T1N, R1W | T1N, R1E

LEGEND

Geologic Units

Ofr95-5	100,000 Series Data
Y2	Qyc
Ya2	Qy, Q
Y2/Y1	Qmo, Qm, Qm1, Qm2
Ya1, Ya	Qo
Y1	Qt
Bedrock	Bedrock
O	Water
Ma1, Ma2, M1, M2a, M2b, M2c, M2d	
Ma/Ya	
ct	

Reach Boundaries

Long Term Erosion Hazard Zone

Sources for Geologic Units:

OFR95-5 (Huckleberry, 1995)

100,000 Series Data (Reynolds, et al., 1997)

N W E S

1 0 1 2 Miles

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Agua Fria River Field Data Maps

Legend

Approximate Bank Locations

Bank Heights — 6'

Left Bank Location

Right Bank Location

Bed Material — FS & Cobbles

Bedrock - Bank Location — Bedrock

Bedrock - Channel Location — Bedrock

Berm Location — Berm 6'

Caliche Location — Caliche 6'

Channel Feature Location — text or or

Cross Section Location — B20

Cutbank Location

Flowline Location

Grade Control Location — Grade Control

Headcut Location — Headcut 4'

Riprap & Bank Protection Location — 7' Soil Cement

Terrace Location & Description

Vegetation Description — Palo Verde

Gravel & Borrow Pits, Excavation Locations

Fill Material Location

New Development Location

Berm, Grade Control, Spoil Pile Locations

Abbreviations

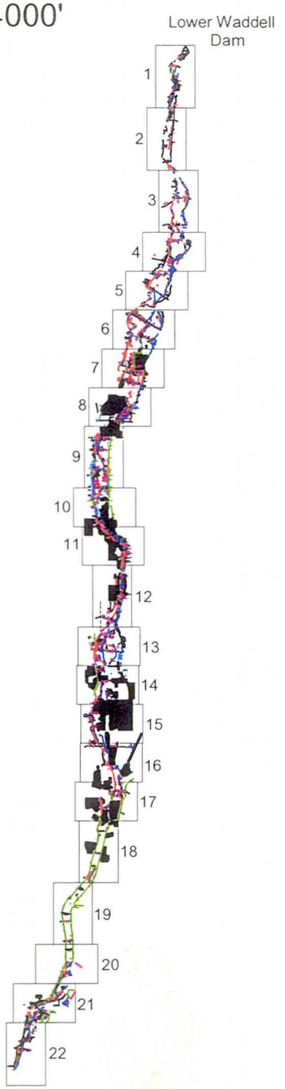
Boulders	boulds	Vegetation	veg
Cobbles	cobs	Mesquite	msq
Pebbles	pebs	Creosote	cr
Fine Gravel	fg	Saguaro	sag
Medium Gravel	mg	Desert Broom	db
Coarse Gravel	cg	Ubiquitous Bush	ub bush
Pea Gravel	pg	Palo Verde	pv
Gravels	gravs	Tamarix	tx
Very Coarse Sand	vcs	Hummocky	hum
Coarse Sand	cs	Angular	ang
Medium Sand	ms	Floodplain	f/p
Fine Sand	fs	Upstream	u/s
Silty Fine Sand	sfs	Downstream	d/s
Silt	si	Channel	chl

Notes

Aerial Photography From Flood Control District of Maricopa County, January, 1999

Field Data Collected From June through September, 2000

Index Map
1" = 24000'



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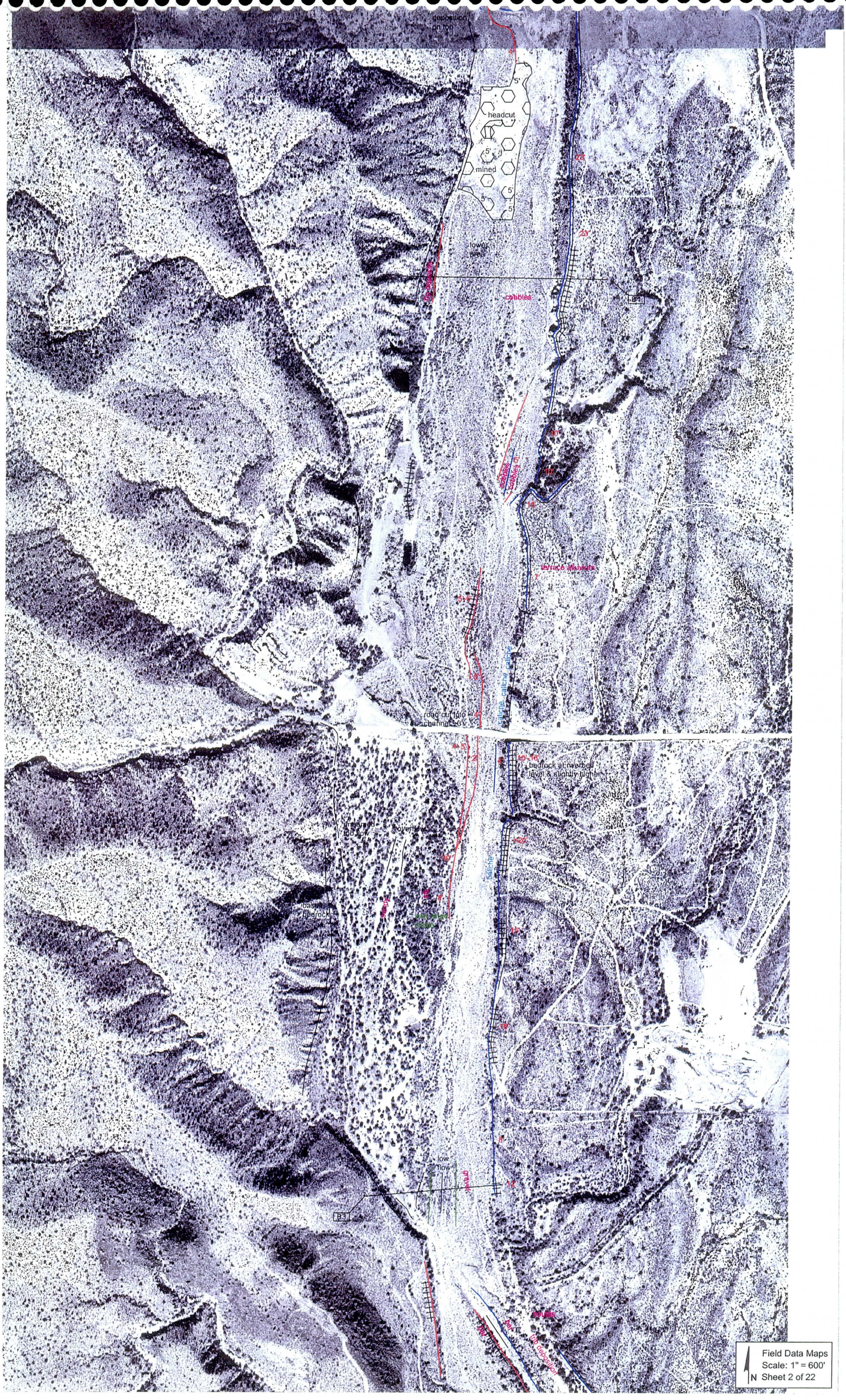
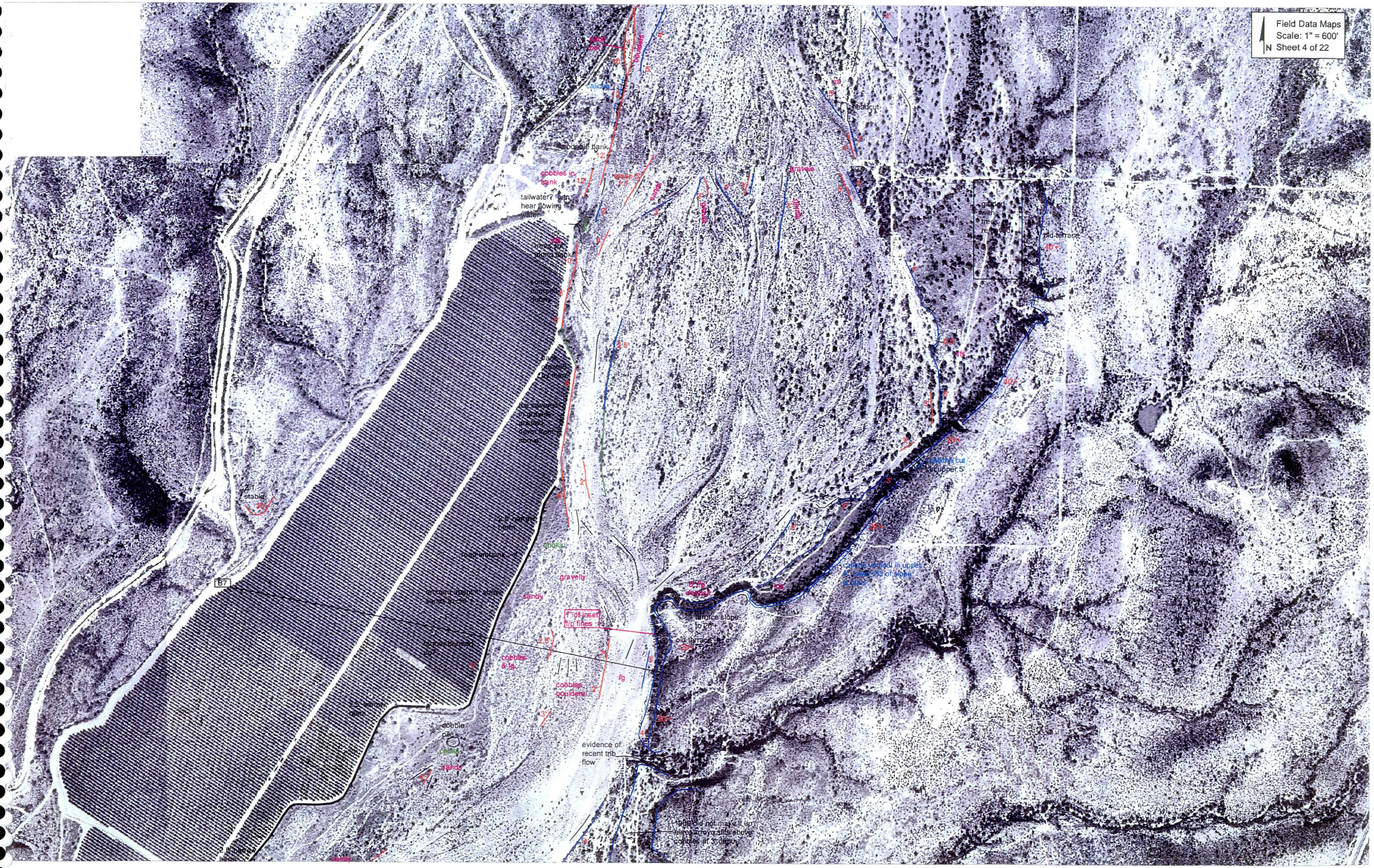
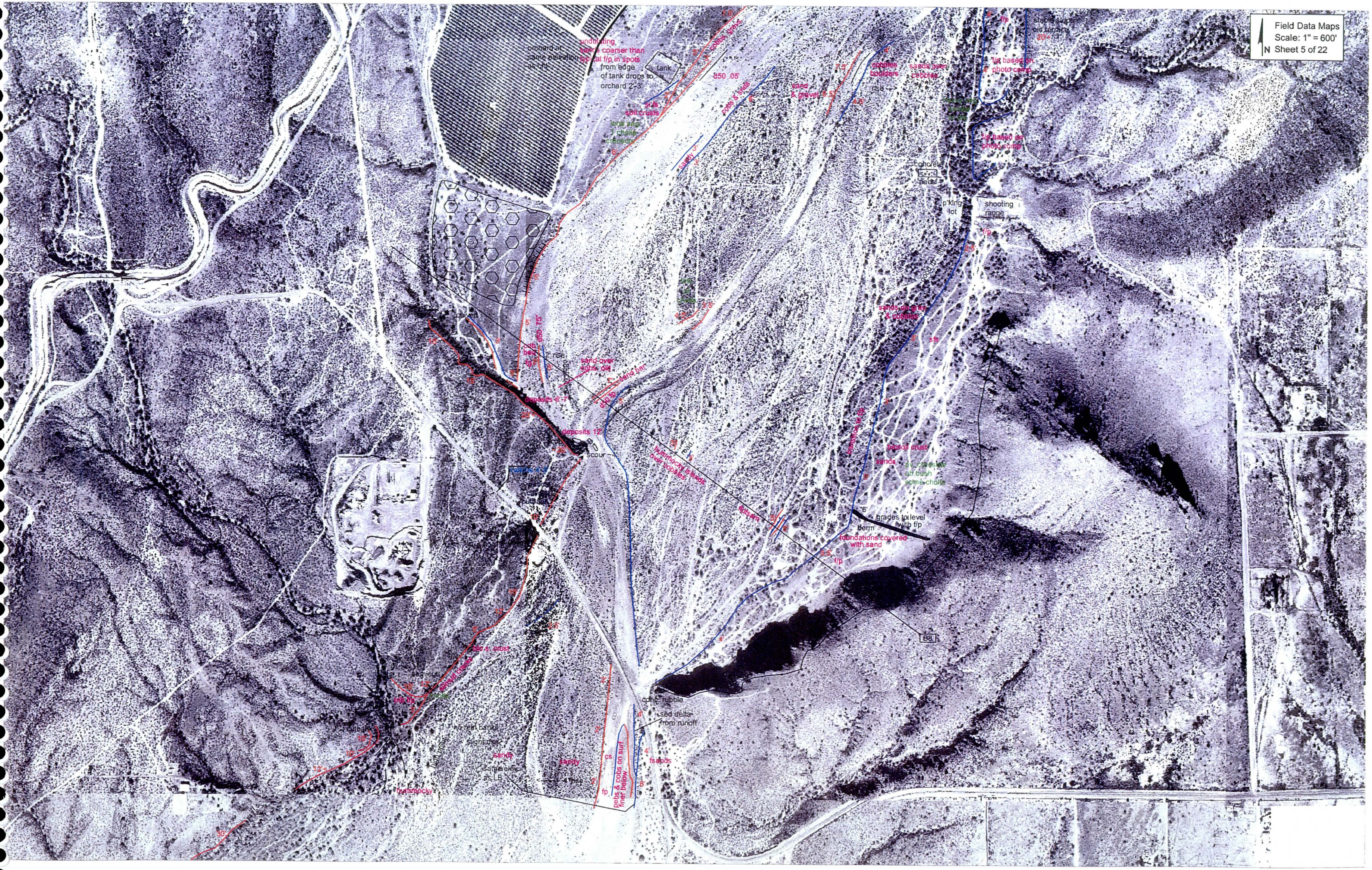
essentially all bedrock w/ locally shallow alluvium
fill
~40'+
fill cut
bedrock
bedrock
bedrock
bedrock
~40'
top of bedrock cliff
fill
water
sedimentary rock
B40
wire fence, remains of a shelter
3'-10'
bedrock
bedrock
bedrock
bedrock
terrace deposits on top of bedrock
gravels cobbles
alluvium on top of bedrock
vertical bedrock cliff
interbedded laminated sands & gravels
gravels cobbles
lower cobbles
gravels cobbles sands
stoss-side hole
B41
floodplain remnant
fill?
terrace deposition
Field Data Maps
Scale: 1" = 600'
N Sheet 1 of 22

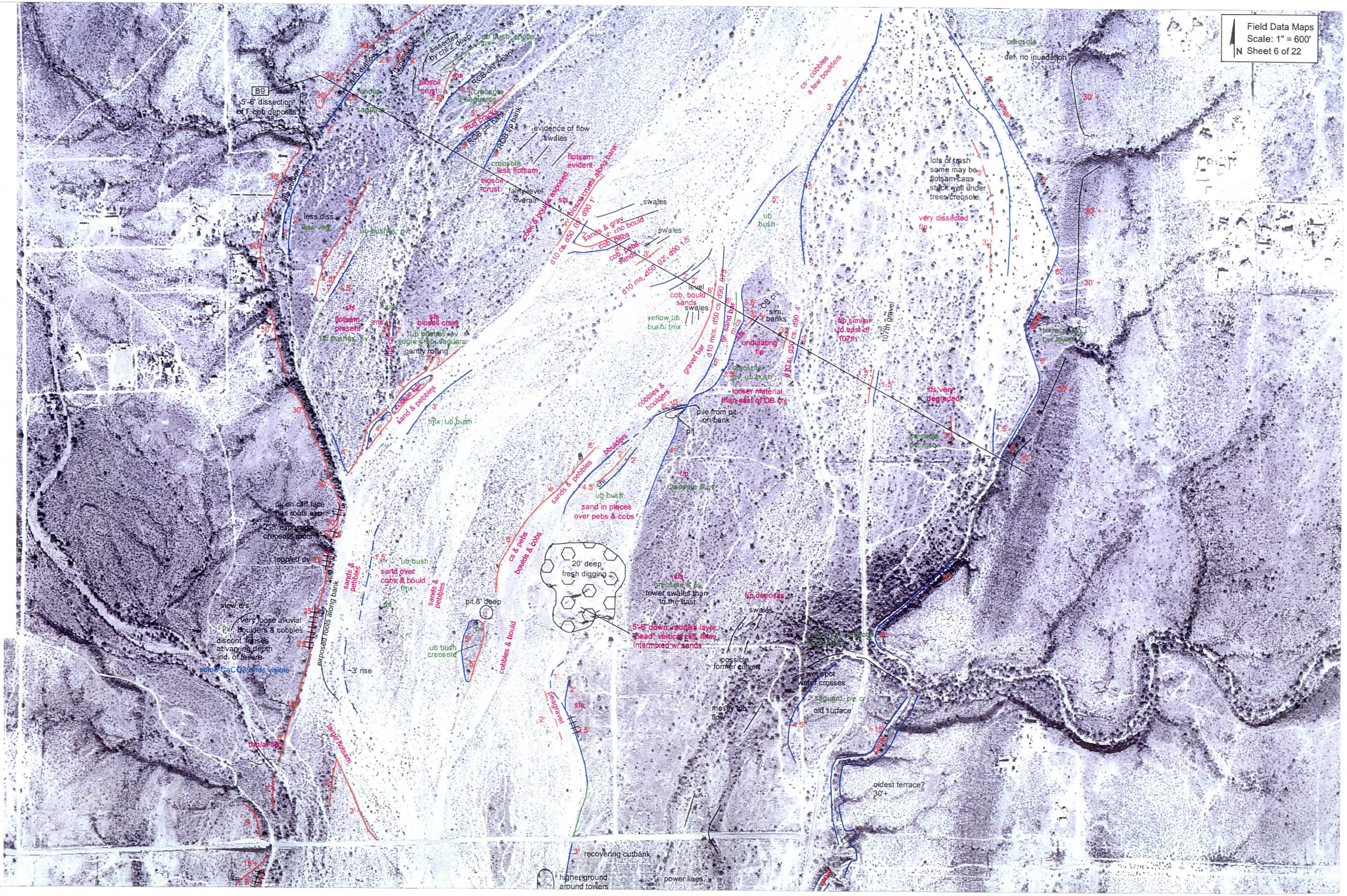

deposition on top
headcut
mined
lower area
cobbles
terrace alluvium
road cut late channel
bedrock at normal level & slightly higher
low flow
Field Data Maps
Scale: 1" = 600'
N Sheet 2 of 22

Field Data Maps
Scale: 1" = 600'
N Sheet 3 of 22


Field Data Maps
Scale: 1" = 600'
N
Sheet 4 of 22
caliche
cobbles in bank
tailwater? can hear flowing water
sands
gravel
sandy
gravelly
7' of inset f/p fines
8' f/p deposit
terrace slope to 20'+
old terrace
cobbles boulders
fg
evidence of recent trib flow
stable
B7



Field Data Maps
Scale: 1" = 600'
N
Sheet 5 of 22
tank
shooting range
scour
Berm
grades to level with frp
foundations covered with sand
B8



Field Data Maps
Scale: 1" = 600'
Sheet 6 of 22
N
B9
5'-6' dissection of f. cob deposits
evidence of flow
swales
fairly level overall
swales
lots of trash some may be flotsam-cans stuck well under trees/creosote
very dissected
def. no inundation
level cob, bould sands
swales
sm. banks
undulating flp
looser material than east of OB chl
gravel bar
cobbles & boulders
pile from pit on bank
gently rolling
sand & pebbles
boulders
sand in places over pebs & cobs
20' deep fresh digging
pit 8' deep
sands & pebbles
sand over cobs & bould
cobbles & bould
boulds & cobs
sands & pebbles
fewer swales than to the East
possible former culvert
wet spot wash crosses
old surface
oldest terrace? 30'+
recovering cutbank
higher ground around towers
power lines
very loose alluvial boulders & cobbles
exposed roots along bank
toppled pv
~3' rise

Field Data Maps
Scale: 1" = 600'
N Sheet 7 of 22

~5'
bank rounder
piles
3'
piles
3'
large boulds
2.5'
piled sand
piled sand
piled sand
large boulders riprap
layered reddish sands, & gravels
top 10' sands browner else thicker gray layers rather massive
pond
large boulders riprap (fourided)
fs, sfs
30'
level/sugar cliff
S10
more gravels in bank than below road cut
fill
fill
4.5'
more gentle upper slope than u/s of trib
S11
hillslope failure directly runoff from road?
25'
3.5' inset slackwater dep
3.5' rng
no top vertical portion
2' sand over gravels
4' rise
inset 10'
likely area of stream piracy
1-2 sf/fs below rng
3' headcut
cobbles & large gravels
fg deposits <1' gray sands over browns w/ some structure, vcs, fg & carbonate filament
erdst
sagebrush
flotsam, limit of 80?
called "main" chl in notes but may not be
5' from invert
brown fs, sfs
sands
fine gravel bar
gravel bar
headcut
aeolian sand ripples
sands over cobs, boulds
2' rise
shallow flow evidence flotsam and swales
sands, cobbles & boulders
cobs & boulds flotsam
overflow chl
headcut
fines over cobbles
biospoil crust
rotated can (pull-tab aluminum)
old low flow chl.
<3' rise
sands
gravelly
cobbles
cs
sands
gravelly
fines
sagebrush
fallen fence
gravelly
fines
cobbles
sagebrush
fg deposits sfs
old ditch
sagebrush
misc sfs & pebs
berm
sagebrush
pit
disturbed packed gravel
cobble & boulder armoring at toe
bar, 1' sands over gravel
gravels 1' deep
cobbles boulders
former cutbank
4.5'
undulating sfs over cobs & lsa sand
scour hole 1'-2' deep
slightly wet
sfs over cobbles & boulders
2' rise
mudcracks
cobs, boulds, sands, mudcracks

Field Data Maps
Scale: 1" = 600'
N Sheet 8 of 22

loose alluvial boulders & cobbles, oversteepened - in some places vertical

mining fines

from last flood?

old disturb, deepest 10'

storage filled with fines

older pit bushgrowing on bottom & sides

developing pavement

saguaros, ocotillo

creosote

sfs

creosote

caliche layer at top 3'-4' exposed stage 3+?

overland flow chl ~2' deep max

looks like the chl nicks his foundation

concrete rip rap ~10'

cut bank

disturbed fill?

boulders & cobbles

cobbles graded

sand

gravels sands

scour hole

headcut

disturbed

overland flow

graded road

concrete rip rap

concrete failing - undercutting

piles of asphalt gravel, etc. protection?

B12

headcut 3' deep

headcut ~2' begins

4.5' flow 1.5' deep, flotsam

cobbles & boulders

sandy

<- 2' drop

<- 4' rise

fill elevation ch

sands & cobbles

loose sands & cobbles

sands & fine gravel cobbles

sand & fine gravel

vertical alluvial cobbles
7'-8' down limit of CaCO3
variable stage, most developed generally 3'-4' down
red sand lenses discontinuous throughout

unstratified sands over cobbs 3' deep

cobbles & boulds

sandy

f. sands fine pebbles

fill

loose sands

sfs

cobbles

sfs, more pebbles on surface than u/s islands

flotsam

mixed w willow

gravels

sands

sands pebbles

old cutbanks from local runoff & river flow smoothed out, sfs nearly vertical faces have biosoil crust

more extensive recent floodplain

saguaros

"low flow chl" in road depressed ~1'

dominated by creosotes

packed sfs - rounded pebbles cobbles, lots of pebs exposed at surface - former f/p

line of cobbles - gravels - road

d90_5', d90_075, d10 ms

main chl

old cuts

und. sfs over peb & cob fairly well-packed

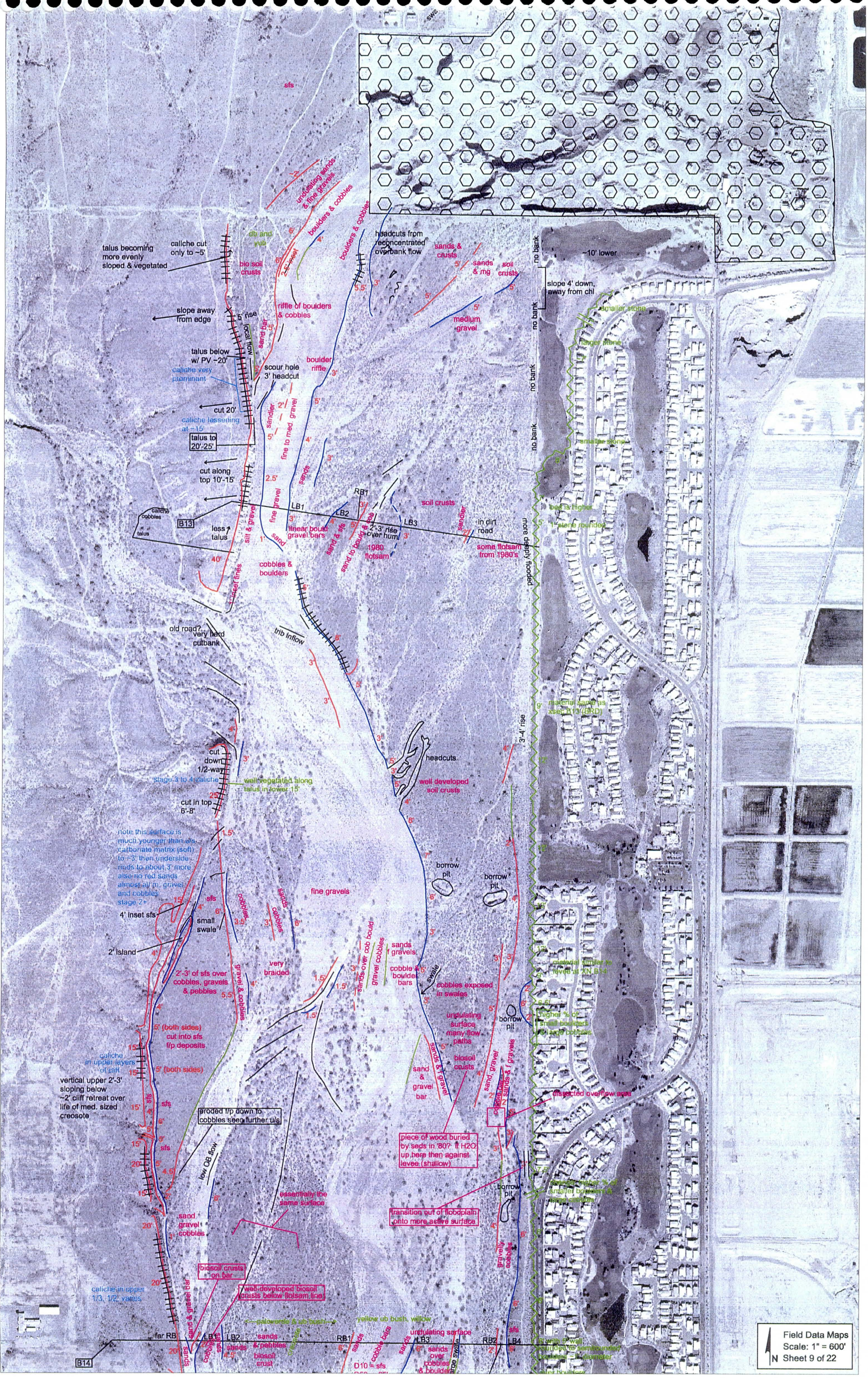
boulders & cobbles

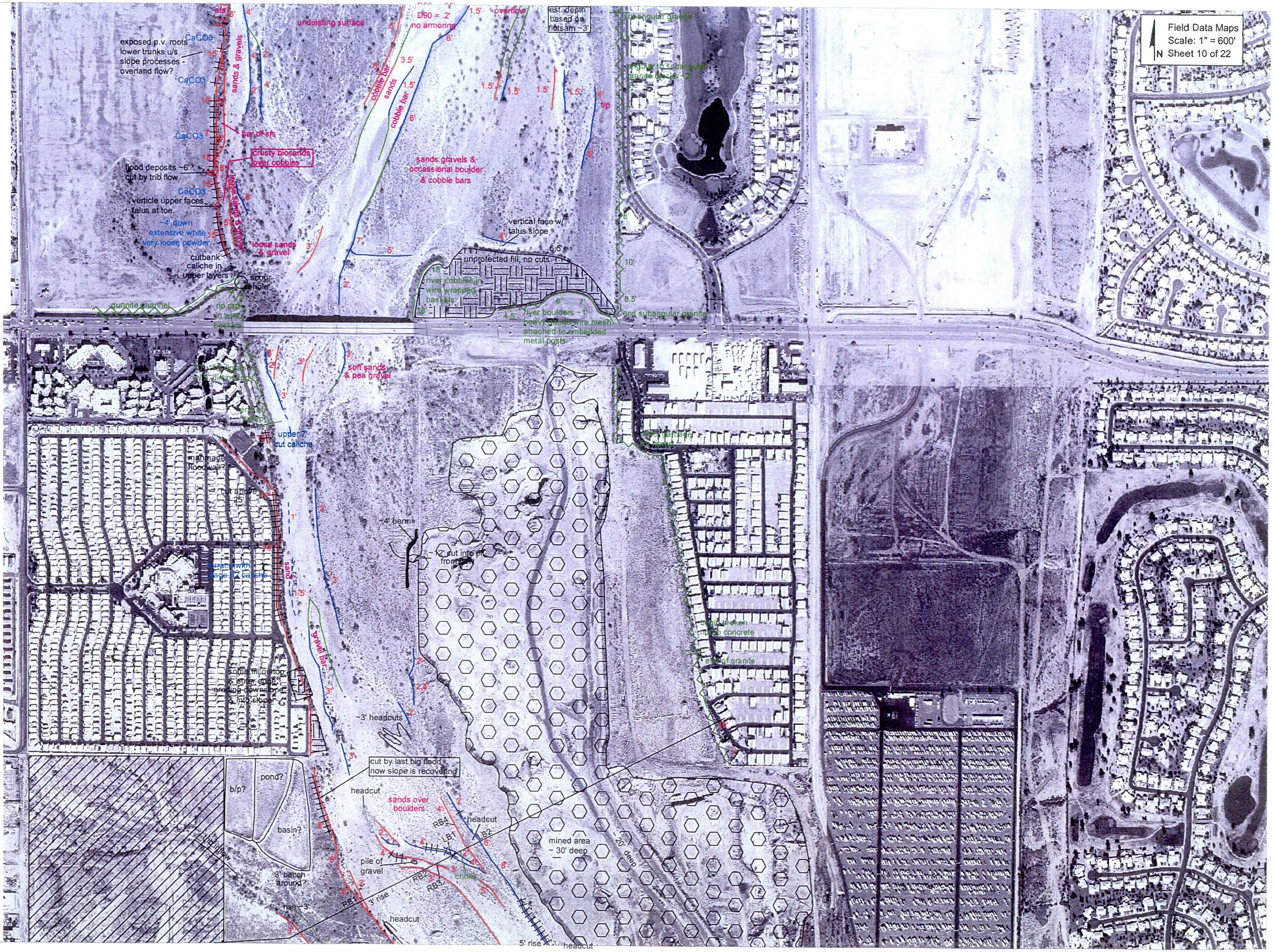
flotsam depth = 5'

boulders & cobbles

graded road

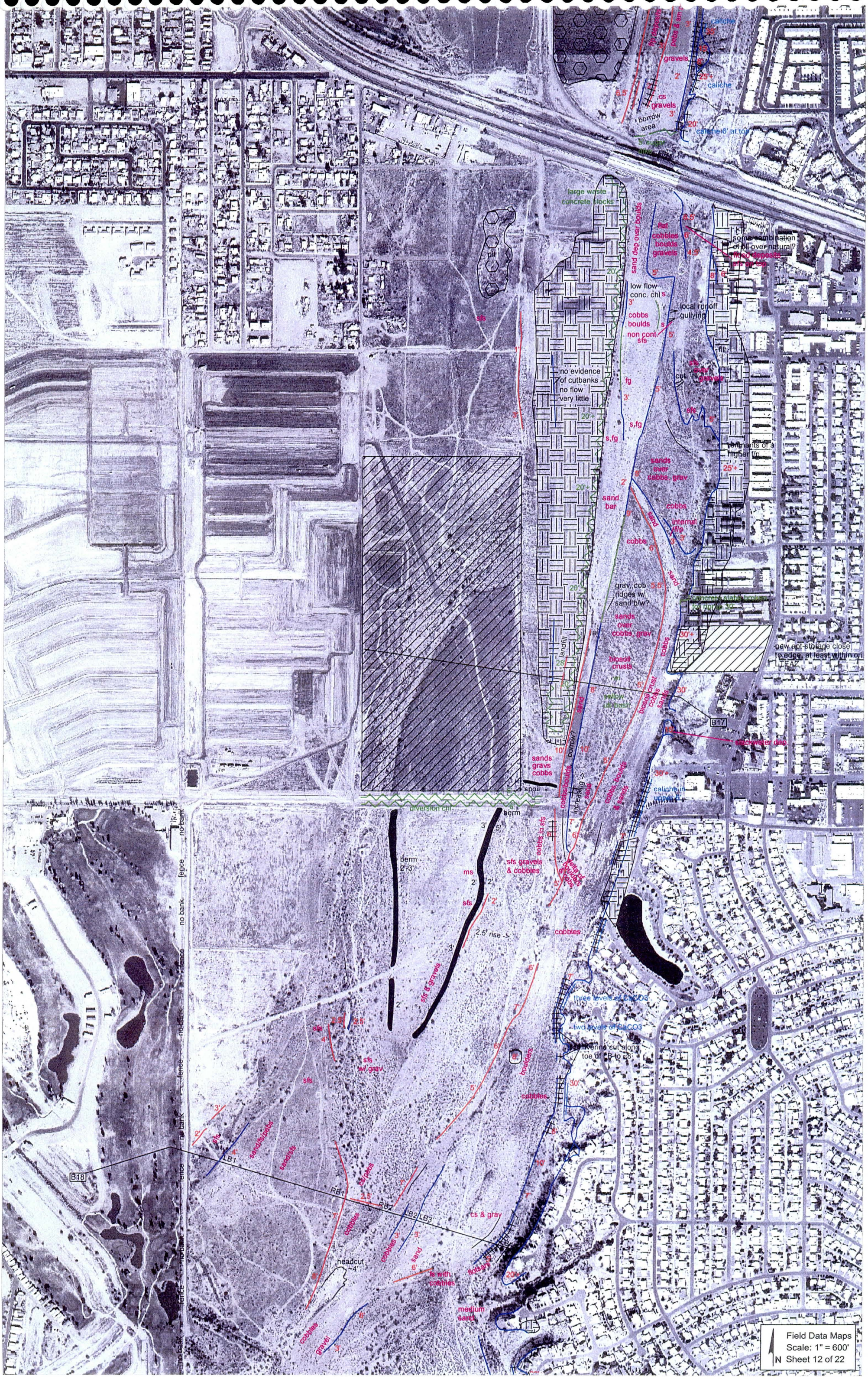
sfs


sfs
swz
undulating sands & fine gravels
boulders & cobbles
boulders & cobbles
headcuts from reconcentrated overbank flow
sands & crusts
sands & mg
soil crusts
~10' lower
no bank
slope 4' down, away from chl
smaller stone
larger stone
smaller stone
talus becoming more evenly sloped & vegetated
caliche cut only to ~5'
dtr and yub
bio soil crusts
2.5' inset
riffle of boulders & cobbles
slope away from edge
5' rise
local flow
sand bar
talus below w/ PV ~20'
caliche very prominant
scour hole 3' headcut
boulder riffle
cut 20'
caliche lessening at ~15'
talus to 20'-25'
cut along top 10'-15'
sandier
fine to med. gravel
sands
fine gravel
RB1
LB1
LB2
LB3
soil crusts
sandier
in dirt road
some flotsam from 1980's
2'-3' rise over hum
1980 flotsam
linear bould gravel bars
sand & sfs
sand to bould & cob
silt & gravel
sand
less talus
caliche cobbles
talus
B13
40'
inset fines
cobbles & boulders
old road?
very hard cutbank
trib inflow
more deeply flooded
bed is higher
1' stone rounded
material same as xsec 13 (BRD)
3'-4' rise
cut down 1/2-way
stage 3 to 4 caliche
well vegetated along talus in lower 15'
cut in top 6'-8'
headcuts
well developed soil crusts
borrow pit
borrow pit
note this surface is much younger than e/s, carbonate matrix (soft) to ~3' then underside rinds to about 3" more alse no red sands almost all m. gravel and cobbles stage 2+
fine gravels
4' inset sfs
small swale
2' island
very braided
2'-3' of sfs over cobbles, gravels & pebbles
gravel & cobbles
sands over cob bould
gravel cobbles
sands f gravels
cobble & boulder bars
swale
cobbles exposed in swales
undulating surface many flow paths
borrow pit
higher % of small boulders & large cobbles
5' (both sides) cut into sfs f/p deposits
caliche in upper layers of cliff
5' (both sides)
vertical upper 2'-3' sloping below ~2' cliff retreat over life of med. sized creosote
sands & f gravels
biosoil crusts
sand & gravel bar
dissected overflow area
eroded f/p down to cobbles seen further u/s
piece of wood buried by seds in '80? ft H2O up here then against levee (shallow)
low OB flow
essentially the same surface
transition out of floodplain onto more active surface
borrow pit
gravelly cobbles
sand gravel cobbles
biosoil crusts on bar
well developed biosoil crusts below flotsam line
caliche in upper 1/3, 1/2' varies
<---paloverde & ub bush--->
yellow ub bush, willow
far RB
LB1
LB2
RB1
LB3
RB2
LB4
sands & pebbles
biosoil crust
sands
cobble bars
undulating surface
sands over cobbles & boulders
large swale
B14
Field Data Maps
Scale: 1" = 600'
N Sheet 9 of 22



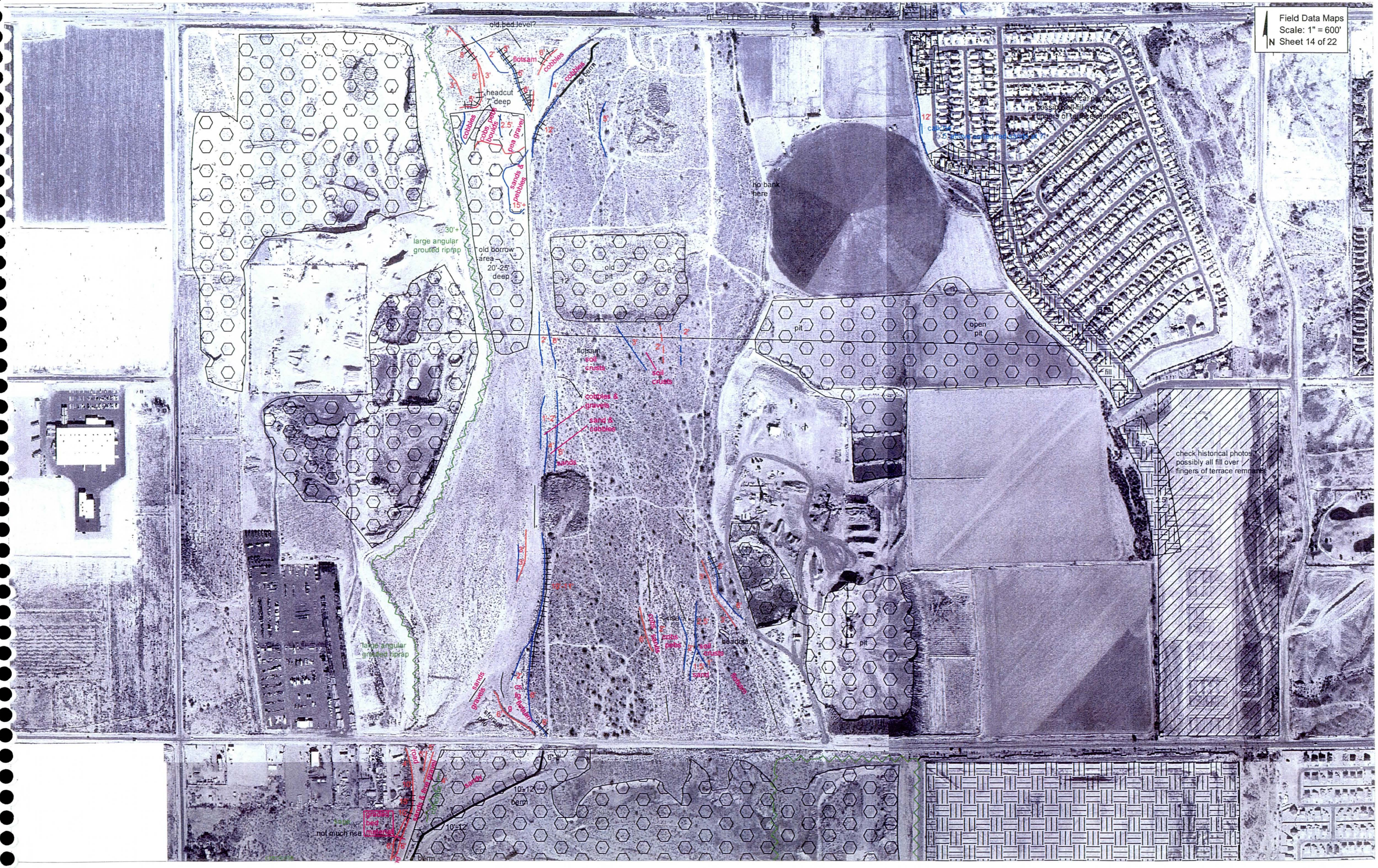
Field Data Maps
Scale: 1" = 600'
Sheet 10 of 22
N
exposed p.v. roots lower trunks u/s slope processes - overland flow?
CaCO3
sands & gravels
undulating surface
D90 = 2' no armoring
overflow
est. depth based on flotsam ~3'
cobble bar
sands
crusty biosands over cobbles
flood deposits ~6' cut by trib flow
verticle upper faces, talus at toe
~4' down extensive white very loose powder
loose sands & gravel
cutbank caliche in upper layers
scour hole
gunnite channel
sands gravels & occassional boulder & cobble bars
vertical face w/ talus slope
unprotected fill, no cuts
soft sands & pea gravel
upper 7' cut caliche
~4' berm
gravel bar
~3' headcuts
cut by last big flood now slope is recovering
headcut
sands over boulders
pond?
b/p?
basin?
pile of gravel
3' rise
5' rise
mined area ~30' deep
20' deep

Field Data Maps
Scale: 1" = 600'
N
Sheet 11 of 22
B15
sfs flp deposits
headcut
6' deep
10'
piles of dirt
sugar dike
cont. ~ 10'
15'
4'+
graded
former
cutbank
sfs
old pit
good ret. basin
15'
filling in
concrete
old pits
pit
25'
new pit
sand bar
flow
path
graded
mass
slope more gentle
than d/s
cutbank
B16
bank
becms
indistnct
1-2' riser

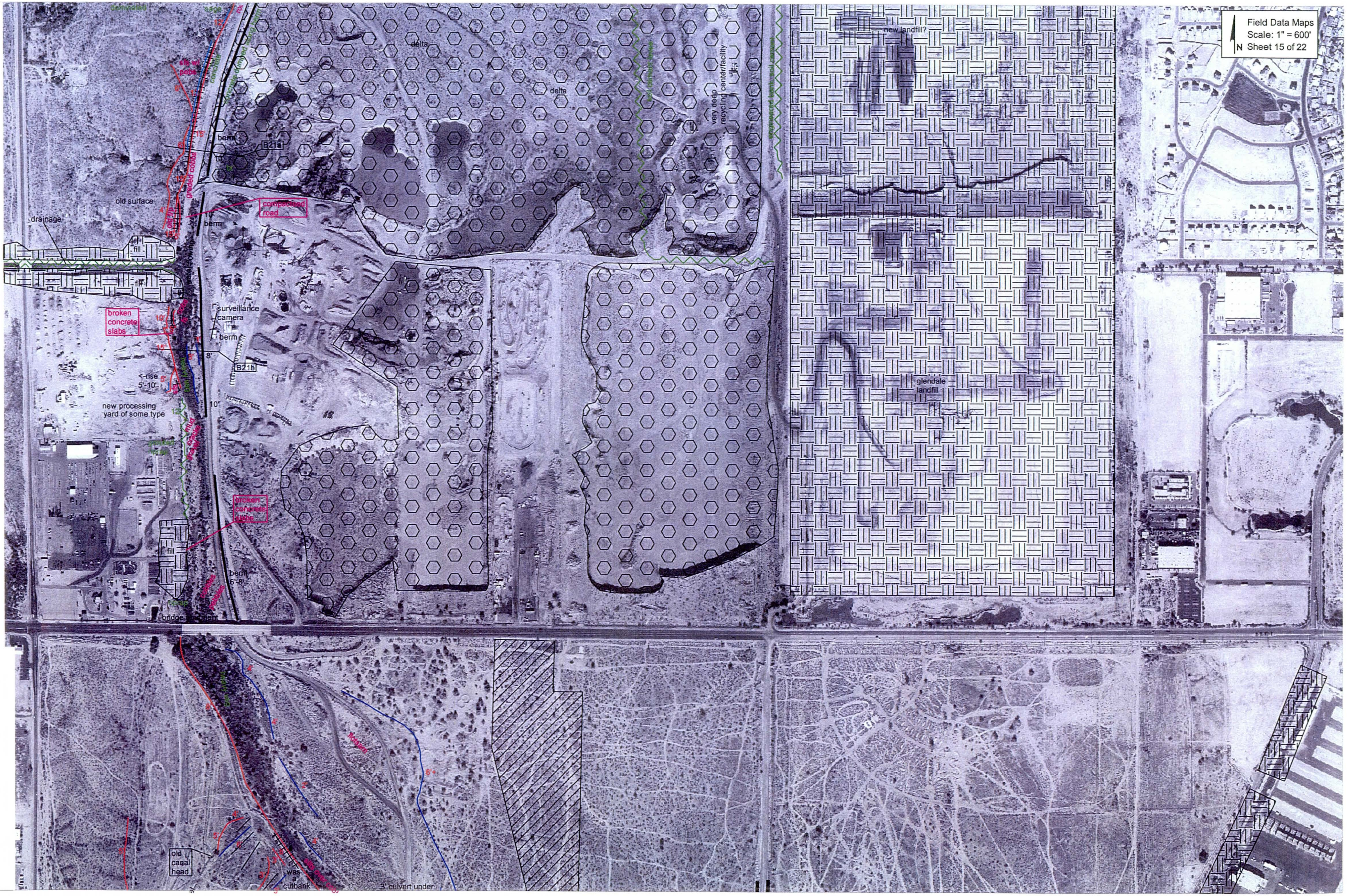

fg deposits
pebs & sms
gravels
caliche
caliche
cs gravels
borrow area
caliche>6' at top
large waste concrete blocks
pit
sand dep over boulds
flat cobbles boulds gravels
some combination of fill over natural? flood deposits sfs on top
low flow conc. chl s
cobbs boulds
non cont sfs
local runoff gullying
fill
sfs over gravels
no evidence of cutbanks no flow very little
fg
s,fg
remnants of a higher fp
sands over cobbs, grav
sand bar
cobbs
interbd sand
cobbs
grav, cob ridges w/ sand b/w?
sands over cobbs, grav
biosoil crusts
yellow (biosol)
sand
biosoil crust
cobbs
sands
B17
stockwater dam
sands gravs cobbs
cobbs/boulds
borrow?
landfill
spoil
diversion chl
berm
cobbs in sfs
sfs gravels & cobbles
ms
sfs
2.5' rise
sfs & gravels
cobbles
three levels of CaCO3
two levels of CaCO3
riverine cut along toe of LB to >8'
boulders
cobbles
sfs w/ grav
sfs
sand/sfs/pebs
sand/sfs
LB1
RB1
RB2
LB2
LB3
B18
cs/pebs
cobbles
cobbles
sand
headcut
4'
cs & gray
sand with cobbles
floats
medium sand
cobbles
gravel
fence
no bank
Field Data Maps
Scale: 1" = 600'
N Sheet 12 of 22

Field Data Maps
Scale: 1" = 600'
N Sheet 13 of 22

boulds, cobs
cobbles
cobs, boulds
some biosoil crusts
look for terrace margin
check old f/p surface boundary on old photos
gabion baskets with toe mat
emergency outflow pipe from wastewater facility
scour hole w/ headcut
2.5' headcut
sands pebbles
sands pebbles small cobs
sands pebbles a few cobs
new stony yard
scour hole 3'-4'
abundant hummocks on lines around jet
abundant flotsam in base of trees
<-2' rise
sands
soil crust
flotsam
fine sands pebbles
drain in pipe
fill in progress
borrow?
caliche laminations exposed
lots of dumped trash
caliche bank stage 3
also inset thin plastered sfs to ~10' locally old f/p? (level)
B19
RB1
RB2
LB1
LB2
RB3
LB3
LB4
LB6

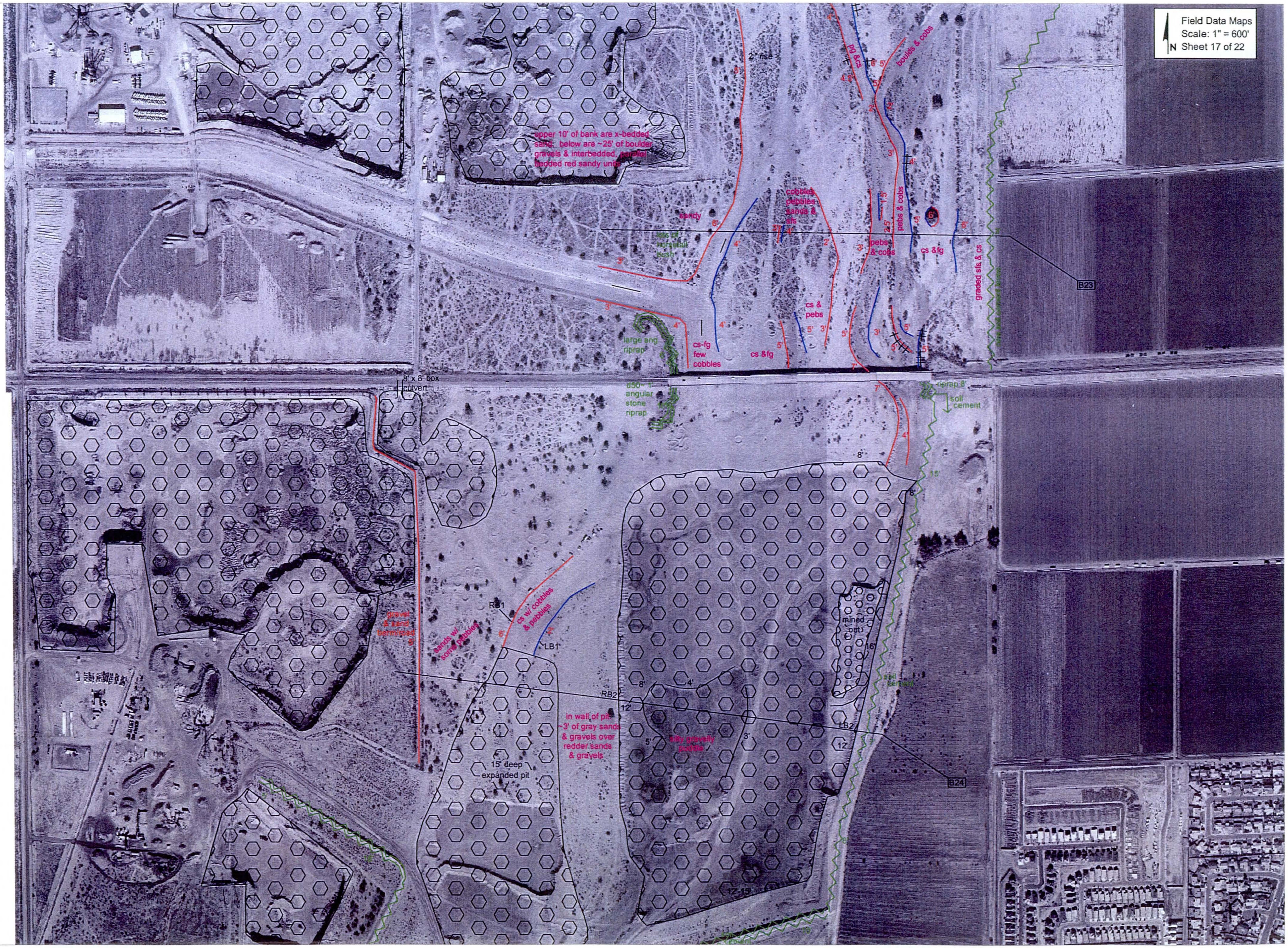


Field Data Maps
Scale: 1" = 600'
Sheet 14 of 22
N
old bed level?
flotsam
cobbles
6' berm
headcut
7' deep
cobs, pebs boulds
pea gravel
sands & pebbles
15'+
30'+
large angular grouted riprap
old borrow area
20'-25' deep
old pit
no bank here
pit
open pit
soil crusts
cobbles & gravels
sand & cobbles
sands
cobs
sands
cobs pebs
soil crusts
sand
headcut
flotsam
rise
large angular grouted riprap
sands
gravels
pit
check historical photos
possibly all fill over
fingers of terrace remnants
10'-12' berm
not much rea
berm

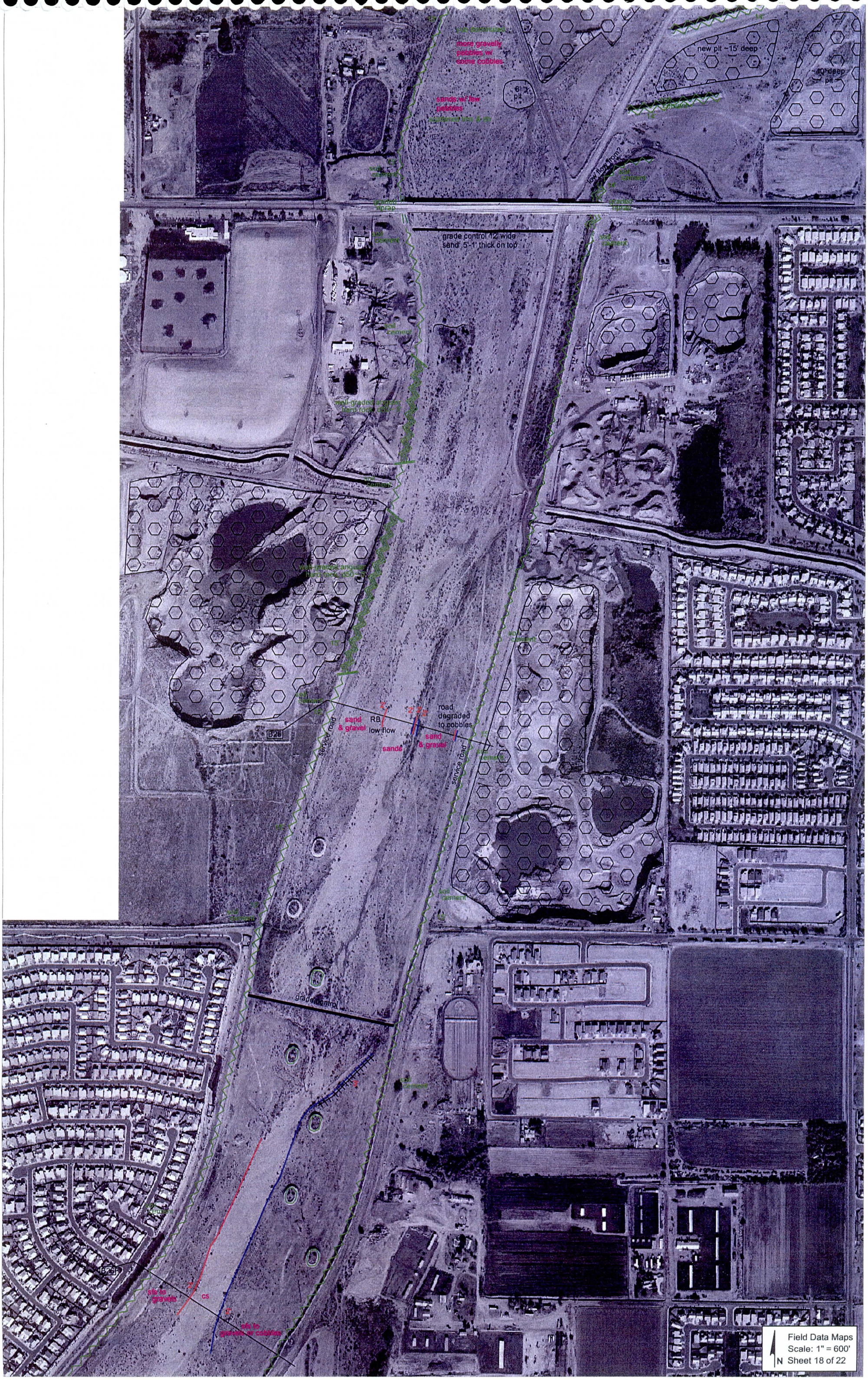

Field Data Maps
Scale: 1" = 600'
N
Sheet 15 of 22
delta
delta
berm
B21a
old surface
compacted road
drainage
berm
fill
fill
broken concrete slabs
surveillance camera
berm
B21b
<-rise 5'-10'
new processing yard of some type
broken concrete slabs
fill
berm 6'-8'
bridge abutment
old canal head
was a cutbank
3' culvert under
very deep recycling center/facility
new landfill?
glendale landfill
mud cracks
flotsam

Field Data Maps
Scale: 1" = 600'
N Sheet 16 of 22

abandoned can
overflow chl
siphon
B22
road, CMP no headwall
cobble berm 4.5'
cobble berm 4'
sandier
stb, crusts pebbles
soil crusts
fb stb
old fip island?
pit
previous avulsion?
new gravel road
pea sand & sand
sand
flotsam & soil crusts
new excavation ~40 ft deep
fence
new glendale facility
soil cement
cobble boulder bar
approximate alignment of cancelled levee set-back



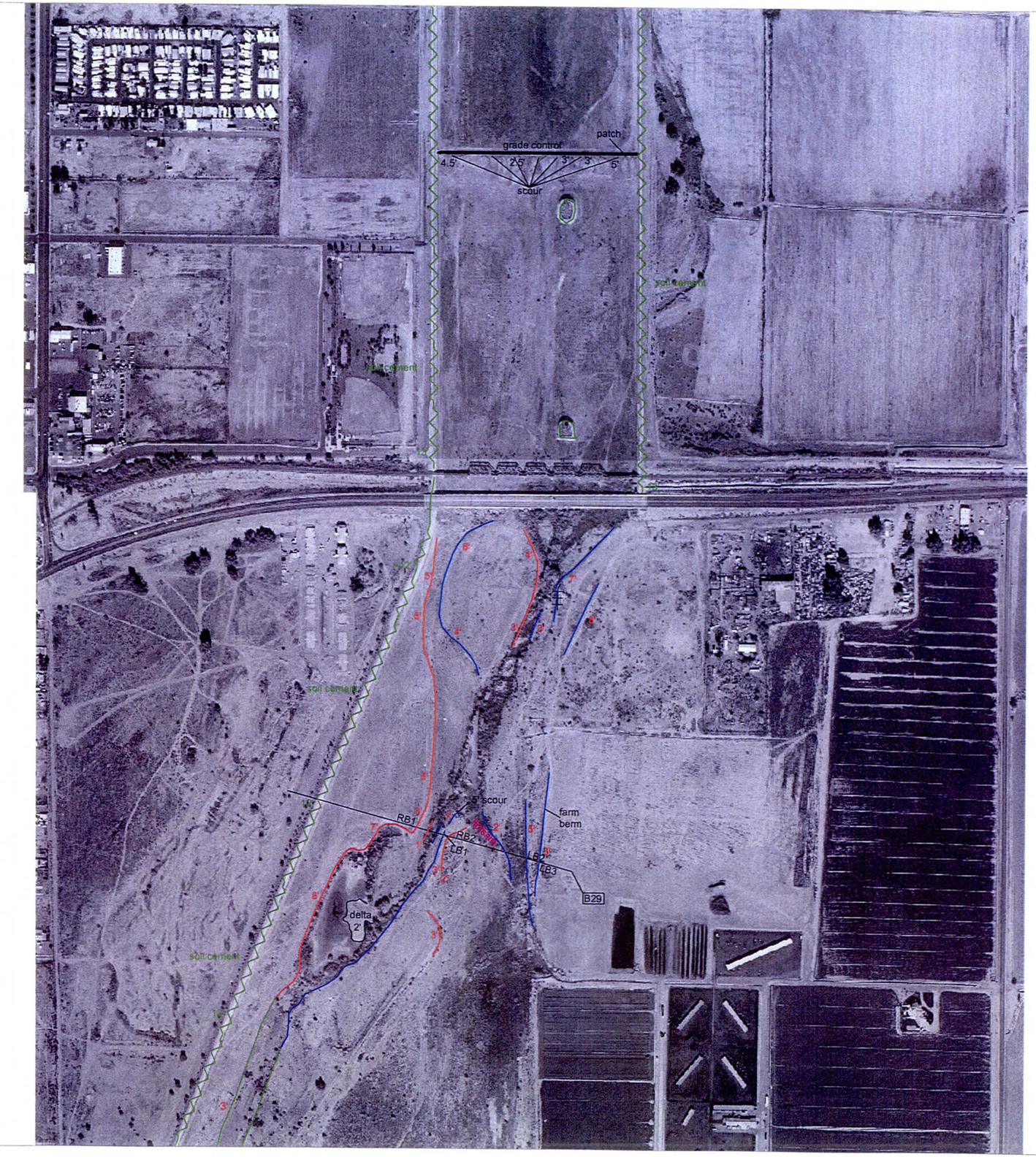
Field Data Maps
Scale: 1" = 600'
N
Sheet 17 of 22
upper 10' of bank are x-bedded sand. below are ~25' of boulder gravels & interbedded, parallel bedded red sandy units
sandy
lots of horsetail bush
cobbles pebbles sands & sfs
pebs & cobs
cs &fg
graded sfs & cs
cs & pebs
large ang riprap
cs-fg few cobbles
cs &fg
B23
8' x 8' box culvert
d50~ 1' angular stone riprap
riprap 8'
soil cement
gravel & sand berm/road
sands w/ some pebbles
RB1
cs w/ cobbles & pebbles
LB1
RB2
LB2
in wall of pit ~3' of gray sands & gravels over redder sands & gravels
silty gravelly puddle
mined out
15' deep expanded pit
B24


more gravelly pebbles w/ some cobbles
sands w/ few pebbles
new plt ~15' deep
~40' deep plt
6' plt
soil cement
grade control 12' wide sand .5'-1' thick on top
well-graded angular hard rock d50=
sand & gravel
RB
low flow
sand
road degraded to cobbles
service road
B26
grade control
sfs to gravels
cs
sfs to gravels or cobbles
Field Data Maps
Scale: 1" = 600'
N Sheet 18 of 22

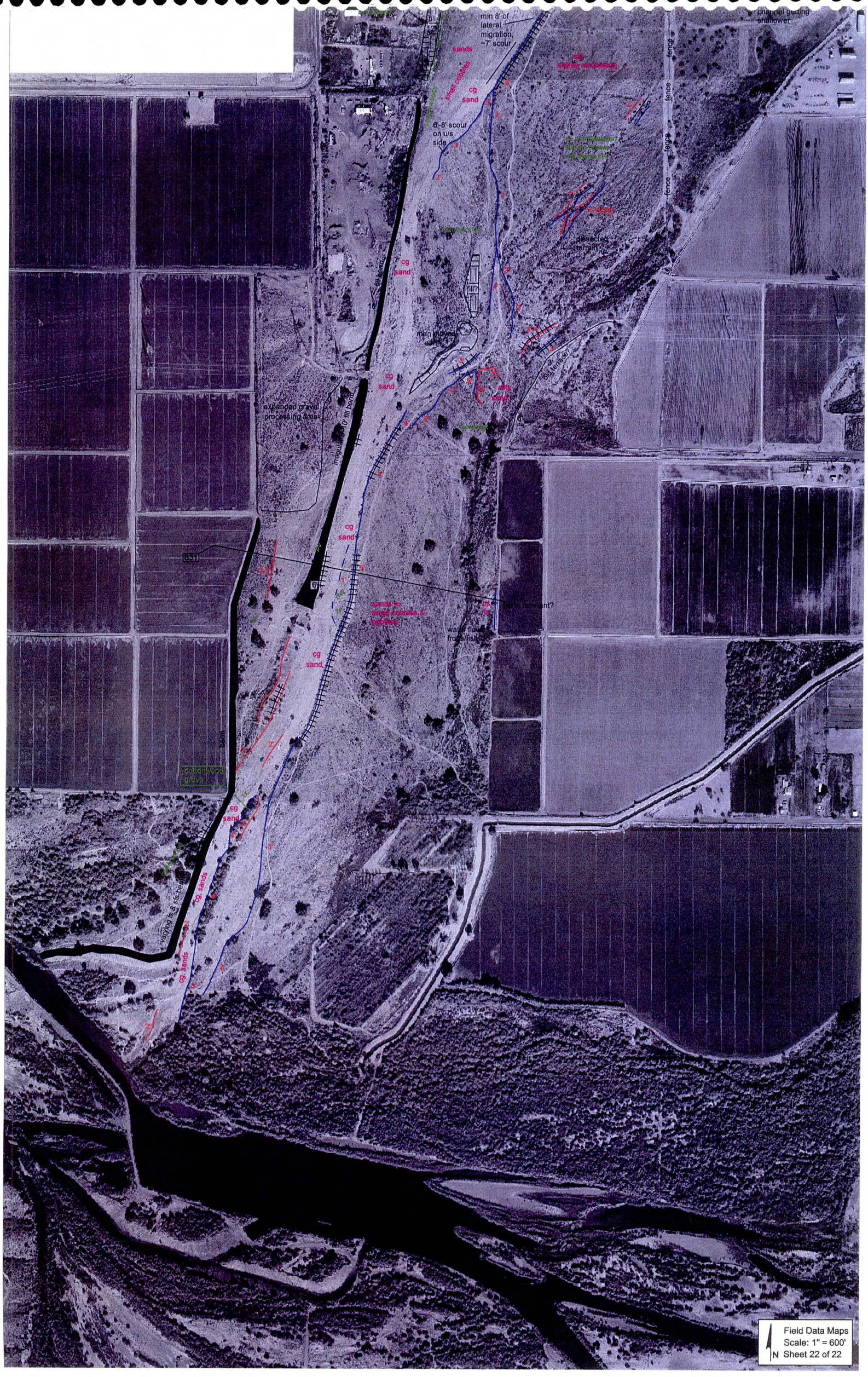
soil cement
soil cement
3.5'
3.5'
grade control
scour
3.5'
soil cement
soil cement
angular riprap
soil cement
storm drain inlet
angular riprap
soil cement
I-10 channel
soil cement
grade control
3.5'
5'
4'
1'
4'
1.5'
scour
soil cement
soil cement
soil cement
B27
1' rise->
soil cement
soil cement
soil cement
sandy silty
sands silts & cobbles
B28
soil cement

Field Data Maps
Scale: 1" = 600'
N Sheet 19 of 22

Field Data Maps
Scale: 1" = 600'
N Sheet 20 of 22



Field Data Maps
Scale: 1" = 600'
N
Sheet 21 of 22


min 8' of lateral migration, ~7' scour
channel getting shallower
sands
small cobbles
cg sand
6'-8' scour on u/s side
cg sand
fence
fence
fence
fence
dissected terrain
cg sand
main channel
cg sand
alluvial?
silty sand
extended gravel processing area
cg sand
cg sand
sands to small cobbles & boulders
water flow from fish
cg sand
cottonwood grove
cg sands
cg sands
varied fish habitat
Field Data Maps
Scale: 1" = 600'
N Sheet 22 of 22

T6N, R1W

T6N, R1E

T3N, R1W

T3N, R1E

T5N, R1W

T5N, R1E

T2N, R1W

T2N, R1E

T4N, R1W

T4N, R1E

T1N, R1W

T1N, R1E

Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

NRCS Soil Map

LEGEND

Soil Landform Classification

- Alluvial Fan
- Floodplain
- Gravel Pit
- Mountain Slopes
- Pediment
- Terrace
- Valley Plain
- Water
- Reach Boundaries
- Long Term Erosion Hazard Zone

N

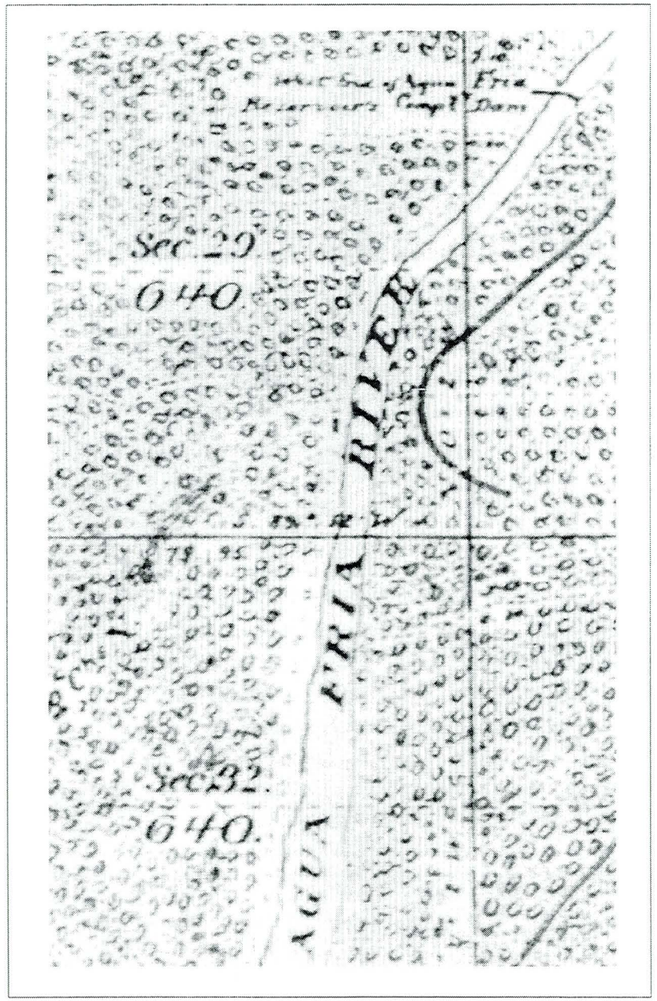
W E

S

1 0 1 2 Miles

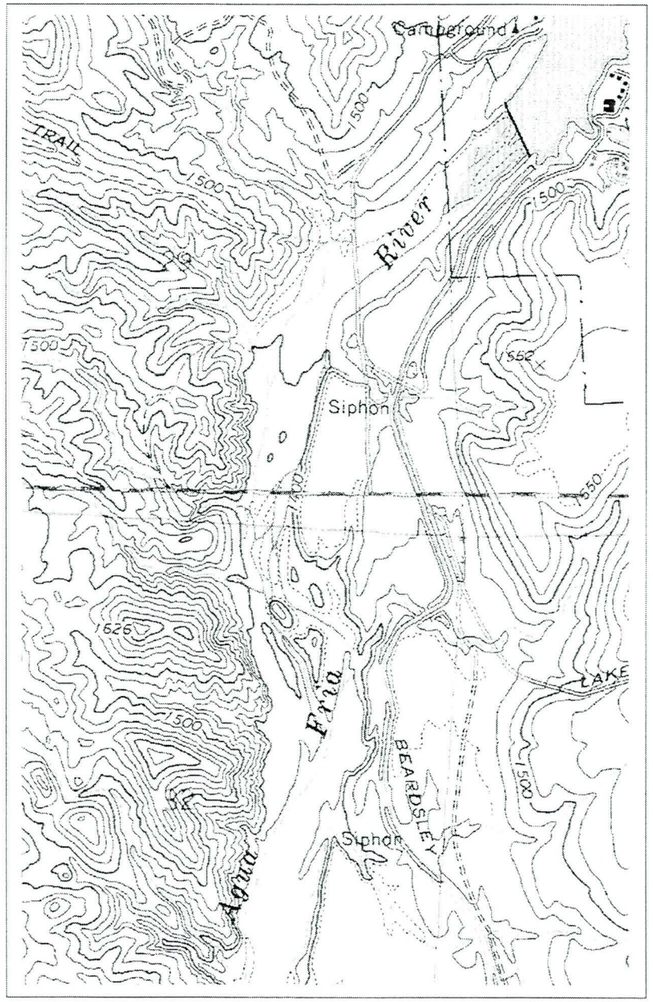
JE FULLER
HYDROLOGY & GEOMORPHOLOGY, INC

Reach 1 - Lower Lake Dam to Siphon



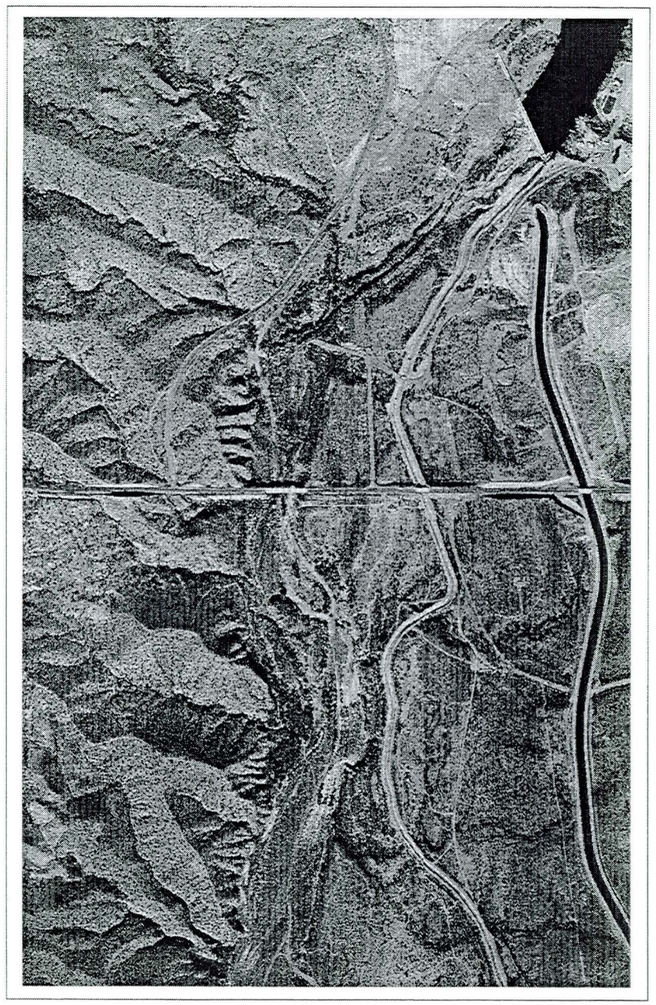
(General Land Office, 1895)

1895



(United States Geological Survey, 1981)

1981



(Flood Control District of Maricopa County, 1999)

1999

N

1500 0 1500 3000 4500 6000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

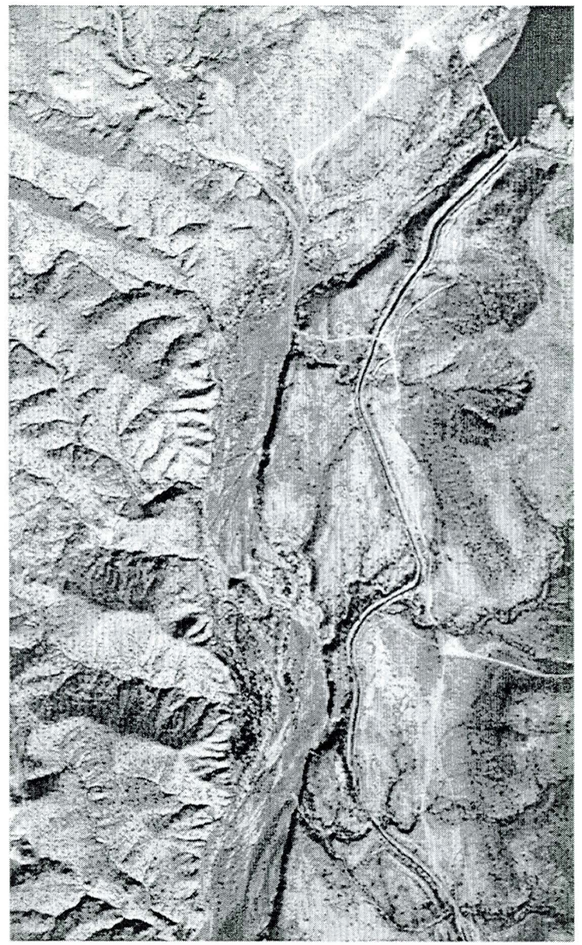
Reach 1 - Lower Lake Dam to Siphon

NOT AVAILABLE

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

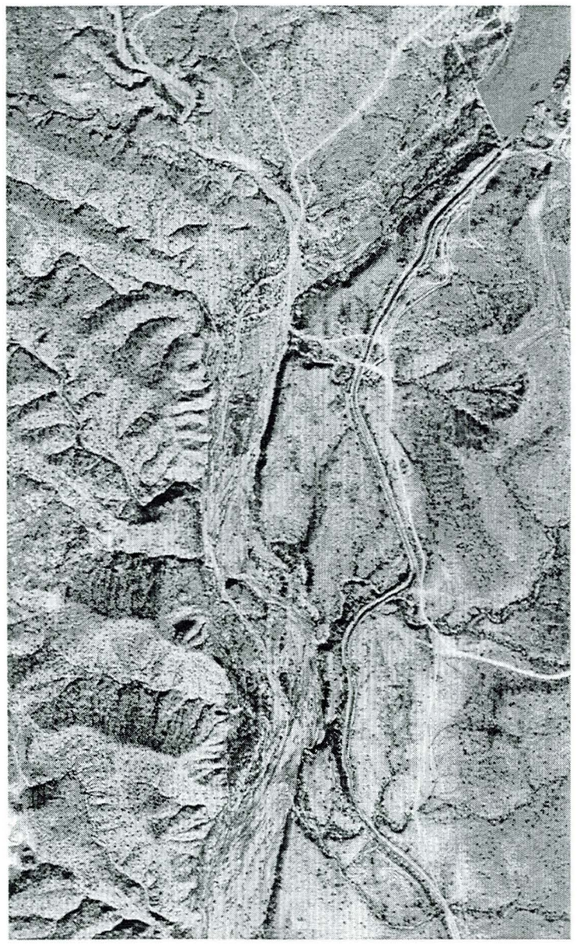
January 24, 1954

N

1500 0 1500 3000 4500 6000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 1 - Lower Lake Dam to Siphon



(Aerial Mapping Company, 1960)

February 7, 1960

NOT AVAILABLE

January 23, 1964

NOT AVAILABLE

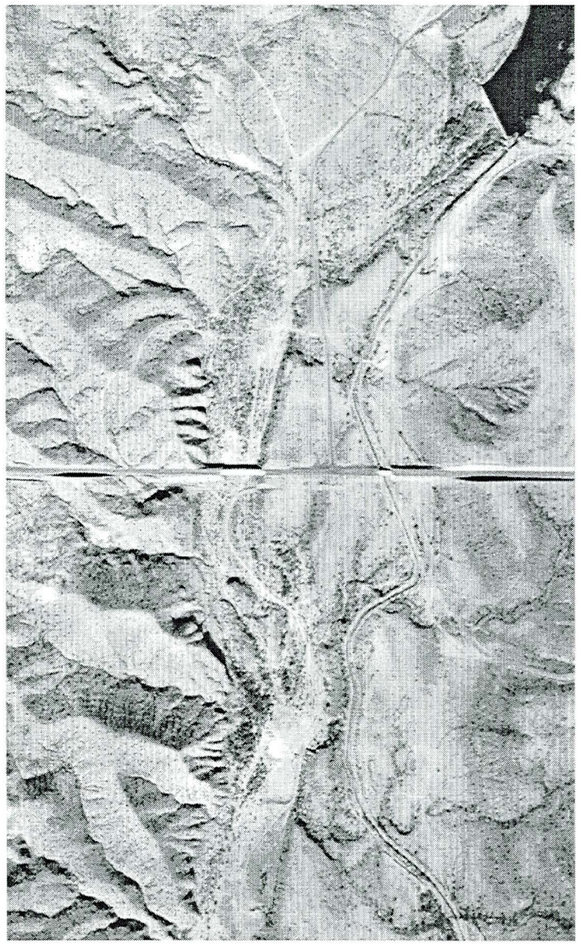
October 9, 1967

N

1500 0 1500 3000 4500 6000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 1 - Lower Lake Dam to Siphon



(Cooper Aerial Surveys Company, 1977)

December 5, 1977

NOT AVAILABLE

May 13, 1979

NOT AVAILABLE

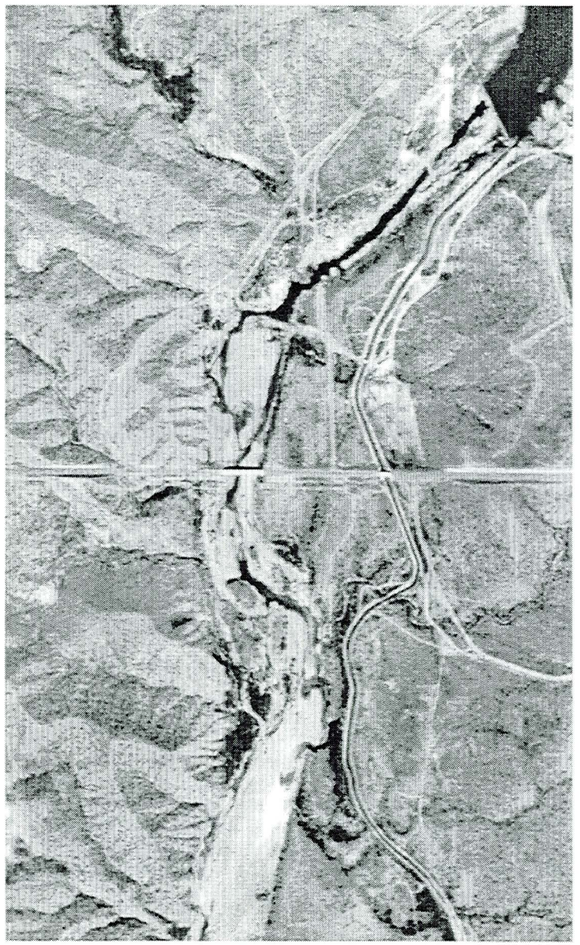
December 30, 1980

N

1500 0 1500 3000 4500 6000 Feet

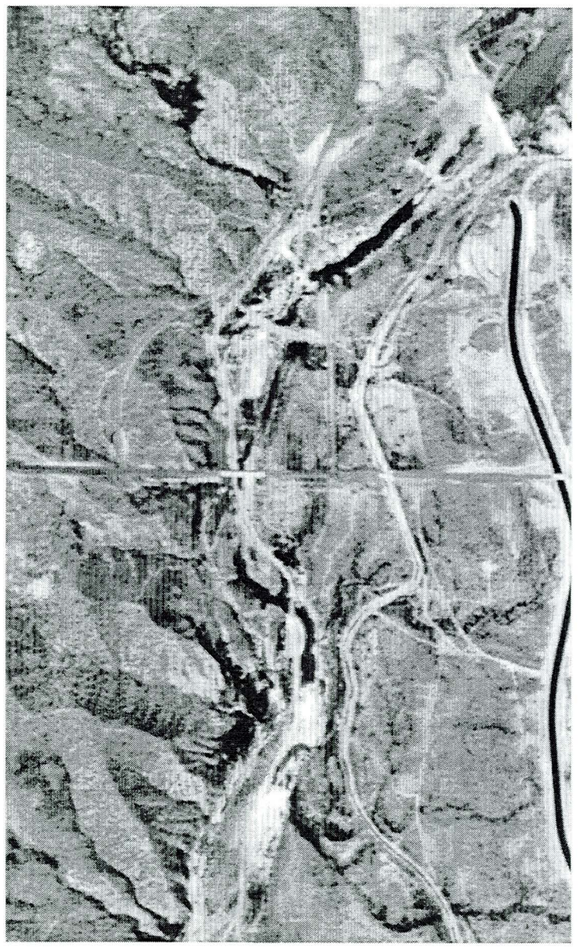
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 1 - Lower Lake Dam to Siphon



(Aerial Mapping Company, 1985)

March 21, 1985



(United States Geological Survey, 1992)

September 6, 1992

(United States Geological Survey, 1997)

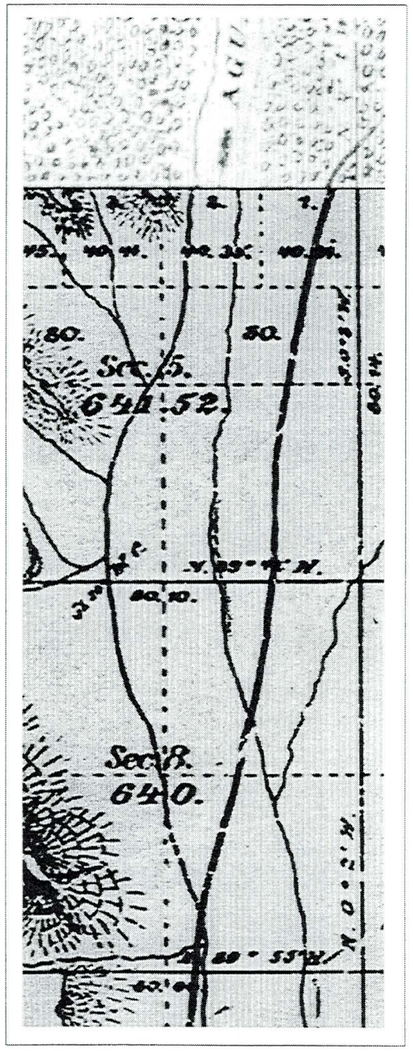
April 30, 1997

N

1500 0 1500 3000 4500 6000 Feet

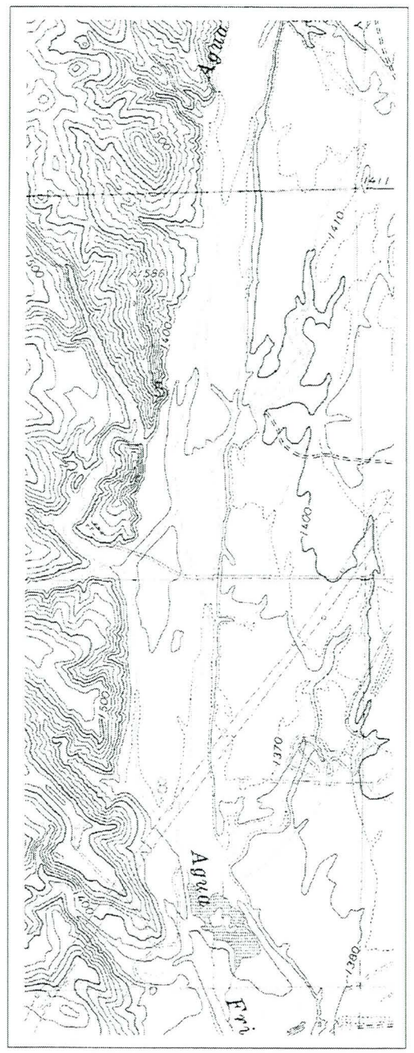
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 2 - Siphon to CAP Siphon



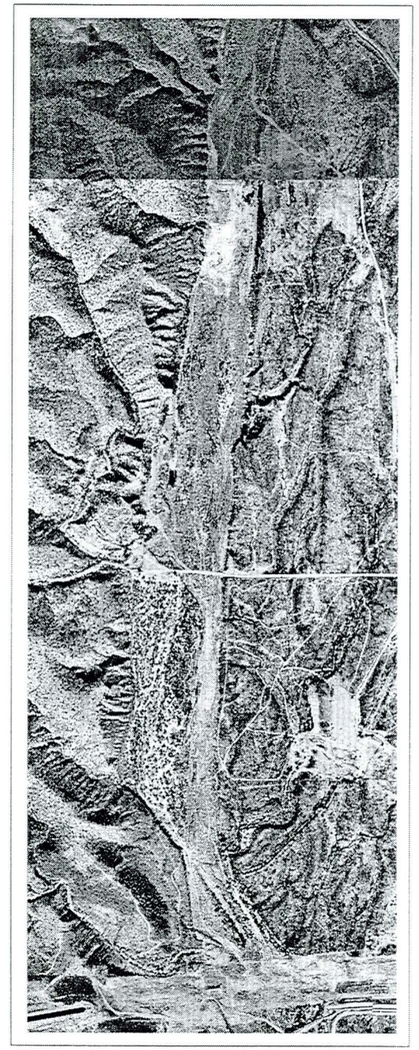
(General Land Office, 1895)

1895



(United States Geological Survey, 1981)

Original Mapping: 1962
Revisions: 1978



(Flood Control District of Maricopa County, 1998)

1999

N

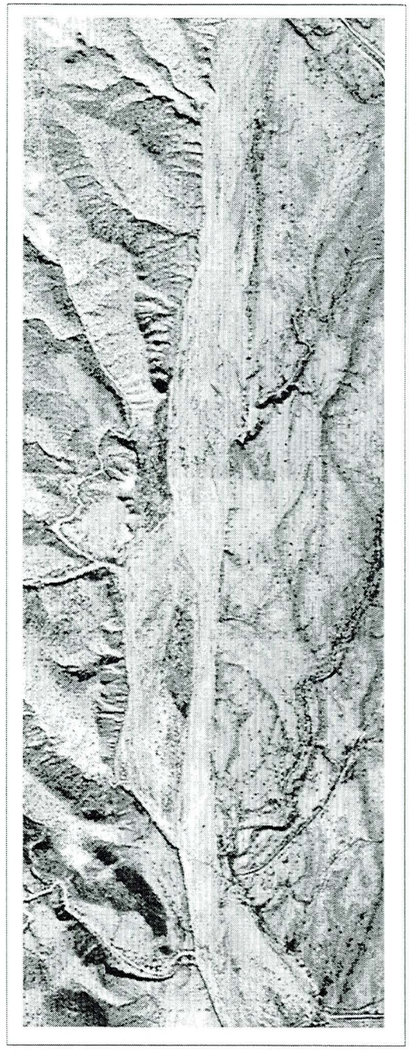
2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 2 - Siphon to CAP Siphon

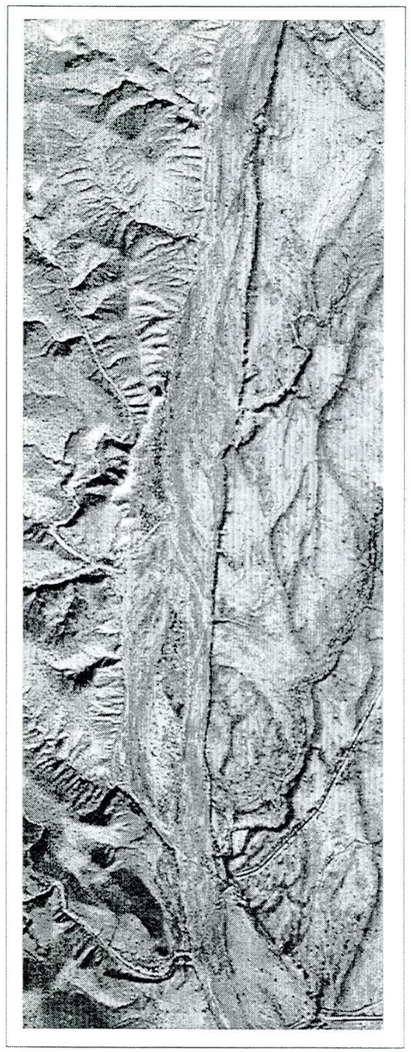
NOT AVAILABLE

1934



(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

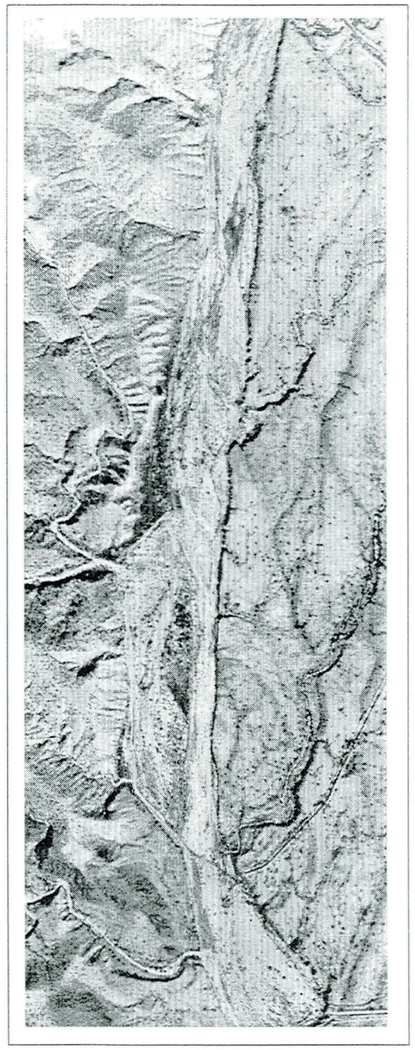
January 24, 1954

N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 2 - Siphon to CAP Siphon



(Aerial Mapping Company, 1960)

February 7, 1960

NOT AVAILABLE

January 23, 1964

NOT AVAILABLE

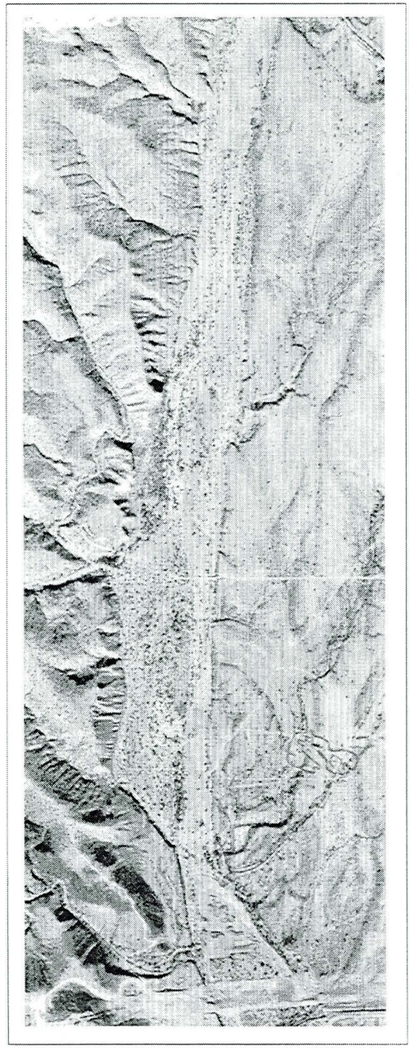
October 9, 1967

N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 2 - Siphon to CAP Siphon



(Cooper Aerial Surveys Company, 1977)

December 5, 1977

NOT AVAILABLE

May 13, 1979

NOT AVAILABLE

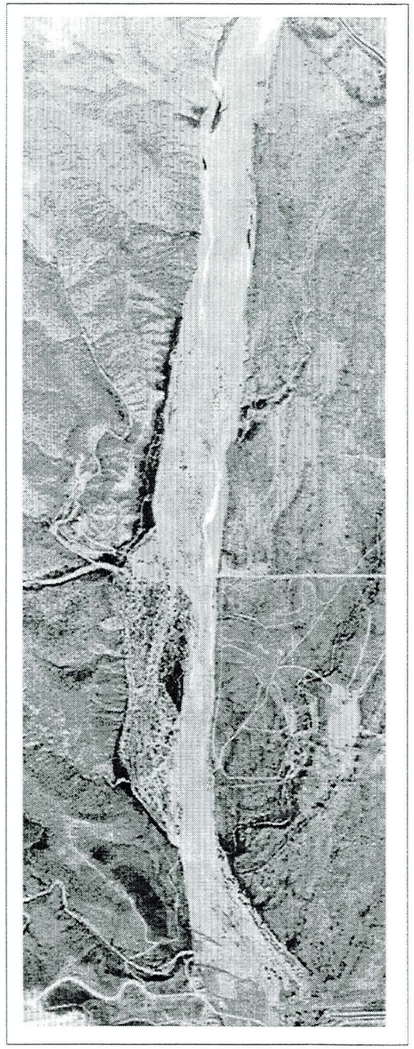
December 30, 1980

N

2000 0 2000 4000 6000 8000 Feet

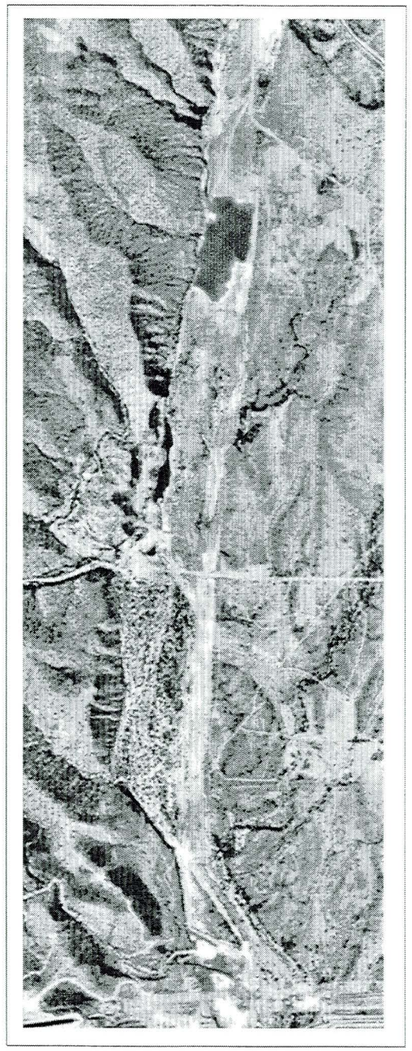
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 2 - Siphon to CAP Siphon



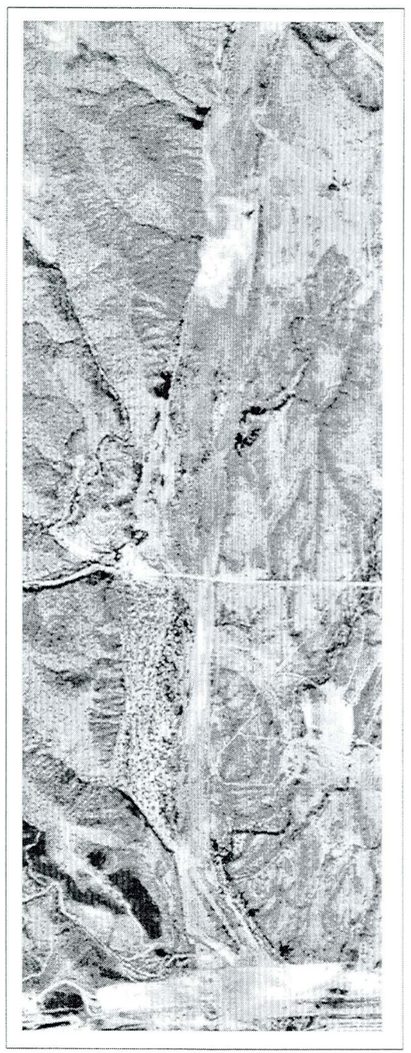
(Aerial Mapping Company, 1985)

March 21,1985



(United States Geological Survey, 1992)

September 6, 1992



(United States Geological Survey, 1997)

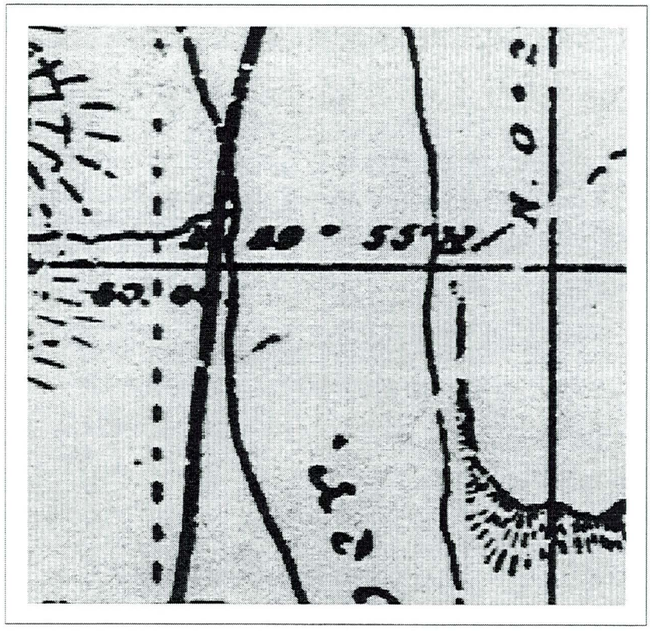
April 30, 1997

N

2000 0 2000 4000 6000 8000 Feet

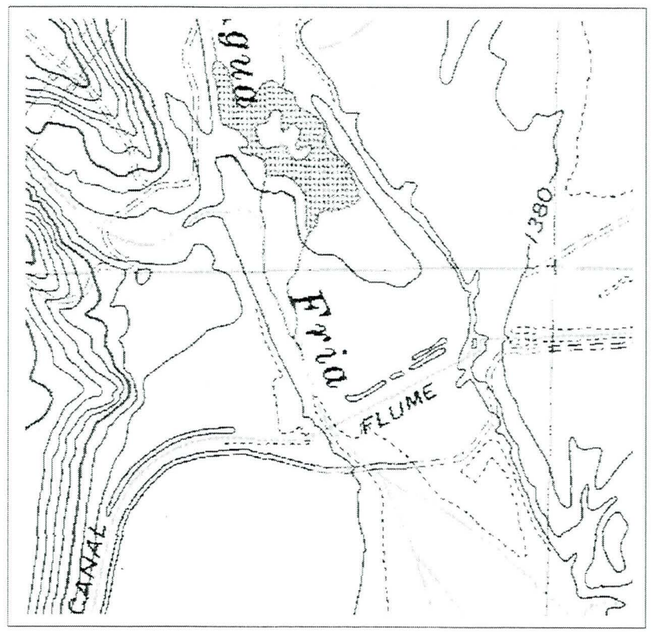
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 3 - CAP Siphon to Beardsley Canal Flume



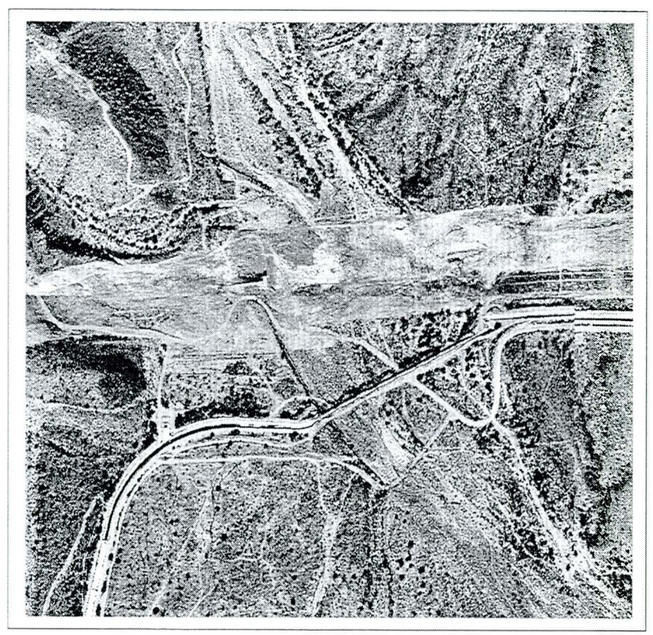
(General Land Office, 1895)

1895



(United States Geological Survey, 1982)

1982



(Flood Control District of Maricopa County, 1999)

1999

N

1000 0 1000 2000 3000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

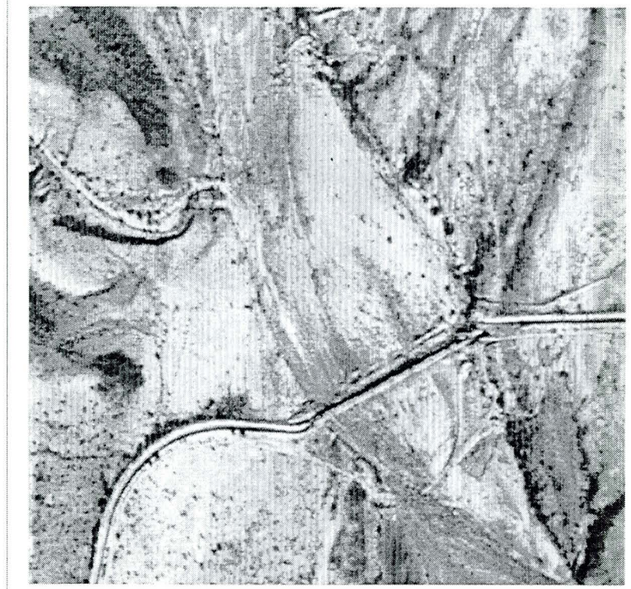
Reach 3 - CAP Siphon to Beardsley Canal Flume

NOT AVAILABLE

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

January 24, 1954

N

1000 0 1000 2000 3000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 3 - CAP Siphon to Beardsley Canal Flume

(Aerial Mapping Company, 1960)

February 7, 1960

NOT AVAILABLE

January 23, 1964

NOT AVAILABLE

October 9, 1967

N

1000 0 1000 2000 3000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 3 - CAP Siphon to Beardsley Canal Flume

(Cooper Aerial Surveys Company, 1977)

December 5, 1977

NOT AVAILABLE

May 13, 1979

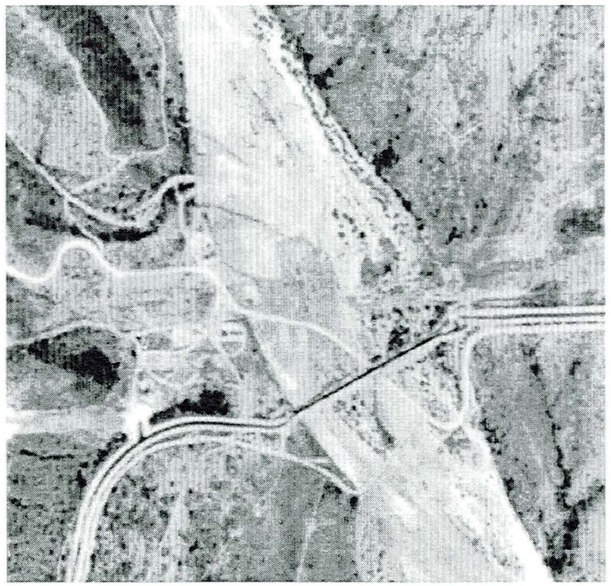
NOT AVAILABLE

December 30, 1980

N

1000 0 1000 2000 3000 Feet

Reach 3 - CAP Siphon to Beardsley Canal Flume



(Aerial Mapping Company, 1985)

March 21, 1985

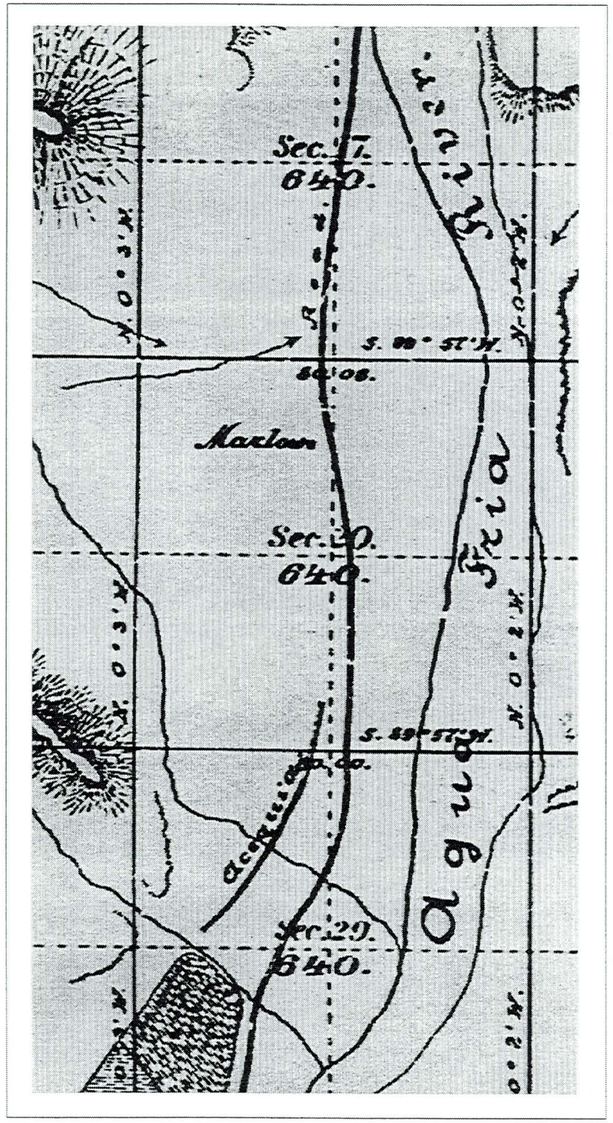
(United States Geological Survey, 1992)

September 6, 1992

(United States Geological Survey, 1997)

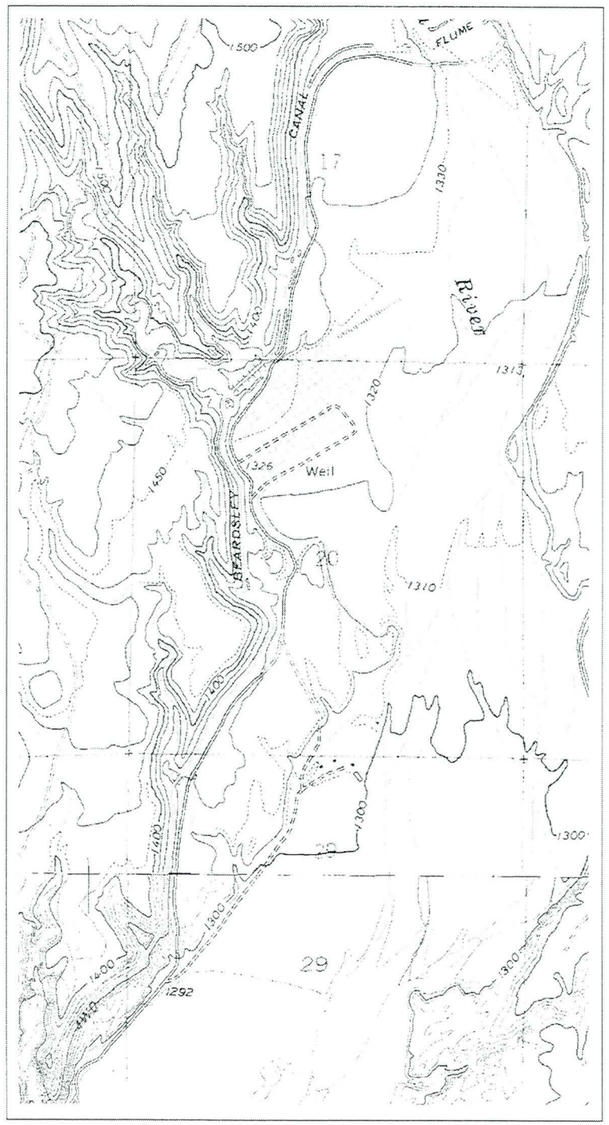
April 30, 1997

Reach 4 - Beardsley Canal Flume to Dynamite Boulevard alignment



(General Land Office, 1895)

1895



(United States Geological Survey, 1981)

Original Mapping: 1962
Revisions: 1978

(Flood Control District of Maricopa County, 1999)

1999

N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

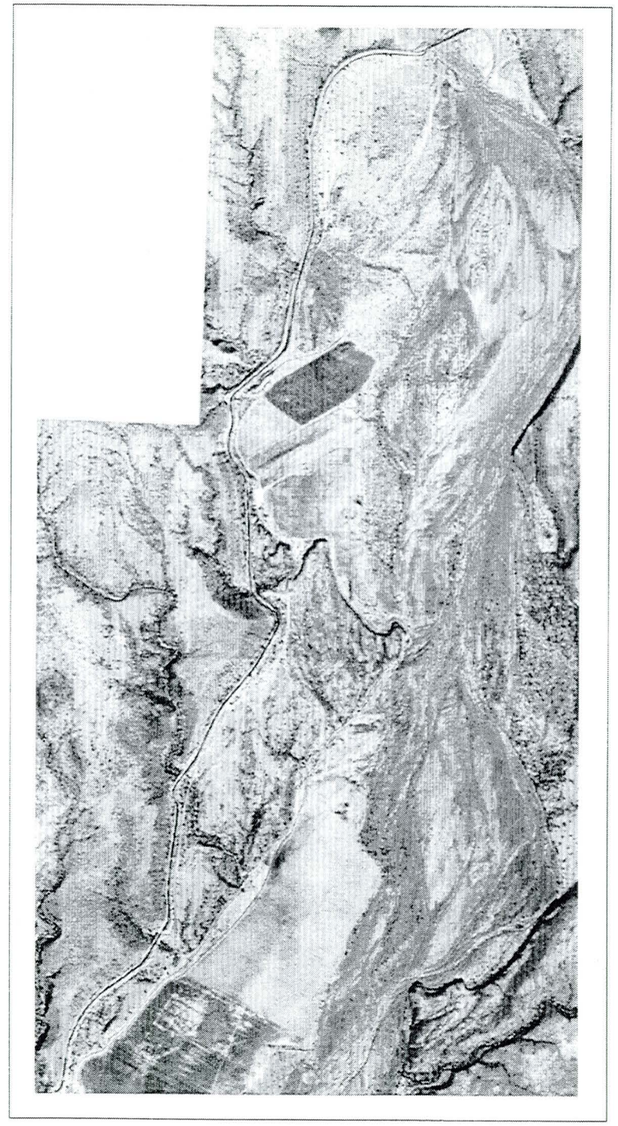
Reach 4 - Beardsley Canal Flume to Dynamite Boulevard alignment

NOT AVAILABLE

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

January 24, 1954

N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 4 - Beardsley Canal Flume to Dynamite Boulevard alignment

(Aerial Mapping Company, 1960)

February 7, 1960

NOT AVAILABLE

January 23, 1964

NOT AVAILABLE

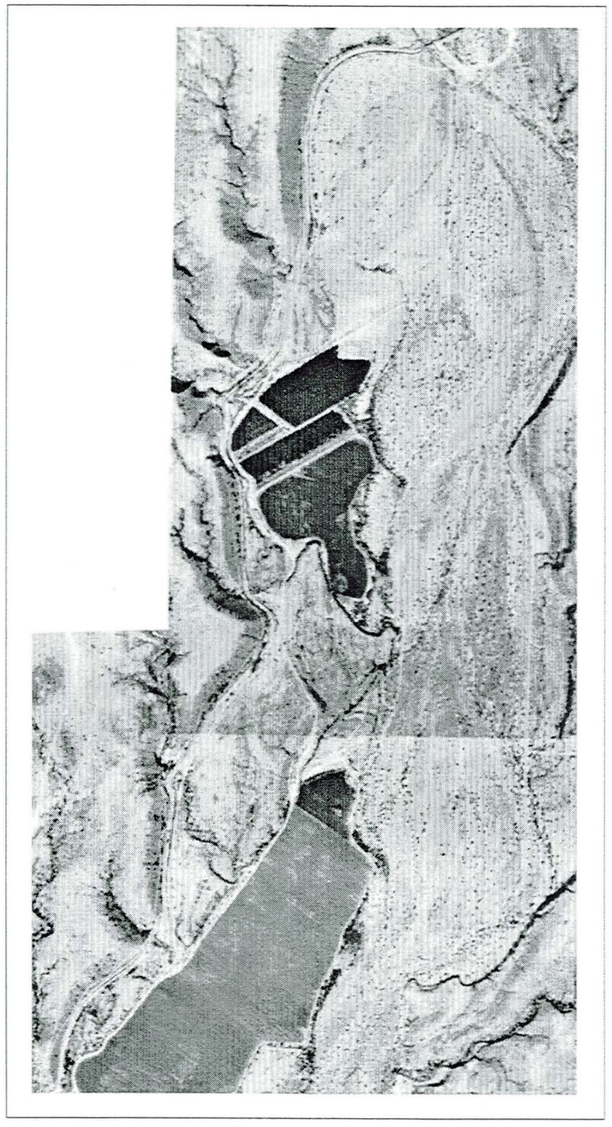
October 9, 1967

N

2000 0 2000 4000 6000 8000 Feet

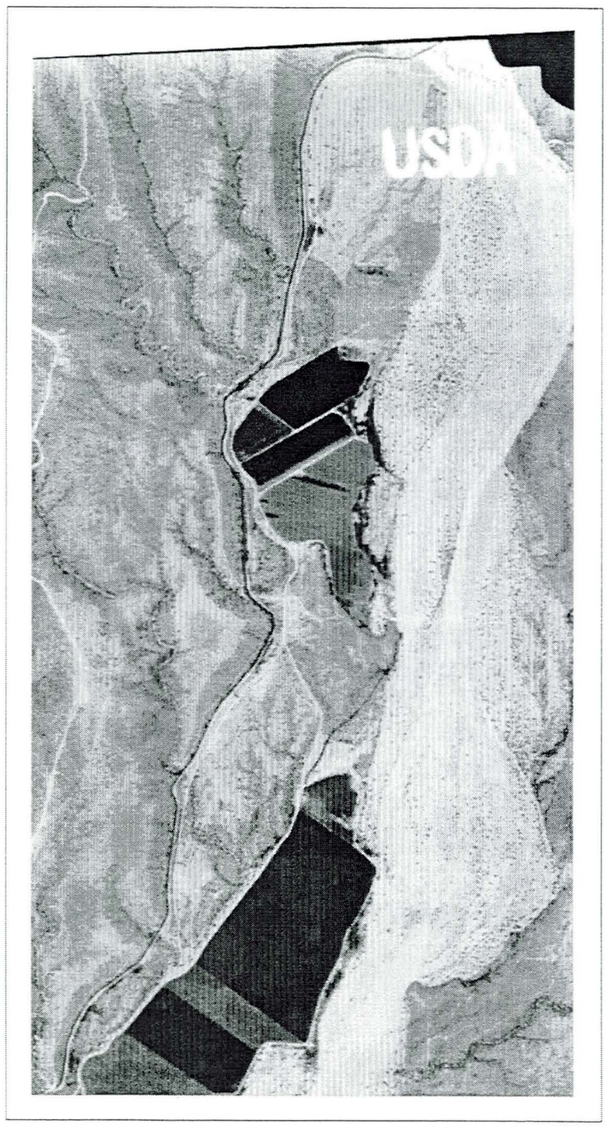
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 4 - Beardsley Canal Flume to Dynamite Boulevard alignment



(Cooper Aerial Surveys Company, 1980)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979

NOT AVAILABLE

December 30, 1980

N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

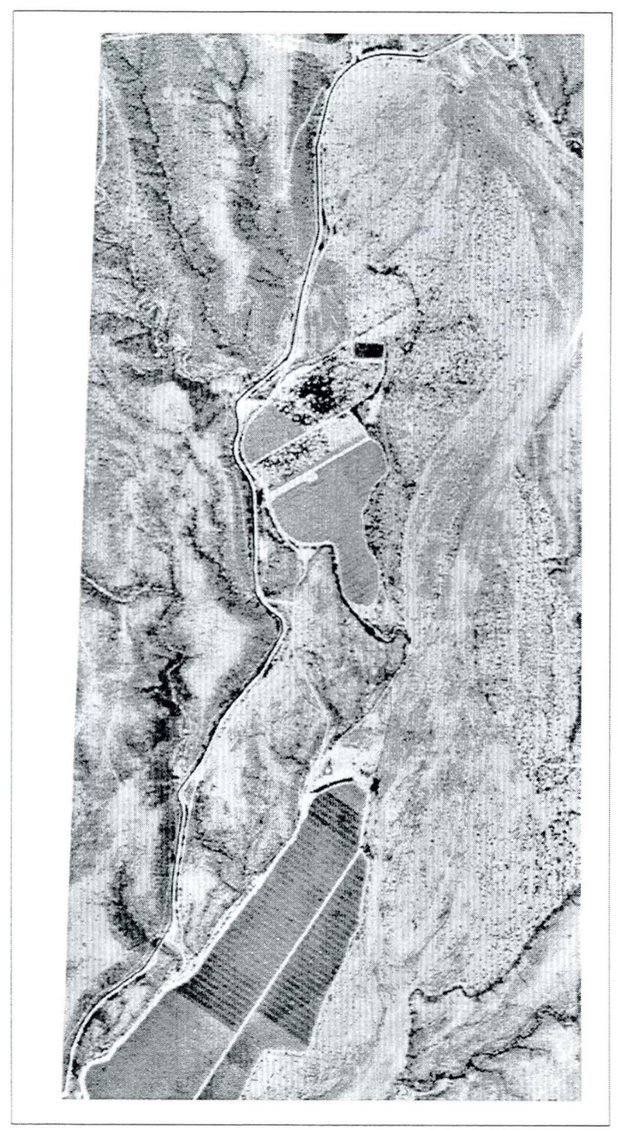
Reach 4 - Beardsley Canal Flume to Dynamite Boulevard alignment

(Aerial Mapping Company, 1985)

March 21, 1985

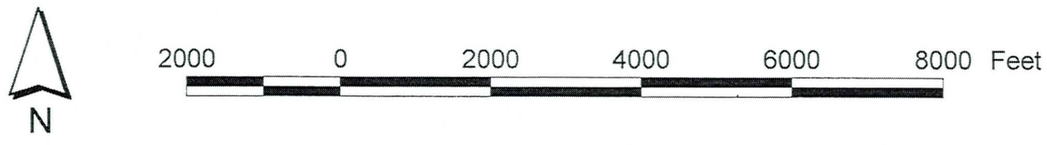
(United States Geological Survey, 1992)

September 6, 1992



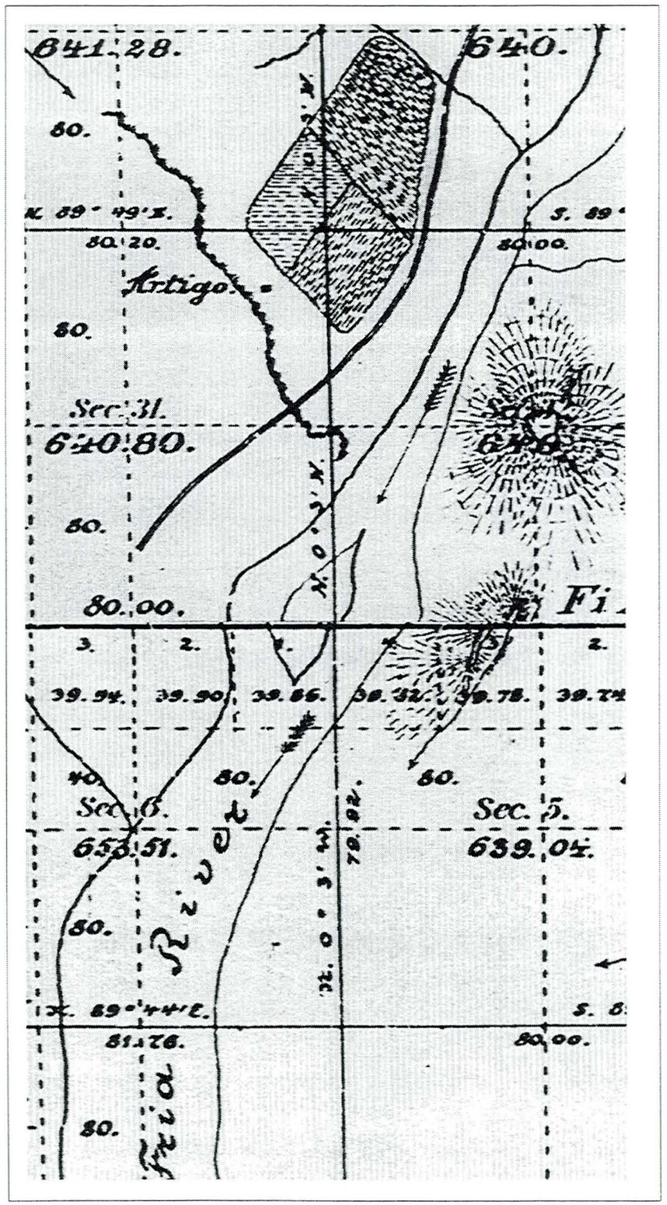
(United States Geological Survey, 1997)

April 30, 1997



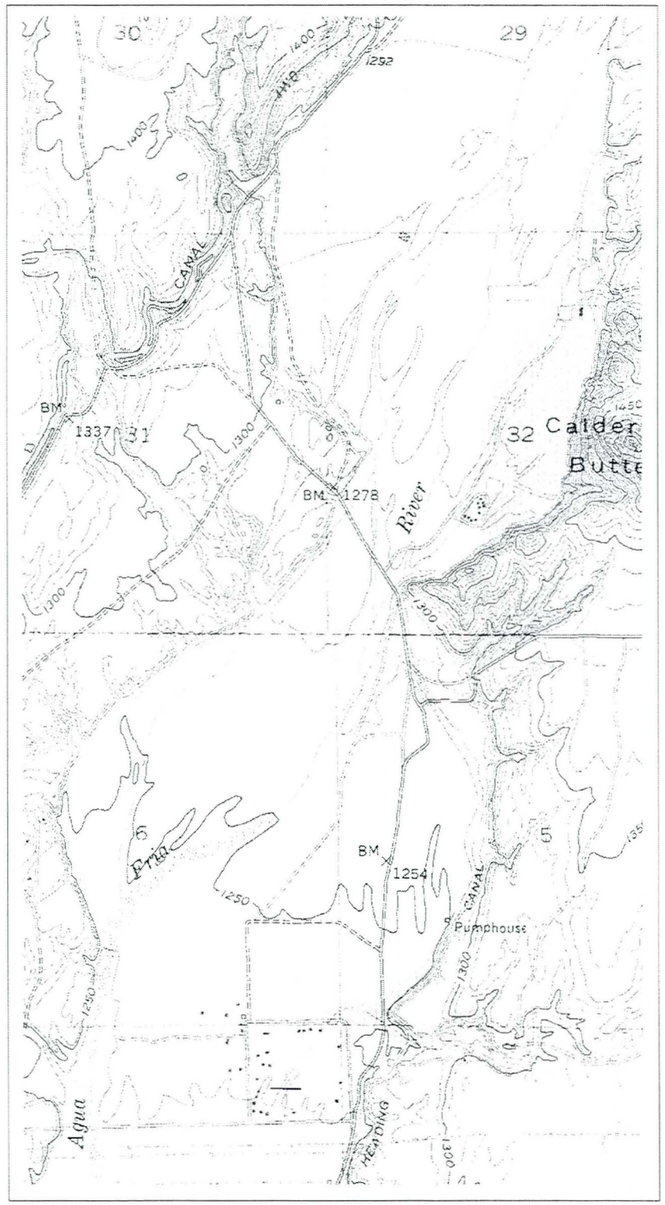
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 5 - Dynamite Boulevard alignment to Hatfield Road



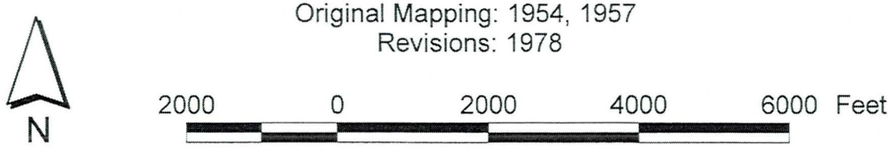
(General Land Office, 1895)

1895



(United States Geological Survey, 1981)

Original Mapping: 1954, 1957
Revisions: 1978



N

(Flood Control District of Maricopa County, 1999)

1999

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

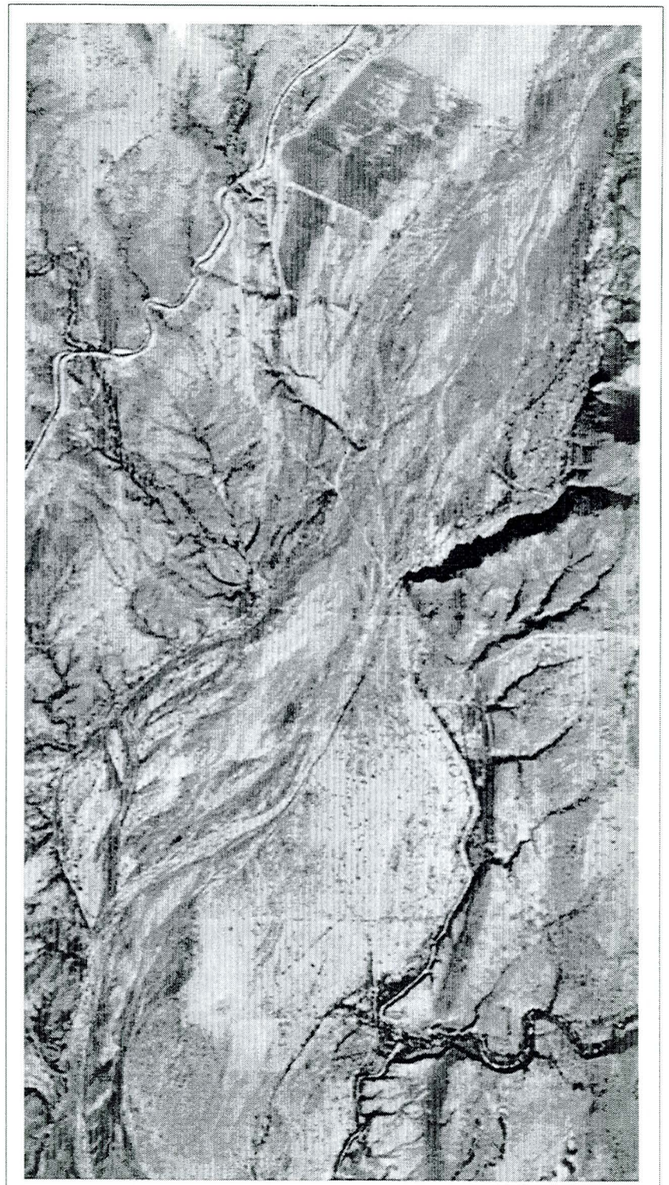
Reach 5 - Dynamite Boulevard alignment to Hatfield Road

NOT AVAILABLE

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

January 24, 1954

N

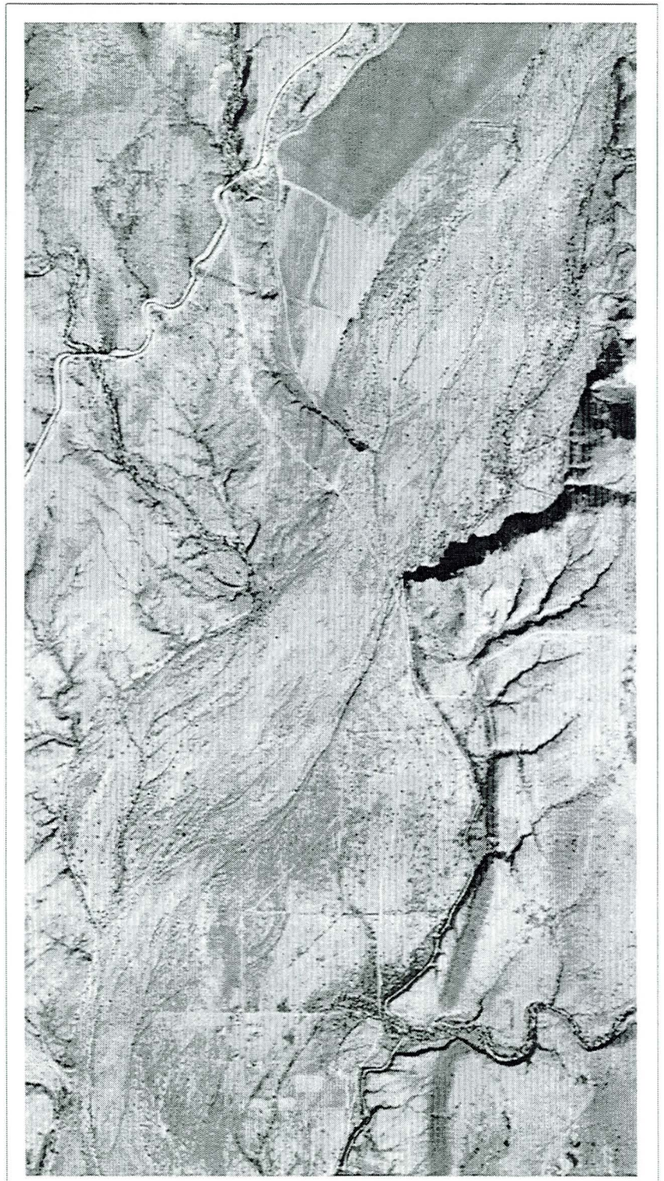
2000 0 2000 4000 6000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 5 - Dynamite Boulevard alignment to Hatfield Road

(Aerial Mapping Company, 1960)

February 7, 1960



(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964

NOT AVAILABLE

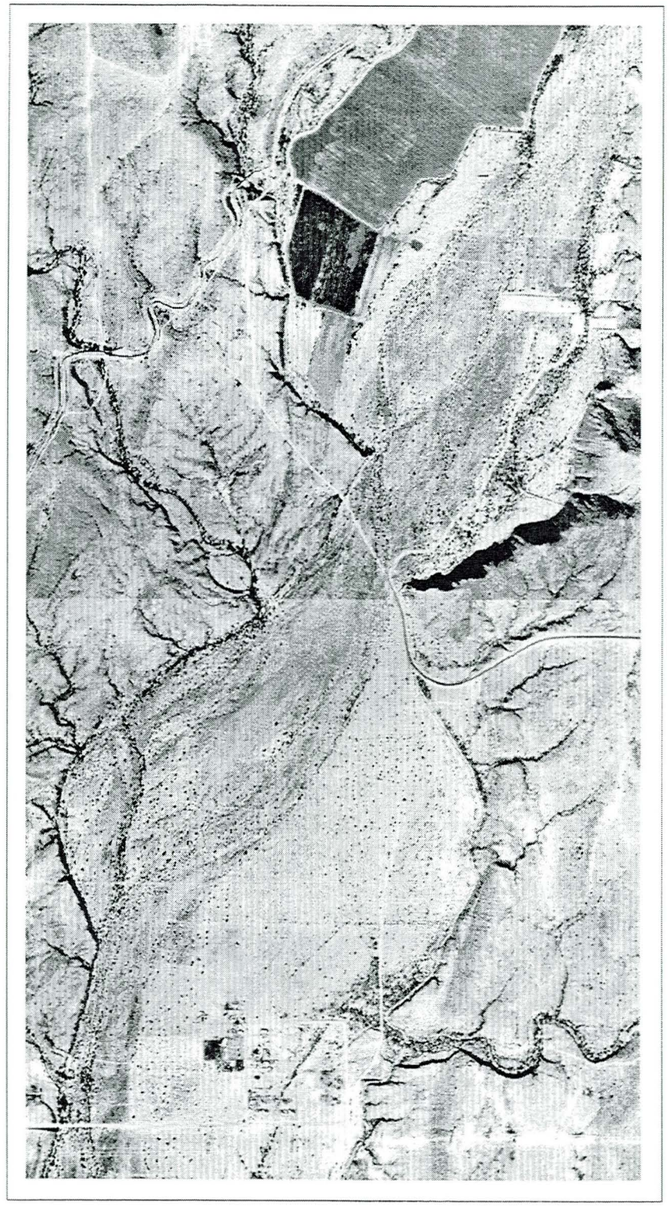
October 9, 1967

N

2000 0 2000 4000 6000 Feet

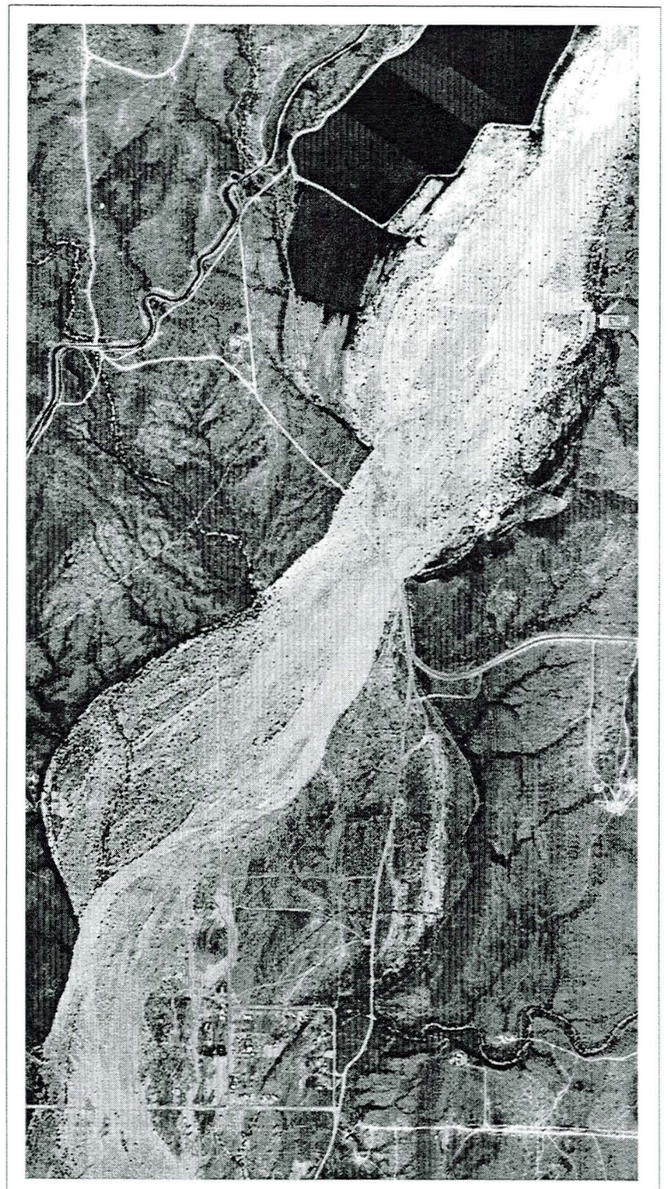
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 5 - Dynamite Boulevard alignment to Hatfield Road



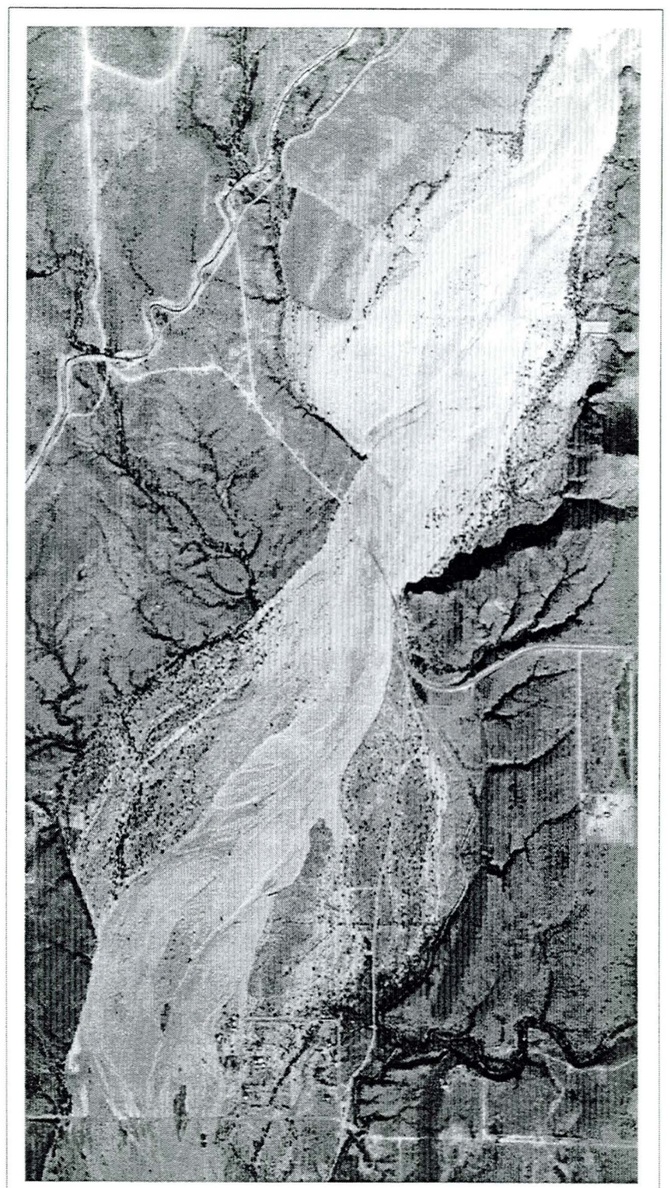
(Cooper Aerial Surveys Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979



(Landiscor Aerial Information, 1980)

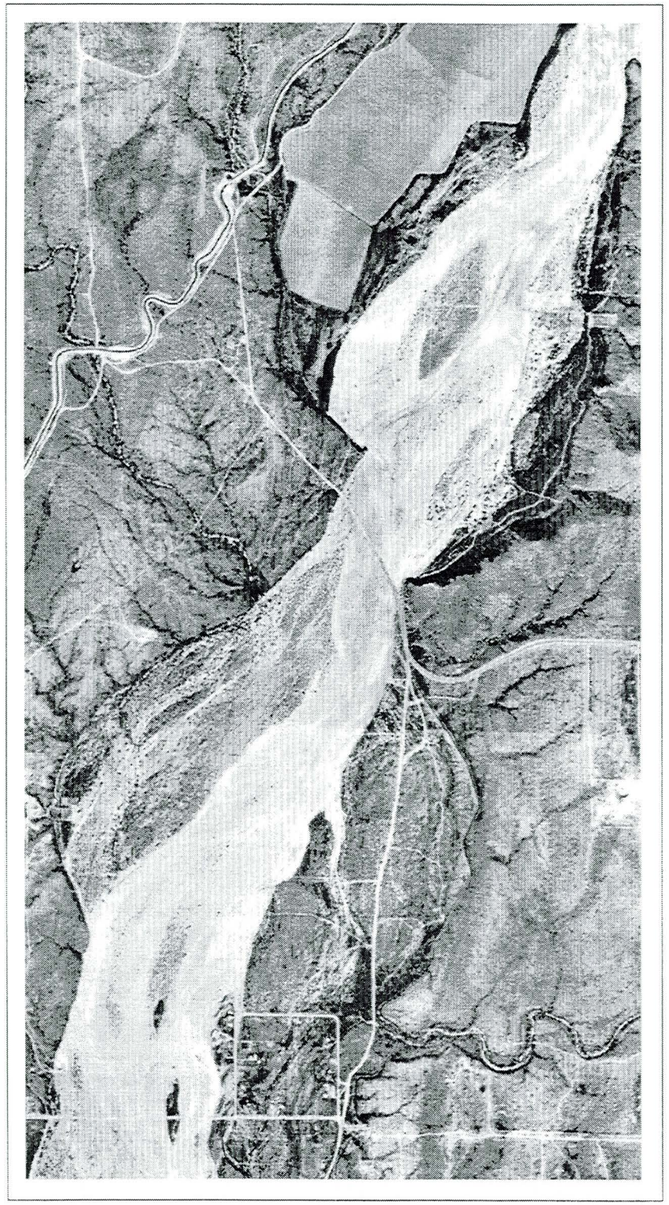
December 30, 1980

N

2000 0 2000 4000 6000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 5 - Dynamite Boulevard alignment to Hatfield Road

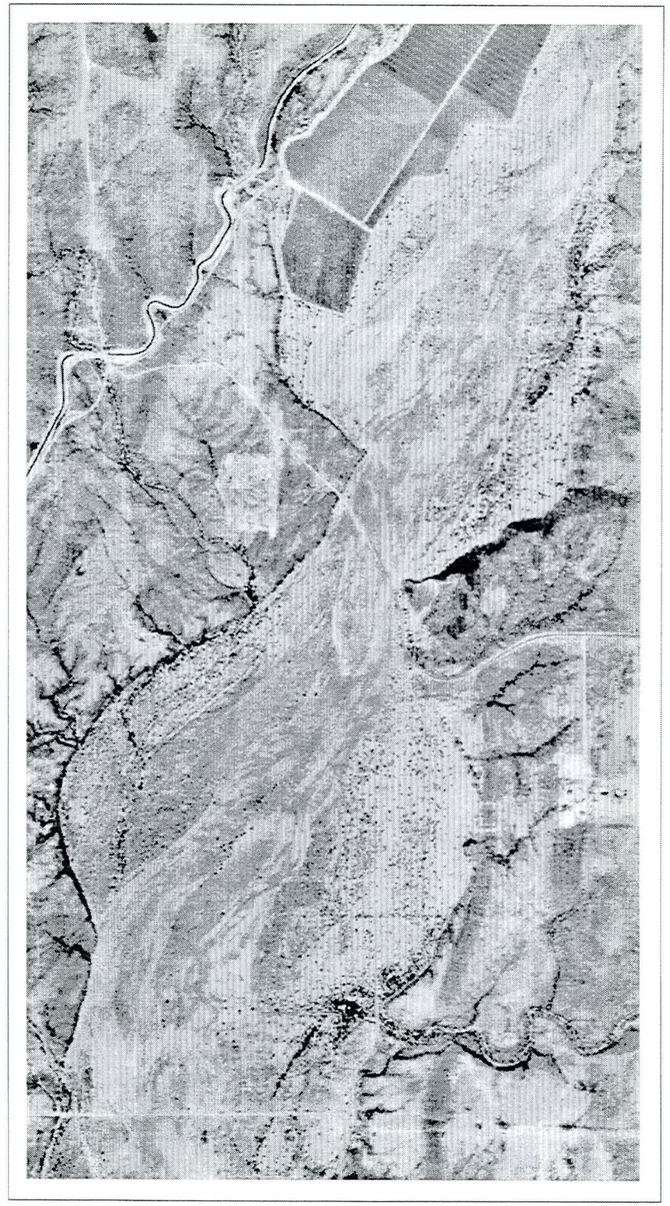


(Aerial Mapping Company, 1985)

March 21, 1985

(United States Geological Survey, 1992)

September 6, 1992



(United States Geological Survey, 1997)

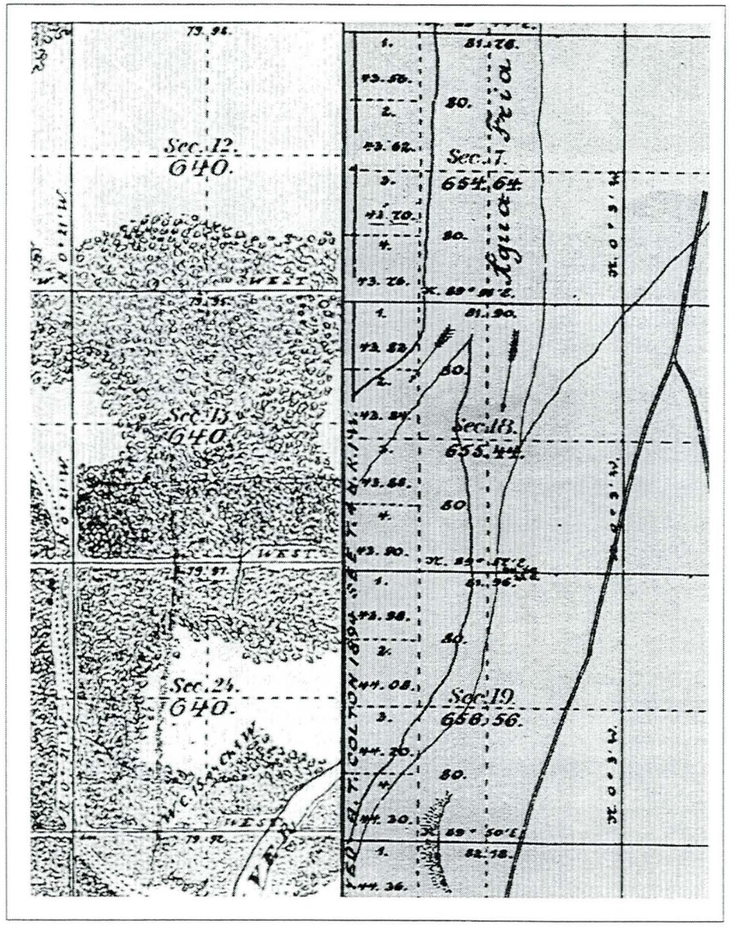
April 30, 1997

N

2000 0 2000 4000 6000 Feet

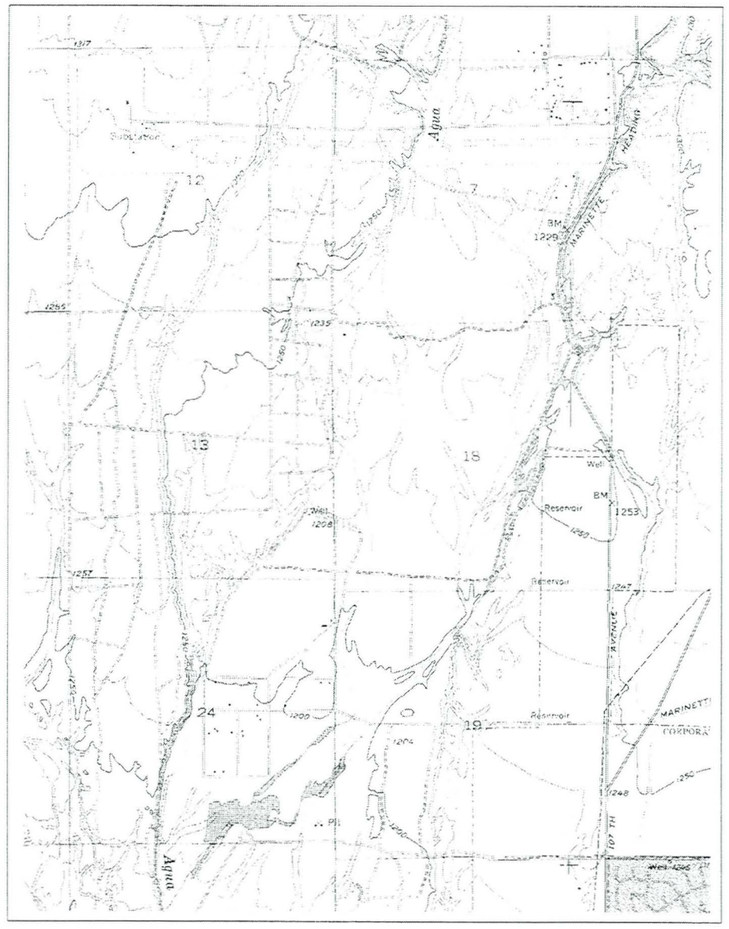
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 6 - Hatfield Road to Beardsley Road alignment



(General Land Office, 1895, 1896)

1895



(United States Geological Survey, 1981)

Original Mapping: 1954
Revisions: 1978

(Flood Control District of Maricopa County, 1999)

1999

N

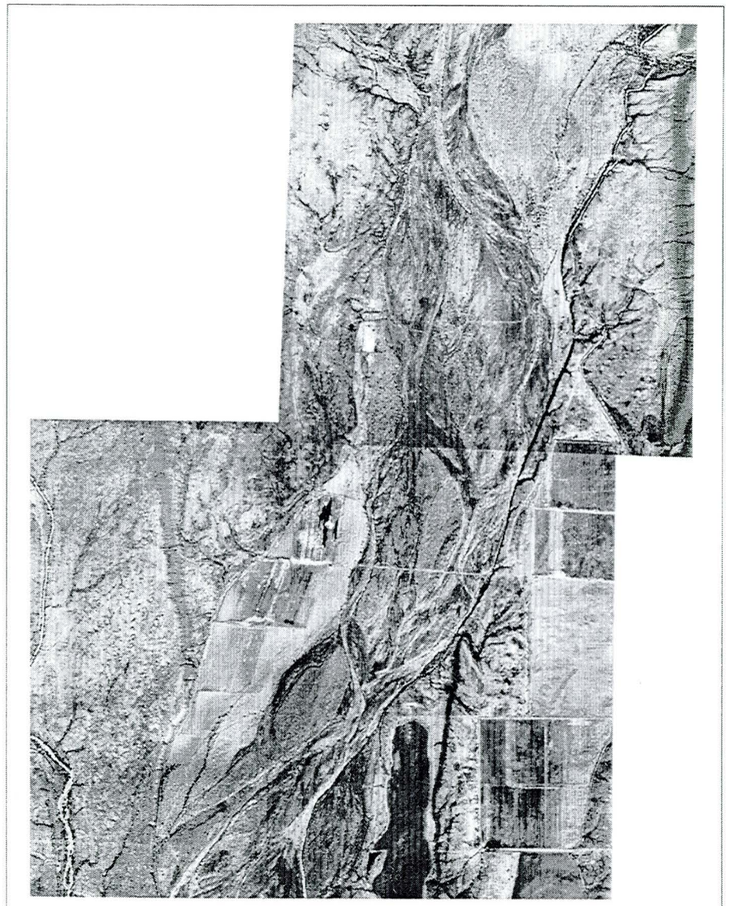
3000 0 3000 6000 9000 12000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 6 - Hatfield Road to Beardsley Road alignment

NOT AVAILABLE

(Agricultural Stabilization & Conservation Service, 1949)

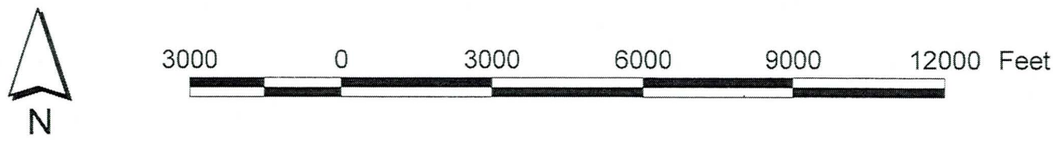


(Agricultural Stabilization & Conservation Service, 1954)

1934

February 14, 1949

January 24, 1954



Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 6 - Hatfield Road to Beardsley Road alignment

(Aerial Mapping Company, 1960)

February 7, 1960

(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964

(Landiscor Aerial Information, 1967)

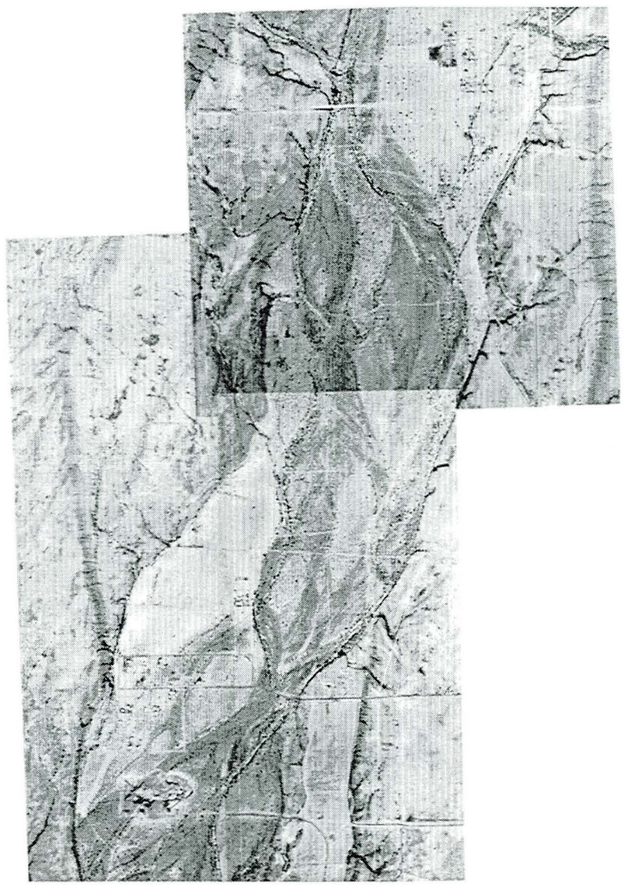
October 9, 1967

N

3000 0 3000 6000 9000 12000 Feet

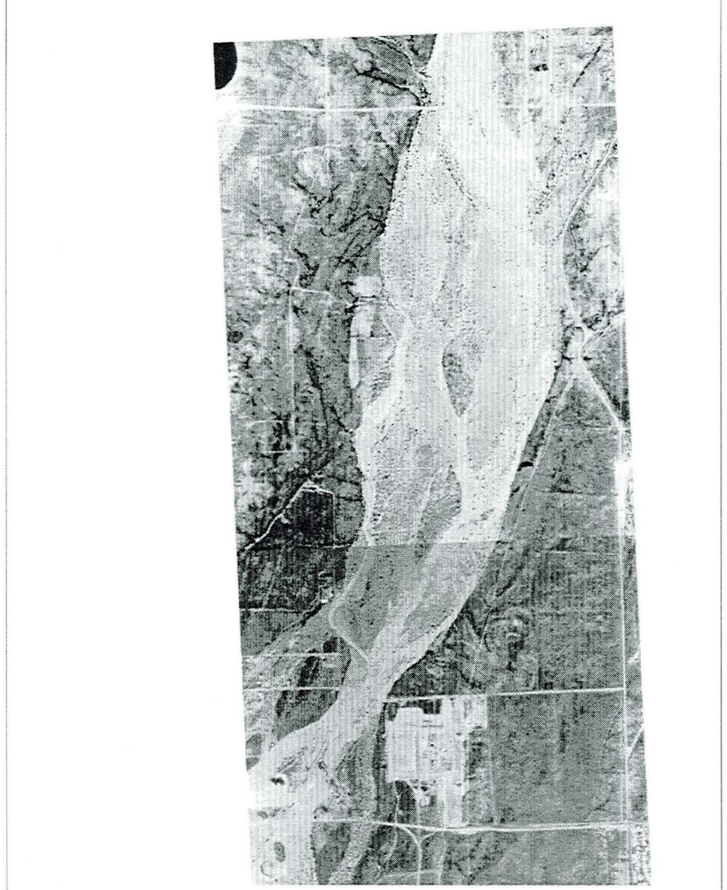
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 6 - Hatfield Road to Beardsley Road alignment



(Cooper Aerial Surveys Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979

(Landiscor Aerial Information, 1980)

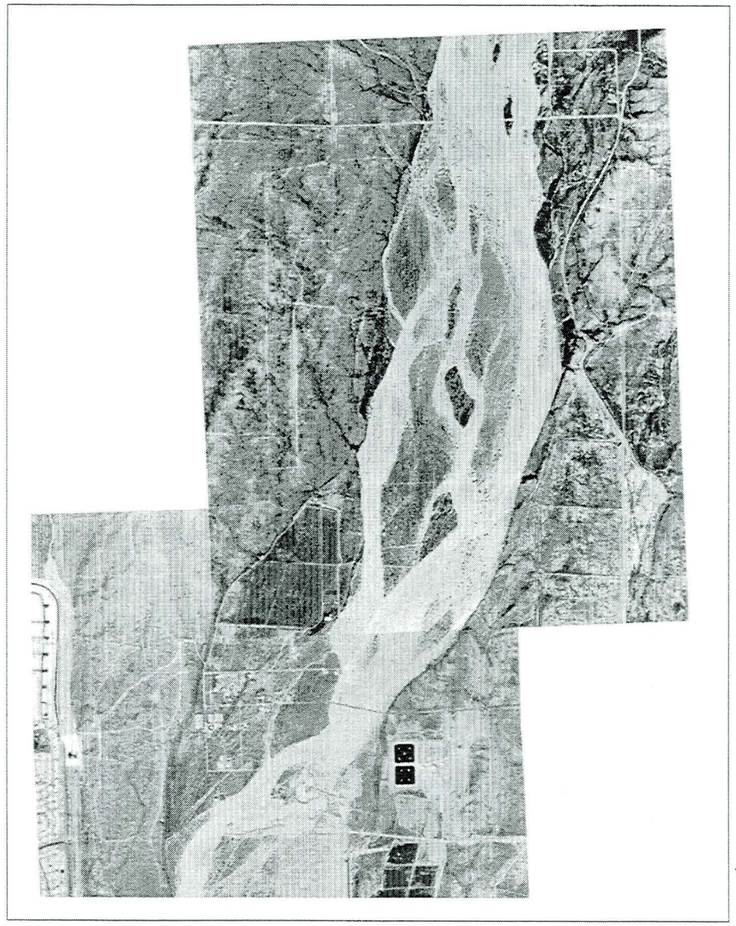
December 30, 1980

N

3000 0 3000 6000 9000 12000 Feet

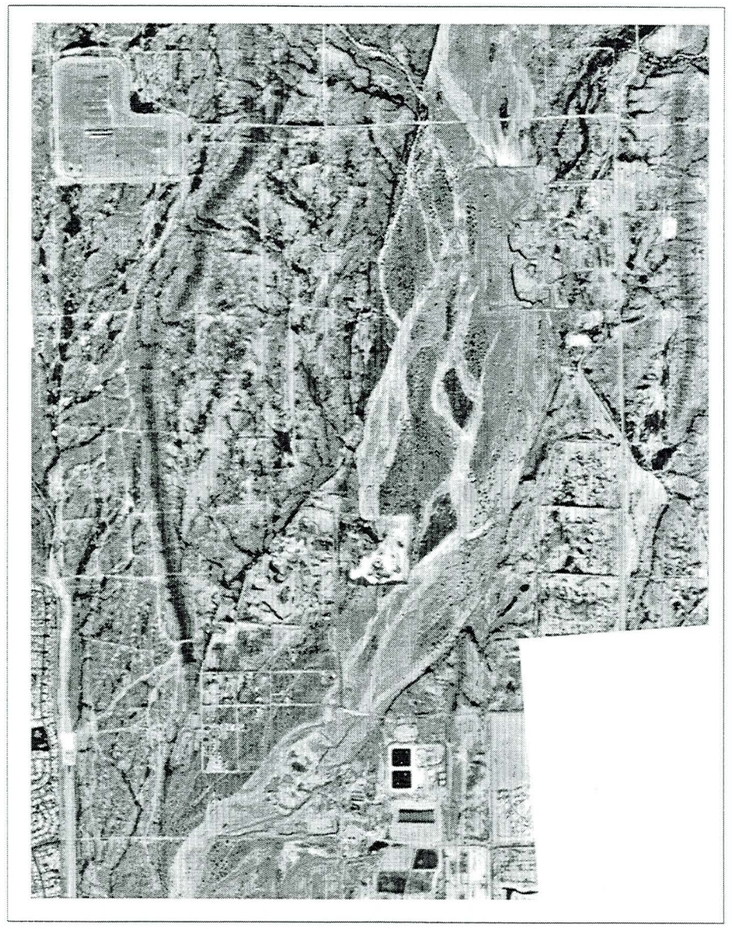
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 6 - Hatfield Road to Beardsley Road alignment



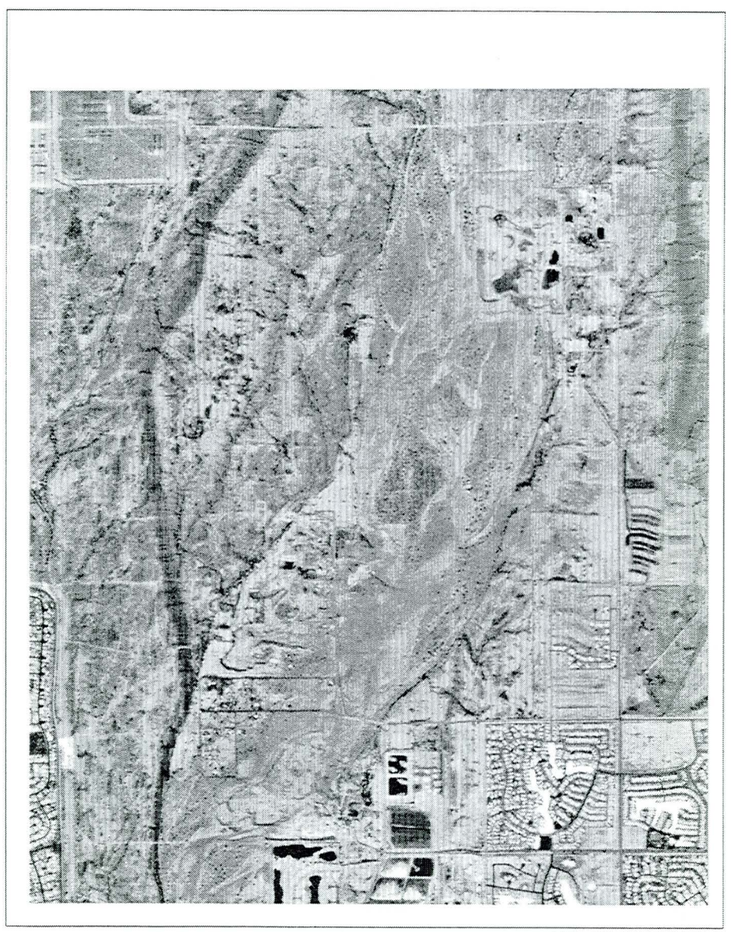
(Aerial Mapping Company, 1985)

March 21, 1985



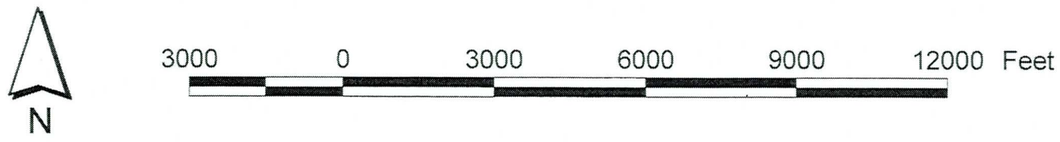
(United States Geological Survey, 1992)

September 6, 1992



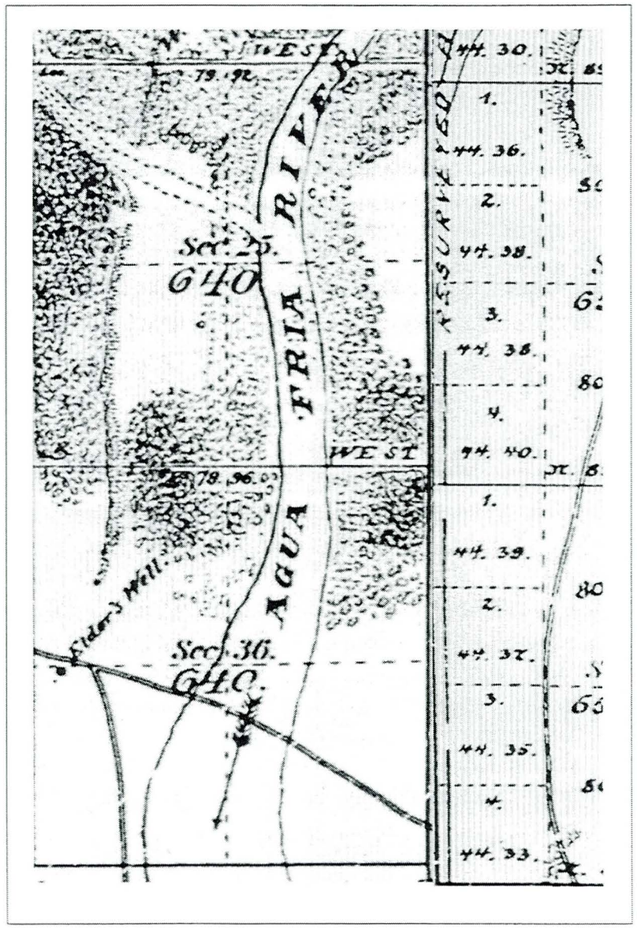
(United States Geoogical Survey, 1997)

April 30, 1997

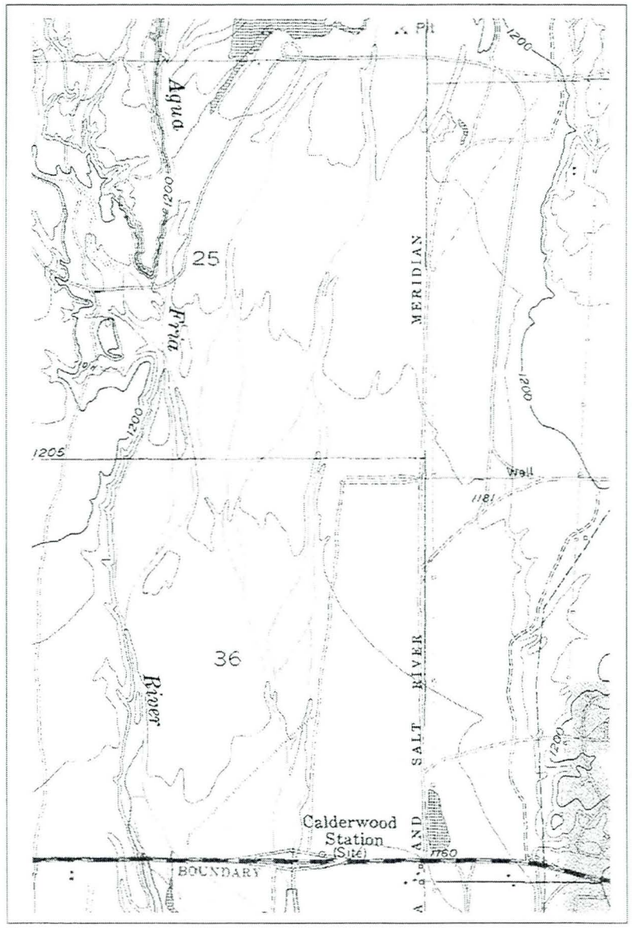


Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

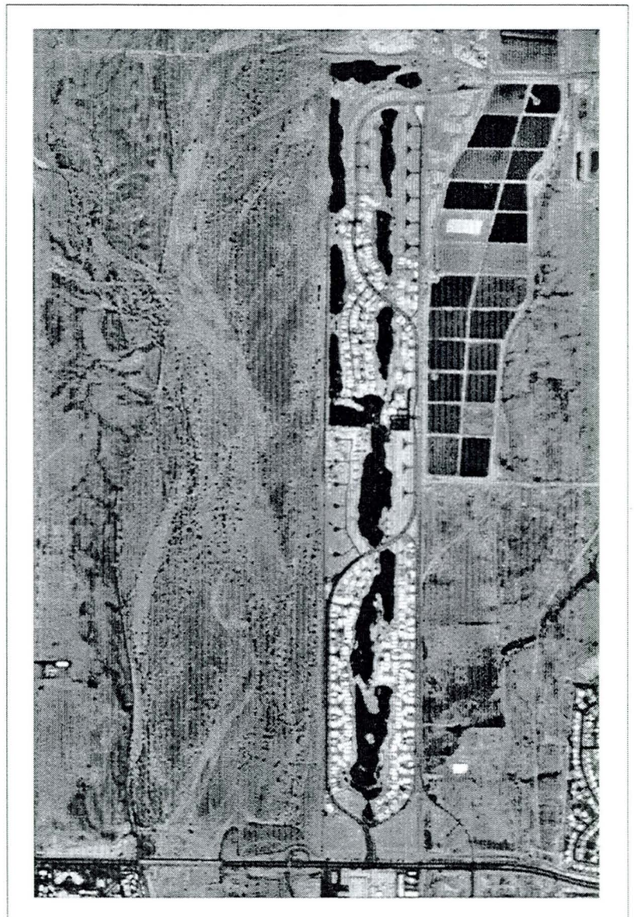
Reach 7 - Beardsley Road alignment to Bell Road



(General Land Office, 1895)



(United States Geological Survey, 1981)



(Flood Control District of Maricopa County, 1999)

1895

Original Mapping: 1954, 1957
Revisions: 1978

1999

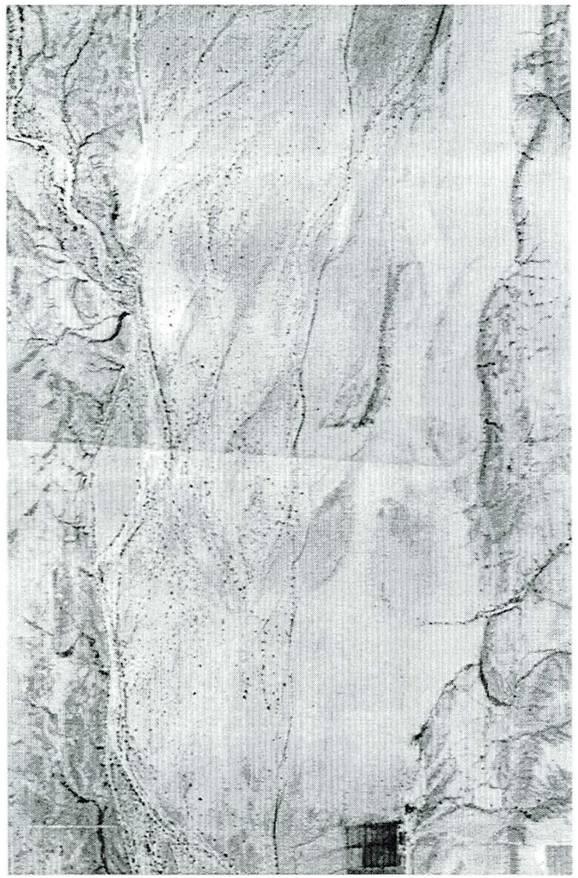
N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 7 - Beardsley Road alignment to Bell Road

NOT AVAILABLE



(Agricultural Stabilization & Conservation Service, 1949)

(Agricultural Stabilization & Conservation Service, 1954)

1934

February 14, 1949

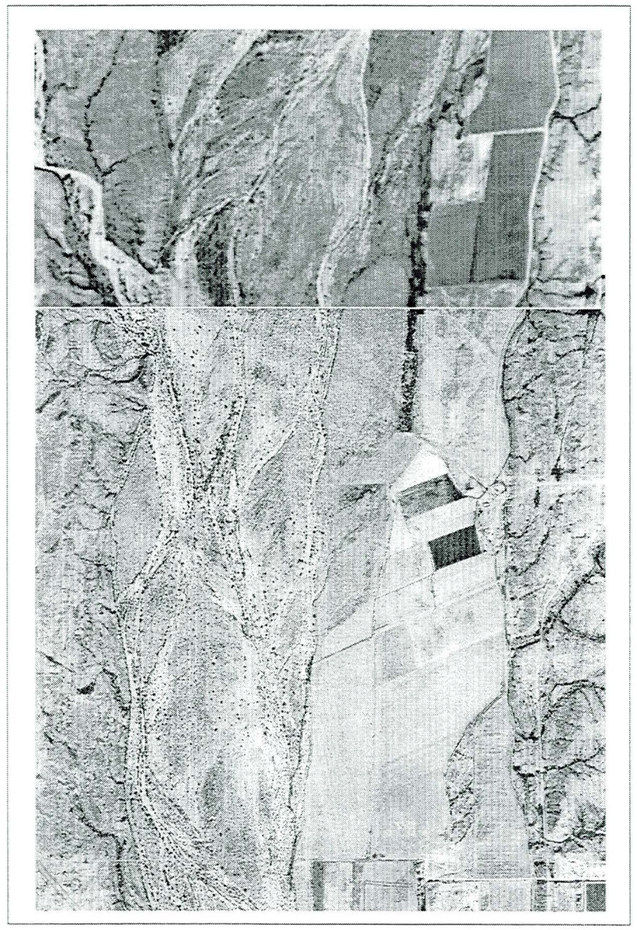
January 24, 1954

N

2000 0 2000 4000 6000 8000 Feet

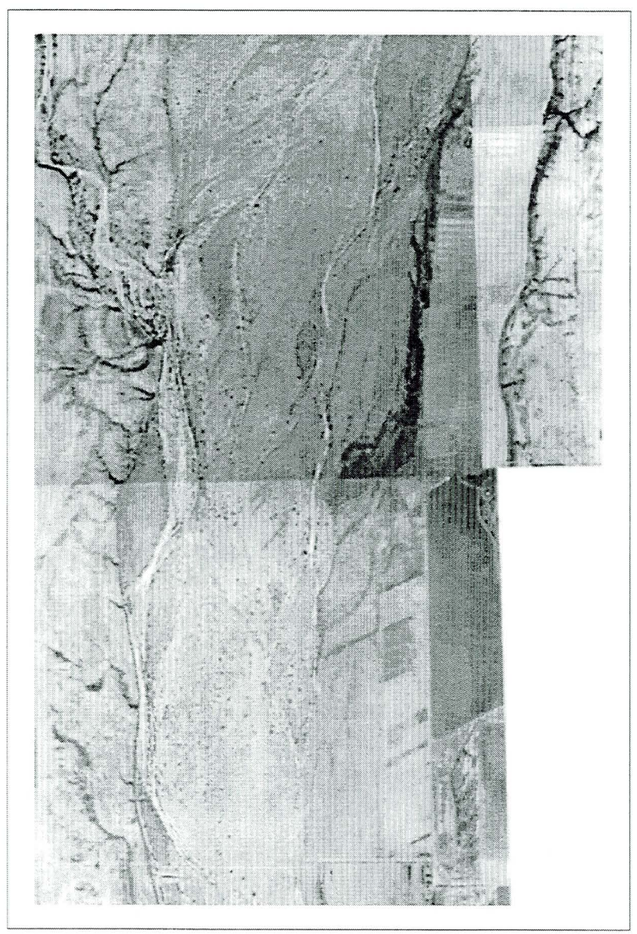
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 7 - Beardsley Road alignment to Bell Road



(Flood Control District of Maricopa County, 1959)
(Aerial Mapping Company, 1960)

1959/February 7, 1960

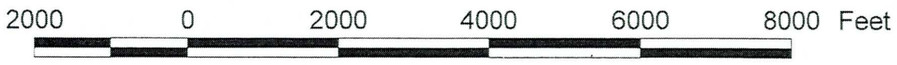


(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964

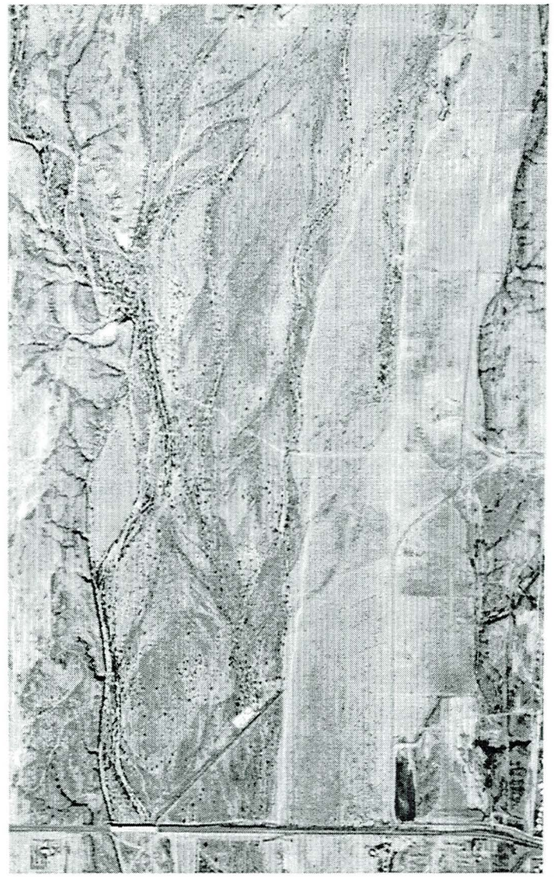
(Landiscor Aerial Information, 1967)

October 9, 1967



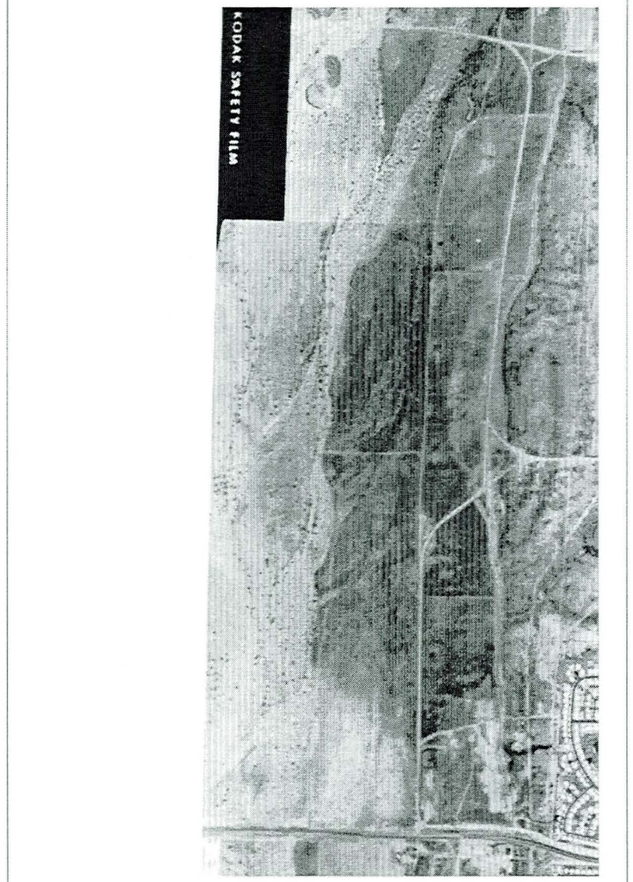
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 7 - Beardsley Road alignment to Bell Road



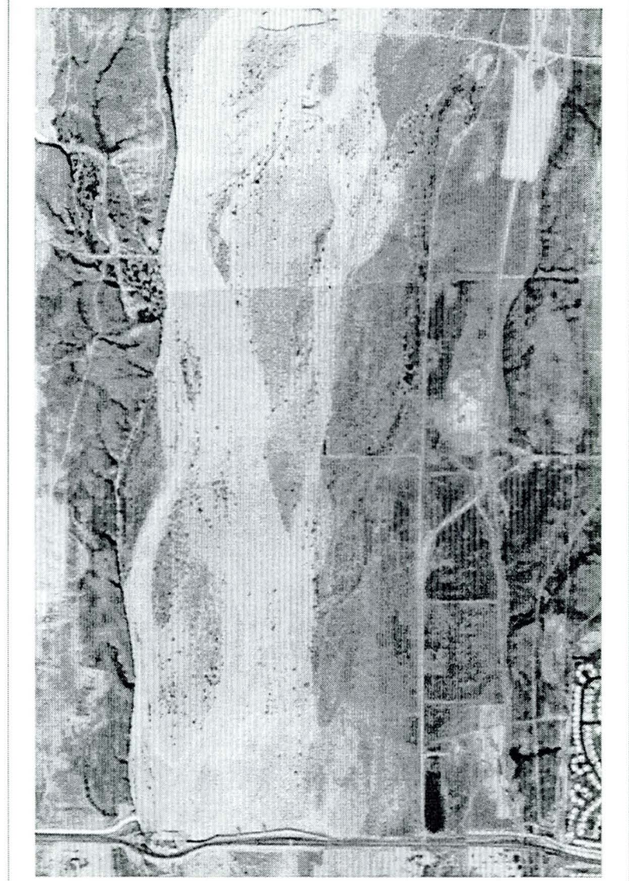
(Cooper Aerial Surveys Company, 1977)

December 5, 1977



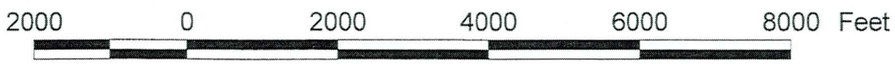
(United States Department of Agriculture, 1979)

May 13, 1979



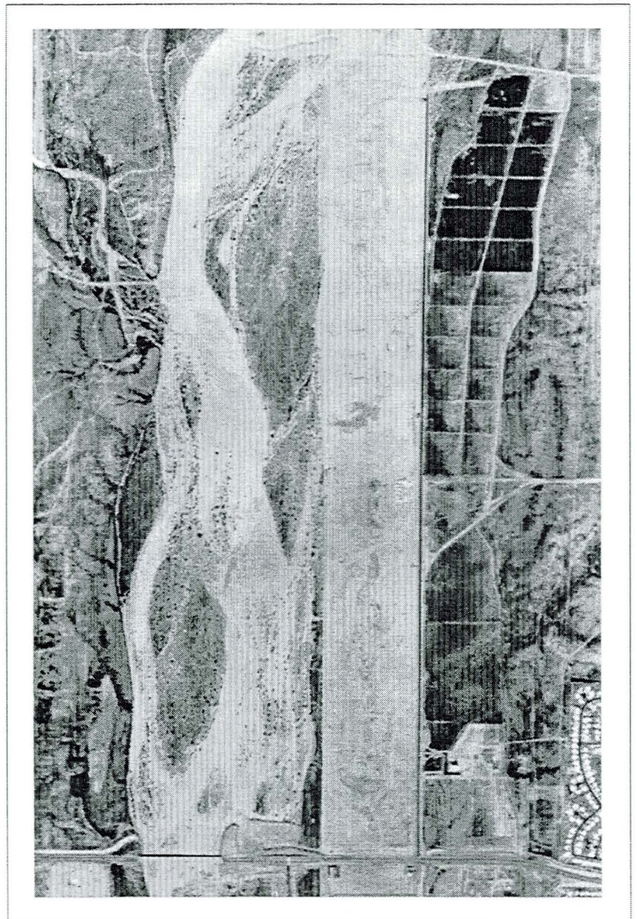
(Landiscor Aerial Information, 1980)

December 30, 1980



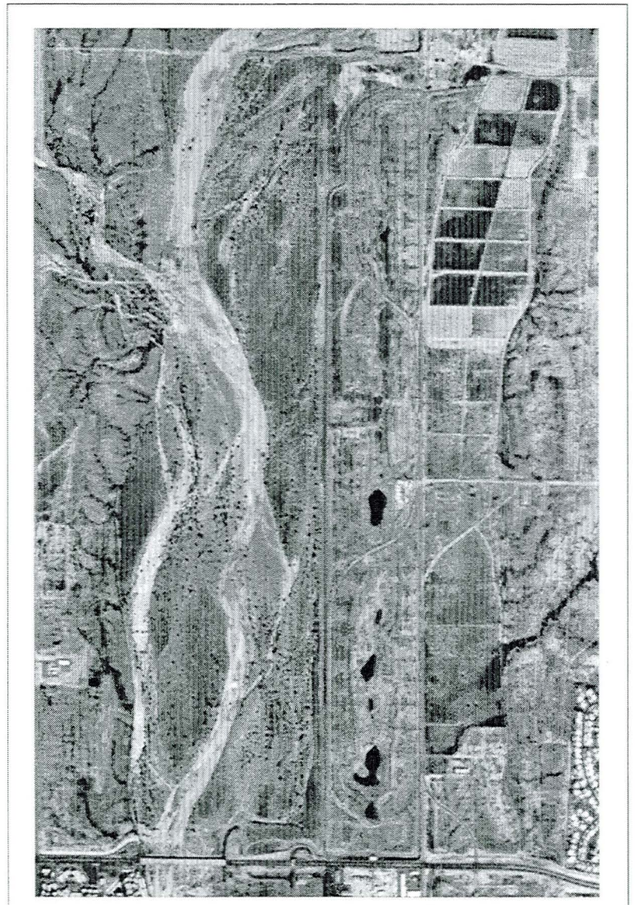
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 7 - Beardsley Road alignment to Bell Road



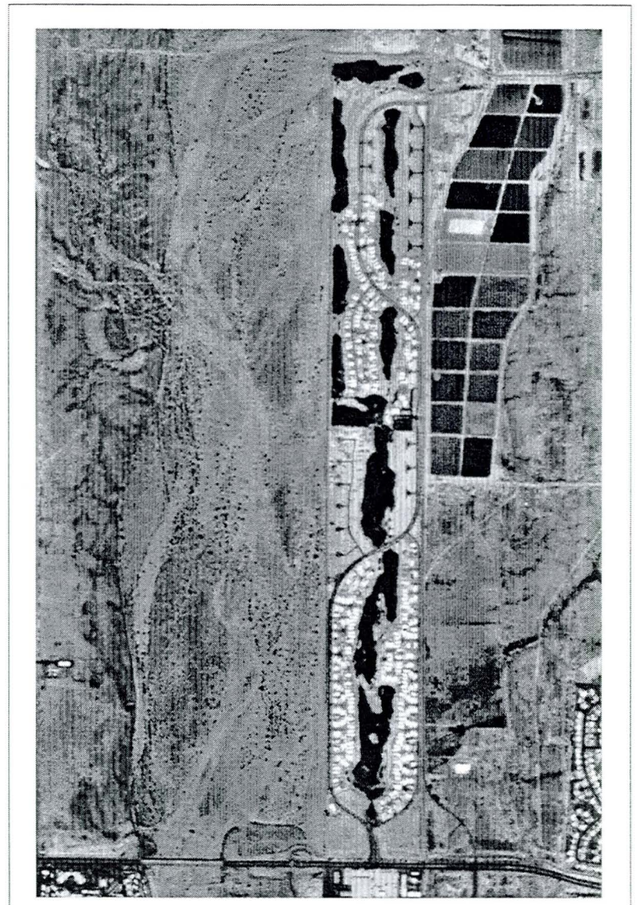
(Aerial Mapping Company, 1977)

March 21, 1985



(United States Geological Survey, 1992)

September 6, 1992



(United States Geological Survey, 1997)

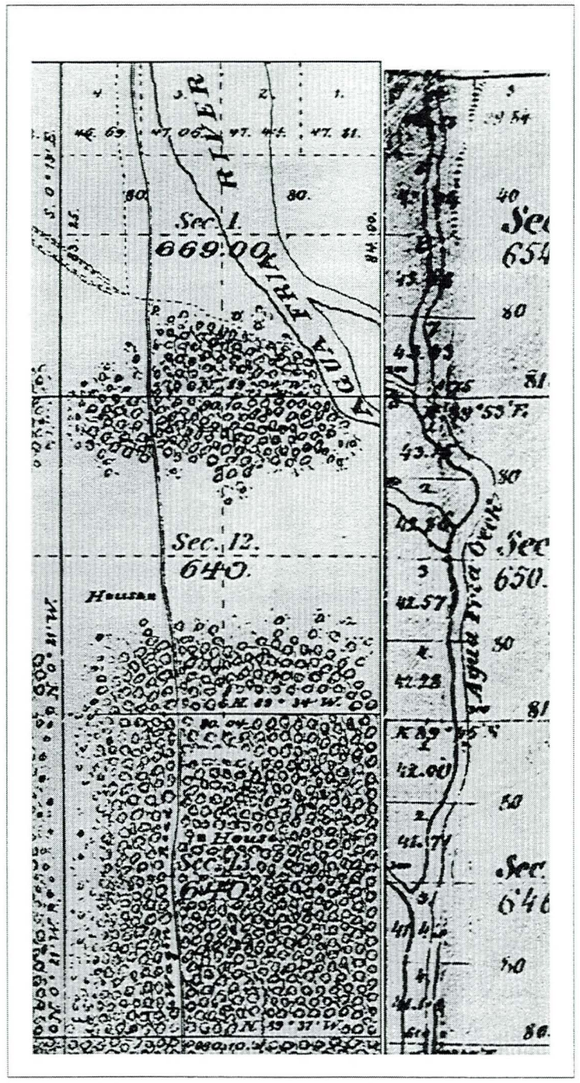
April 30, 1997

N

2000 0 2000 4000 6000 8000 Feet

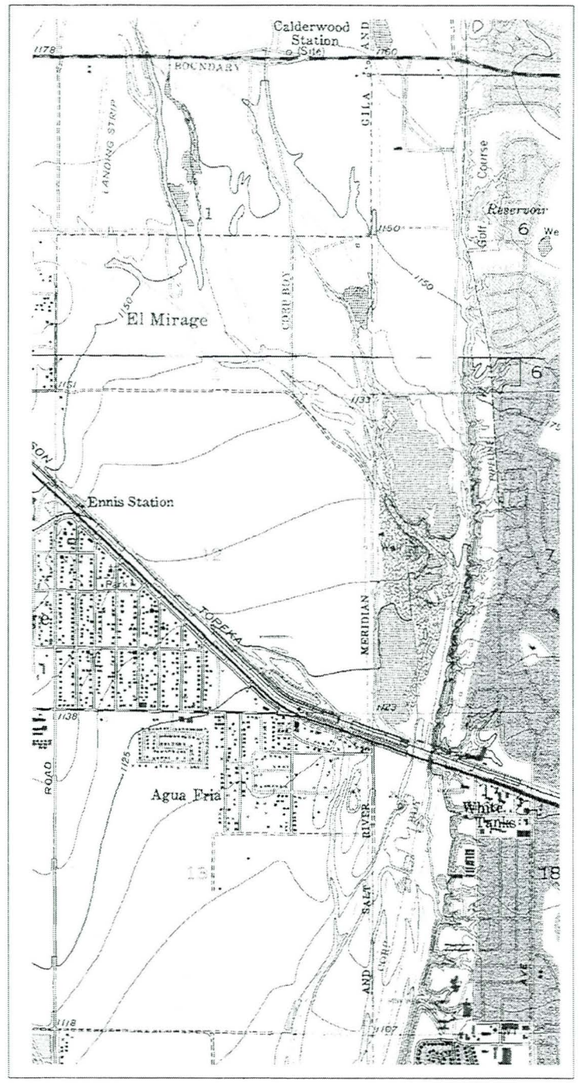
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 8 - Bell Road to Cactus Road alignment



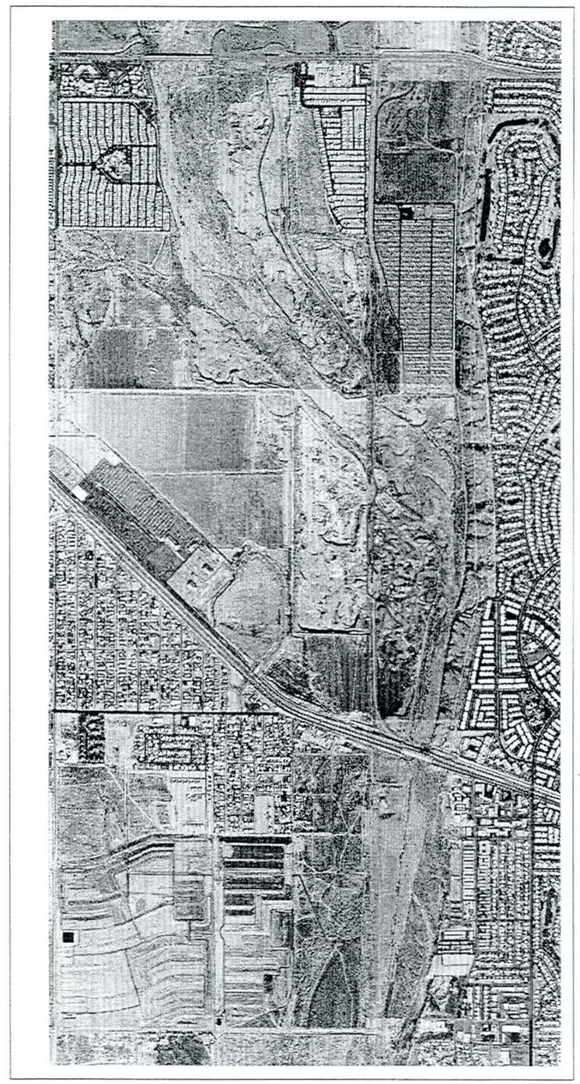
(General Land Office, 1870)
(General Land Office, 1896)

1896/1870



(United States Geological Survey, 1982)

Original Mapping: 1954, 1957
Revisions: 1978



(Flood Control District of Maricopa County, 1999)

1999

N

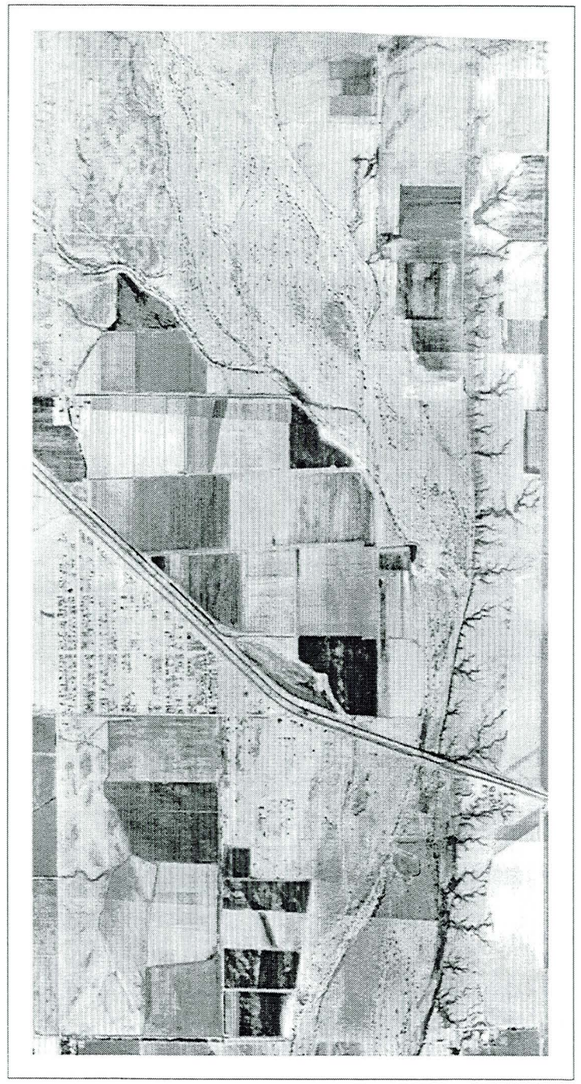
2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 8 - Bell Road to Cactus Road alignment

NOT AVAILABLE

1934



(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949

(Agricultural Stabilization & Conservation Service, 1954)

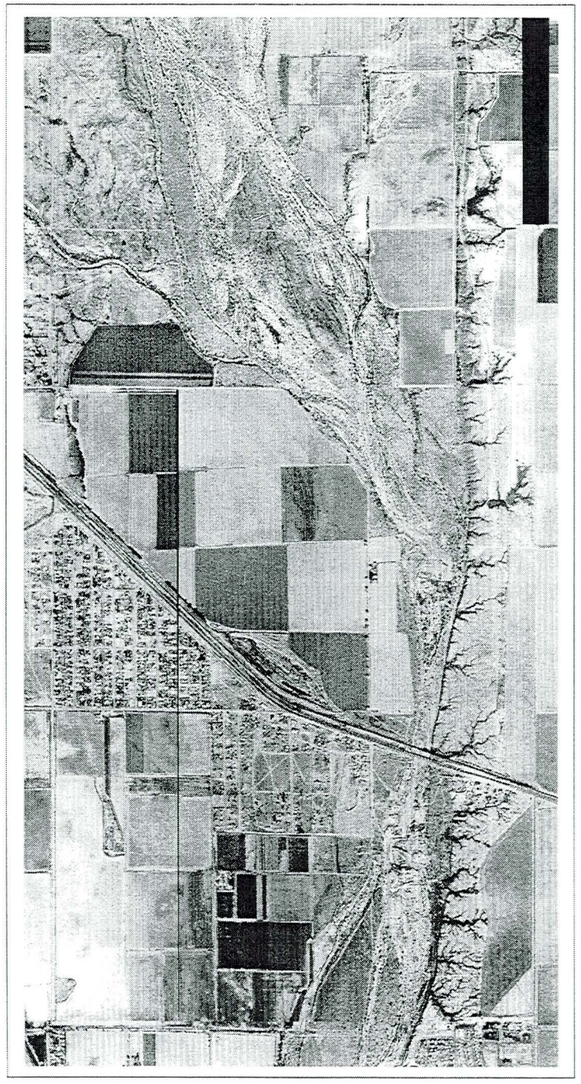
January 24, 1954

N

2500 0 2500 5000 7500 10000 Feet

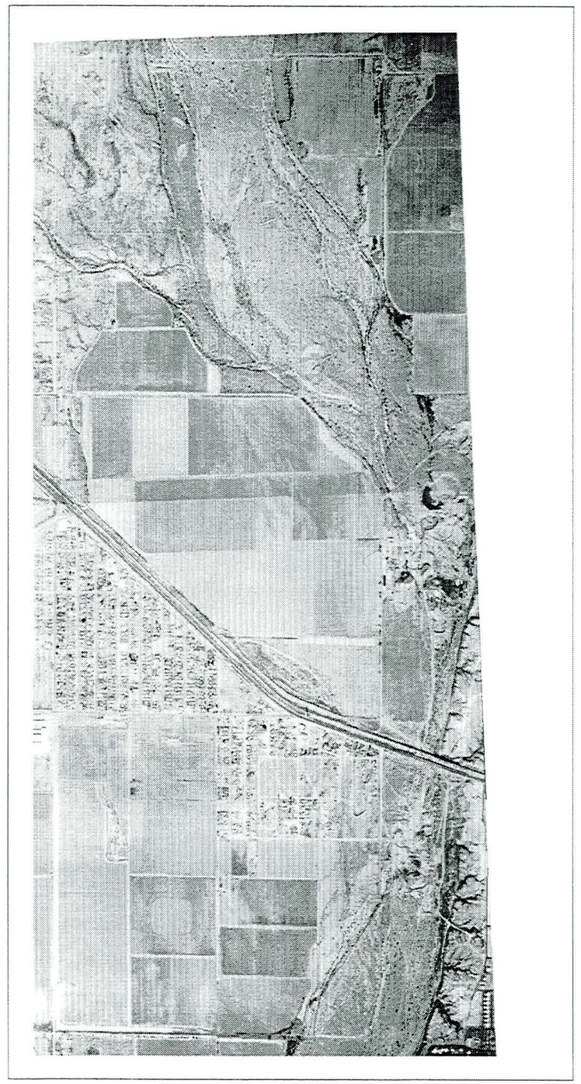
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 8 - Bell Road to Cactus Road alignment



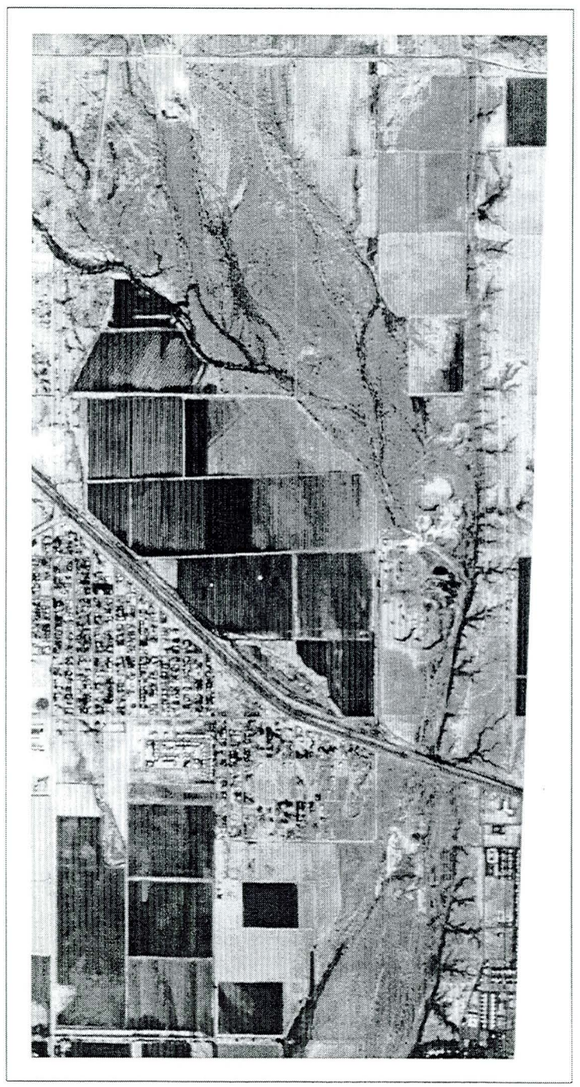
(Flood Control District of Maricopa County, 1959)

1959



(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964



(Landiscor Aerial Information, 1967)

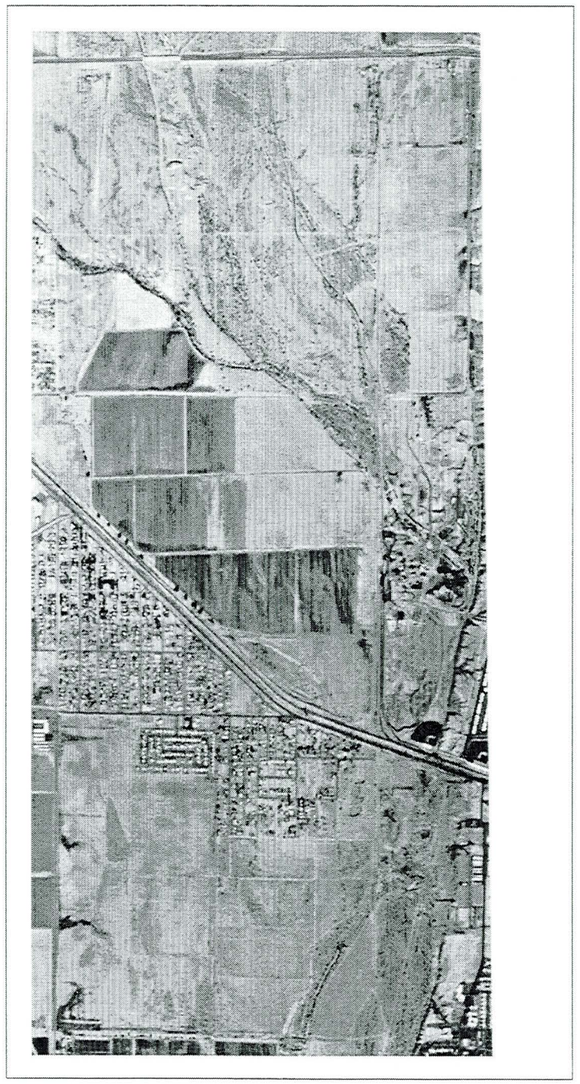
October 9, 1967

N

2500 0 2500 5000 7500 10000 Feet

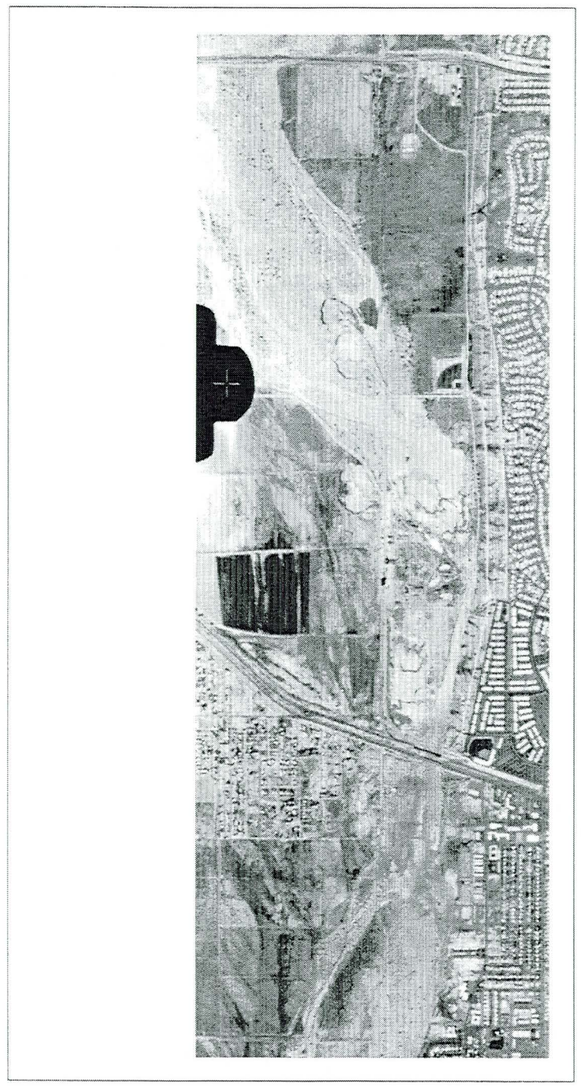
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 8 - Bell Road to Cactus Road alignment



(Cooper Aerial Surveys Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979

(Landiscor Aerial Information, 1980)

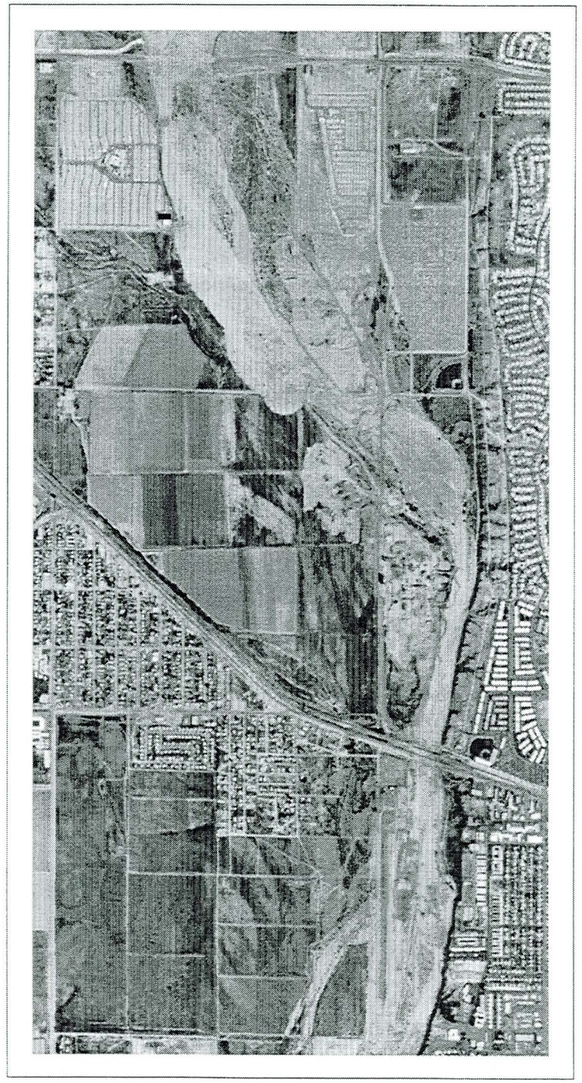
December 30, 1980

N

2500 0 2500 5000 7500 10000 Feet

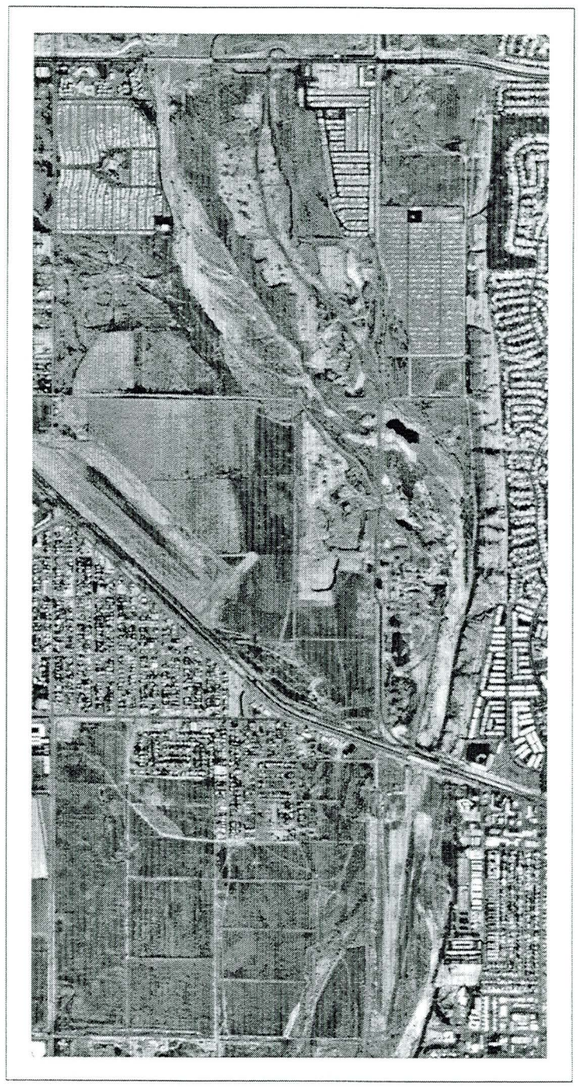
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 8 - Bell Road to Cactus Road alignment



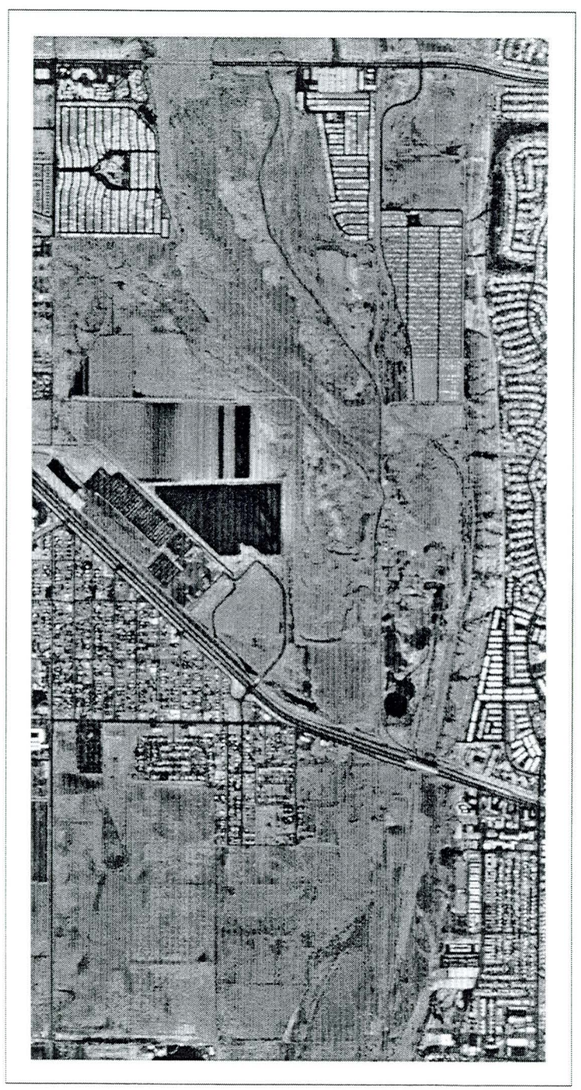
(Aerial Mapping Company, 1985)

March 21, 1985



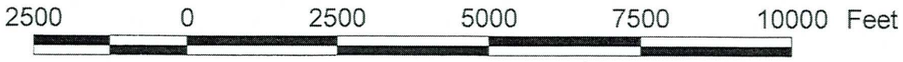
(United States Geological Survey, 1992)

September 6, 1992



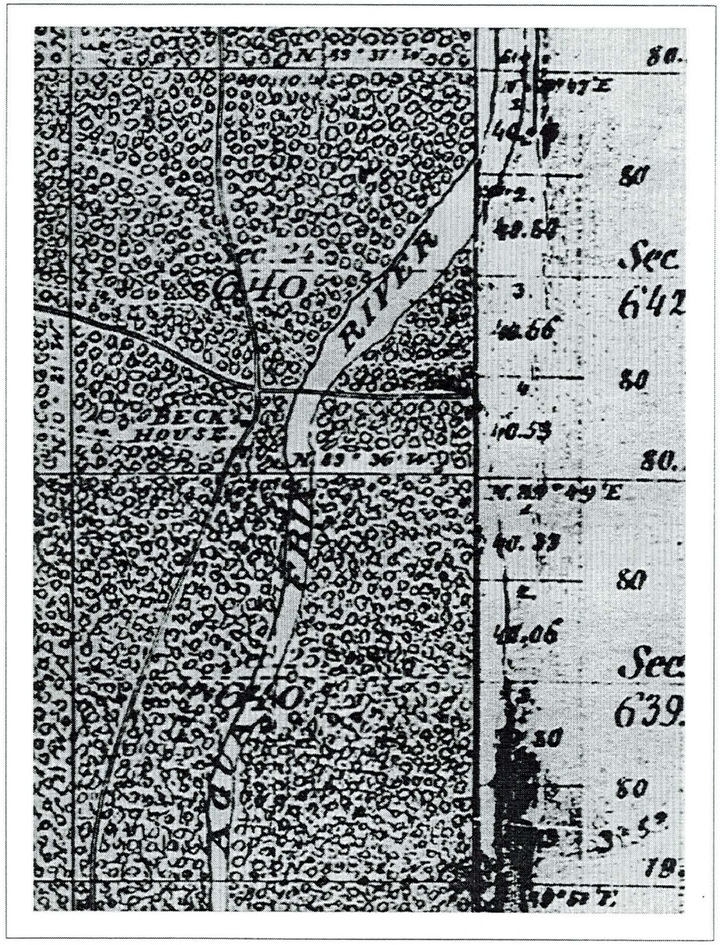
(United States Geological Survey, 1997)

April 30, 1997



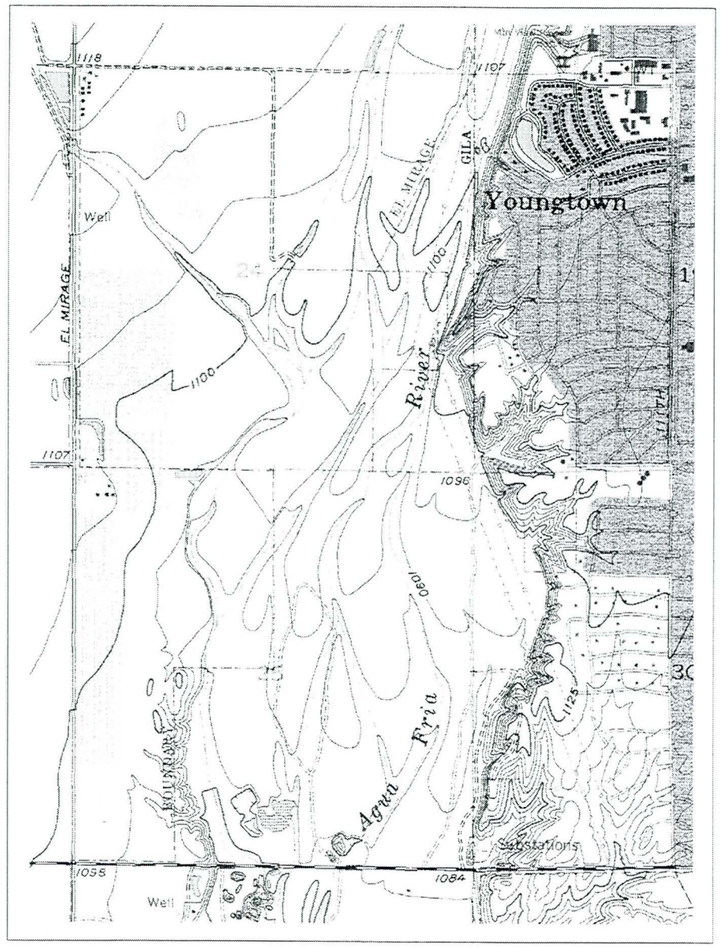
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 9 - Cactus Road alignment to Olive Ave.



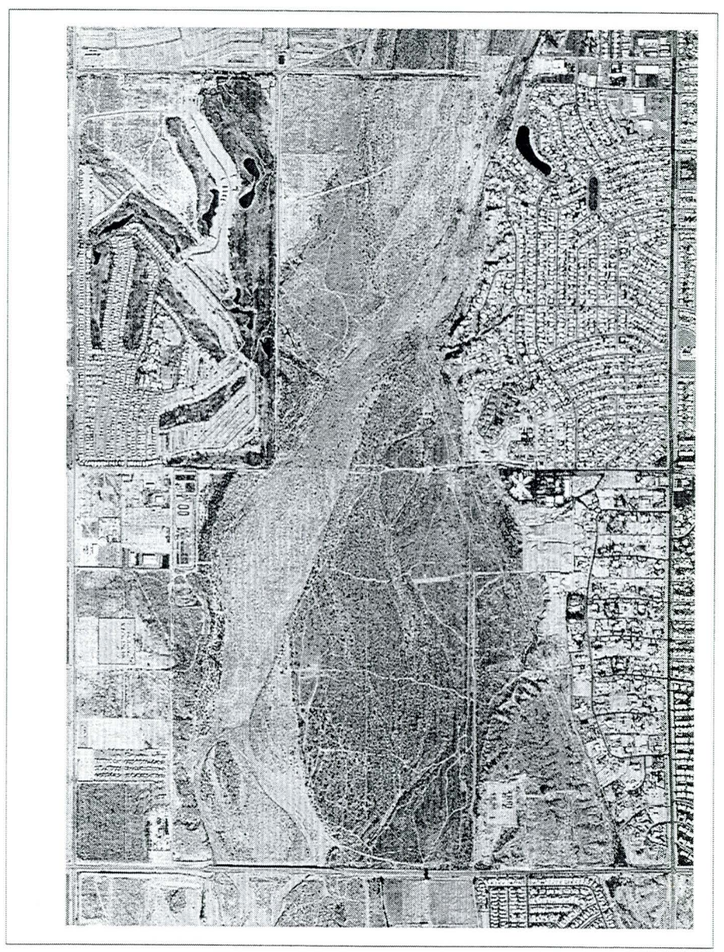
(General Land Office, 1870)
(General Land Office, 1896)

1896/1870



(United States Geological Survey, 1982)

Original Mapping: 1954, 1957
Revisions: 1978



(Flood Control District of Maricopa County, 1999)

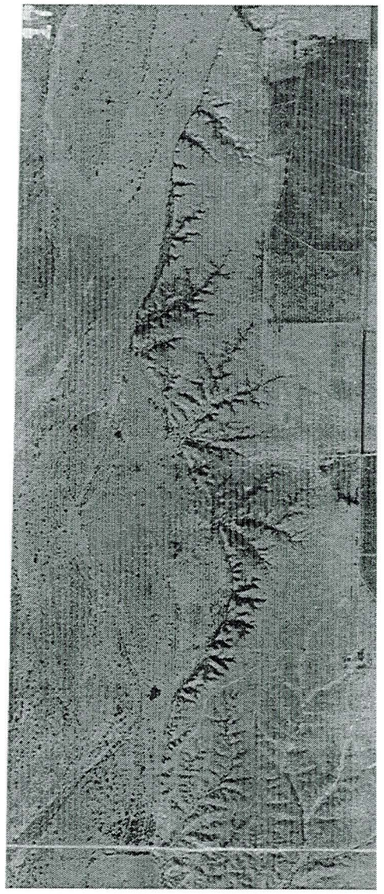
1999

N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 9 - Cactus Road alignment to Olive Ave.

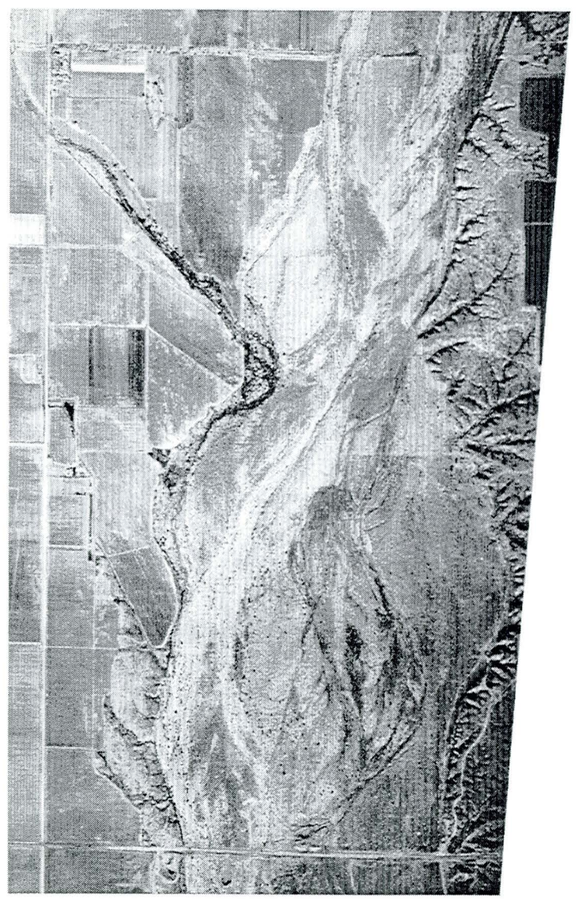


(Arizona Salt River Project, 1934)

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

January 24, 1954

N

2000 0 2000 4000 6000 8000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 9 - Cactus Road alignment to Olive Ave.

(Flood Control District of Maricopa County, 1959)

1959

(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964

(Landiscor Aerial Information, 1967)

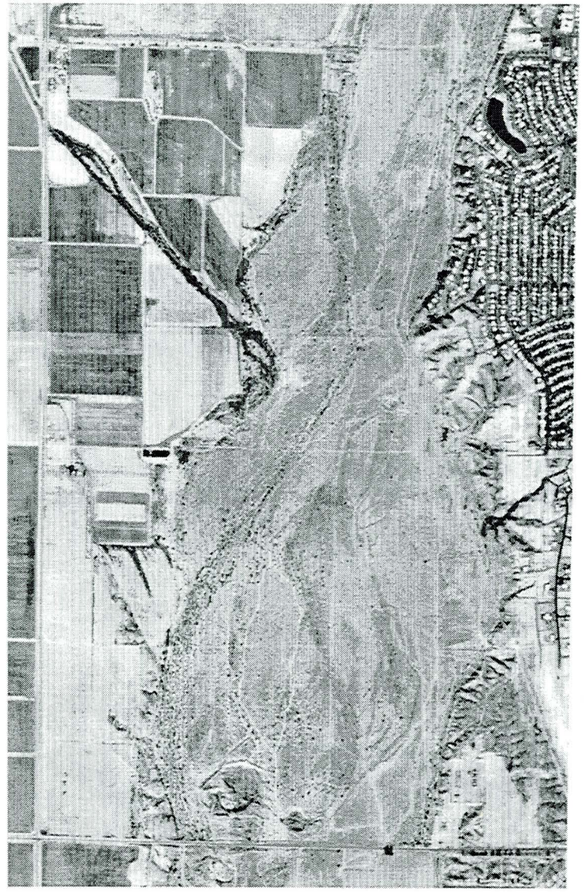
October 9, 1967

N

2000 0 2000 4000 6000 8000 Feet

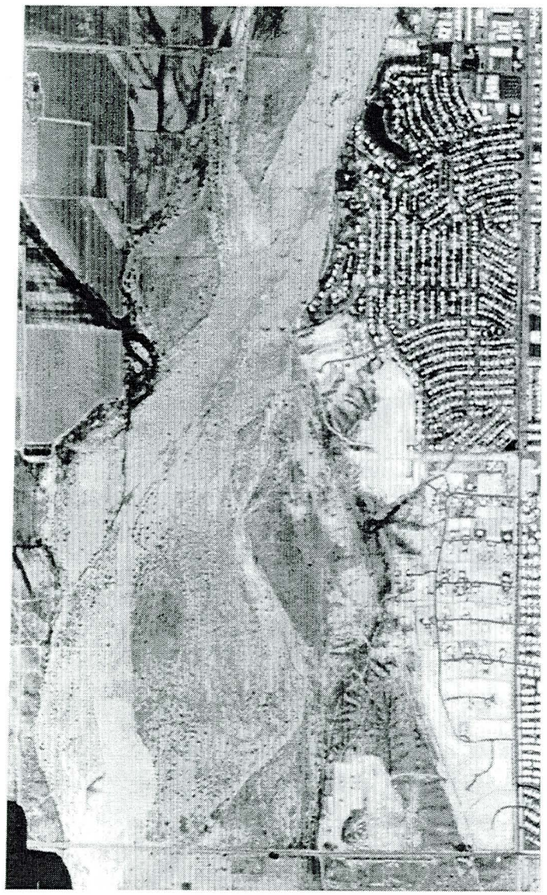
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 9 - Cactus Road alignment to Olive Ave.



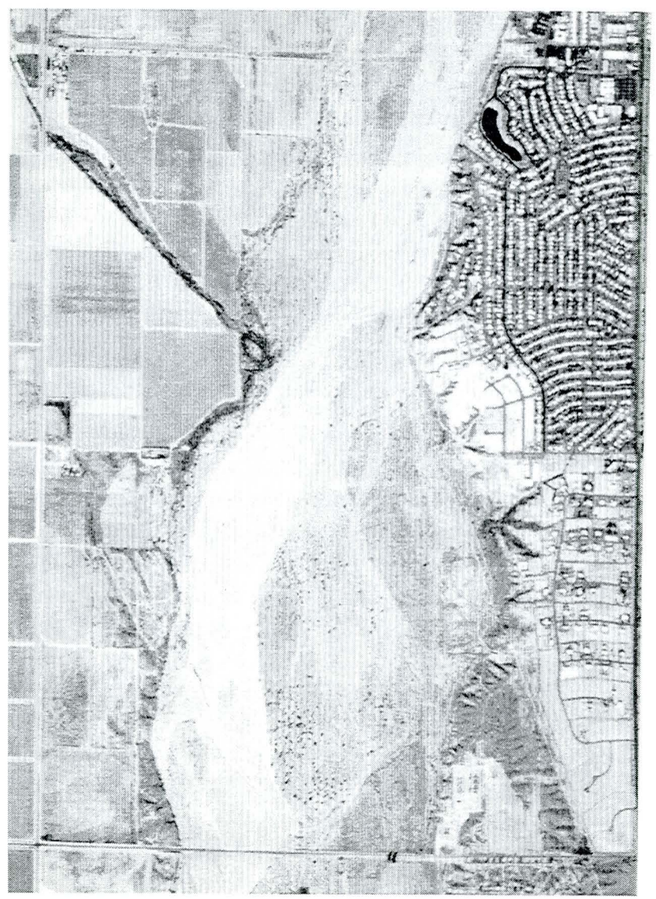
(Cooper Aerial Survey Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979



(Landiscor Aerial Information, 1980)

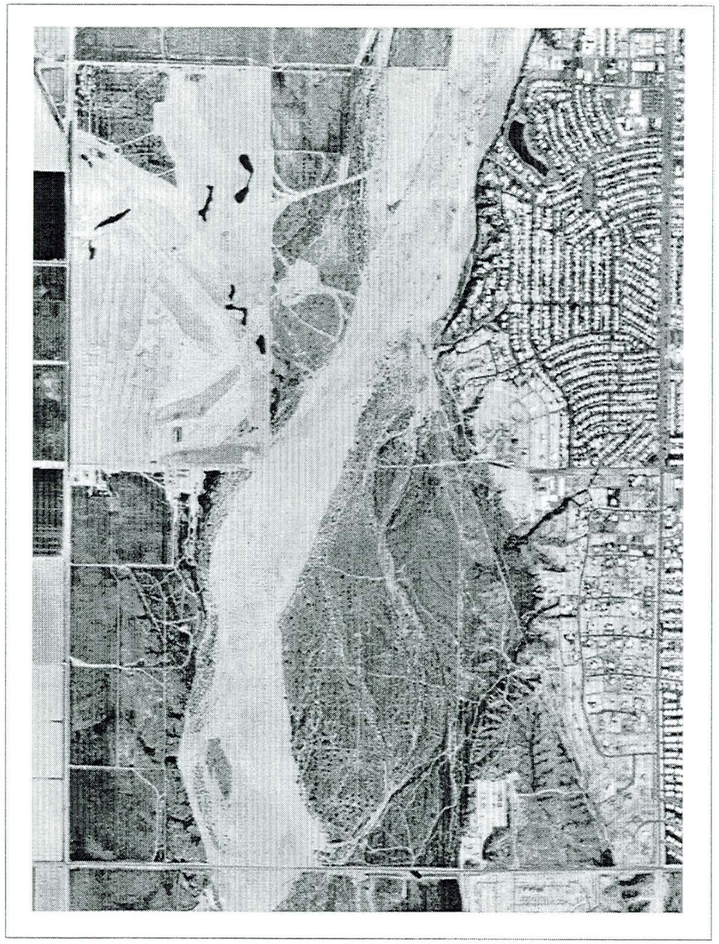
December 30, 1980

N

2000 0 2000 4000 6000 8000 Feet

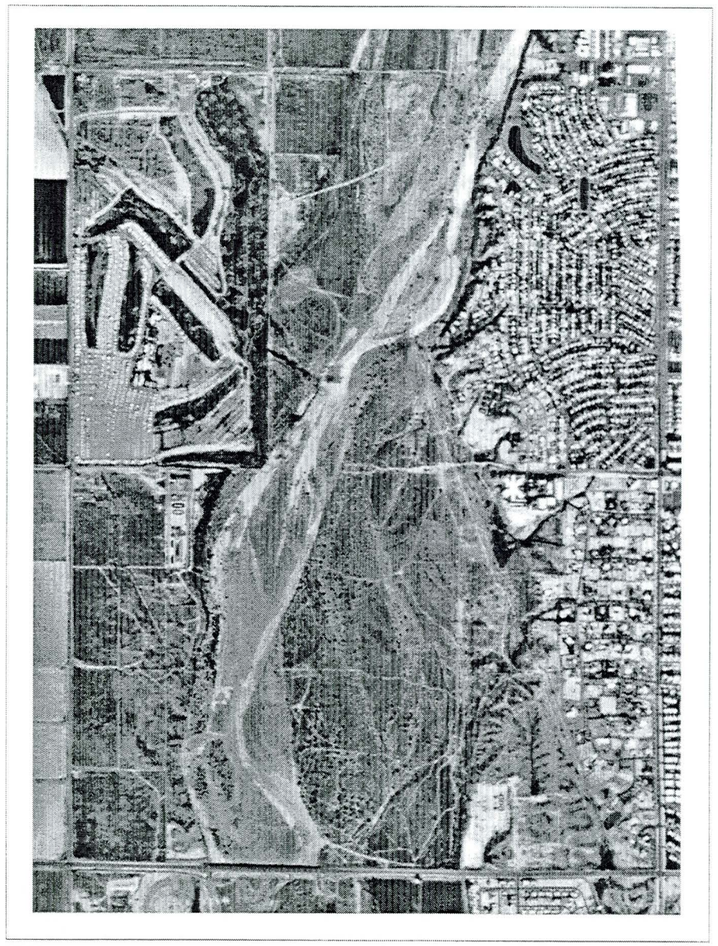
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 9 - Cactus Road alignment to Olive Ave.



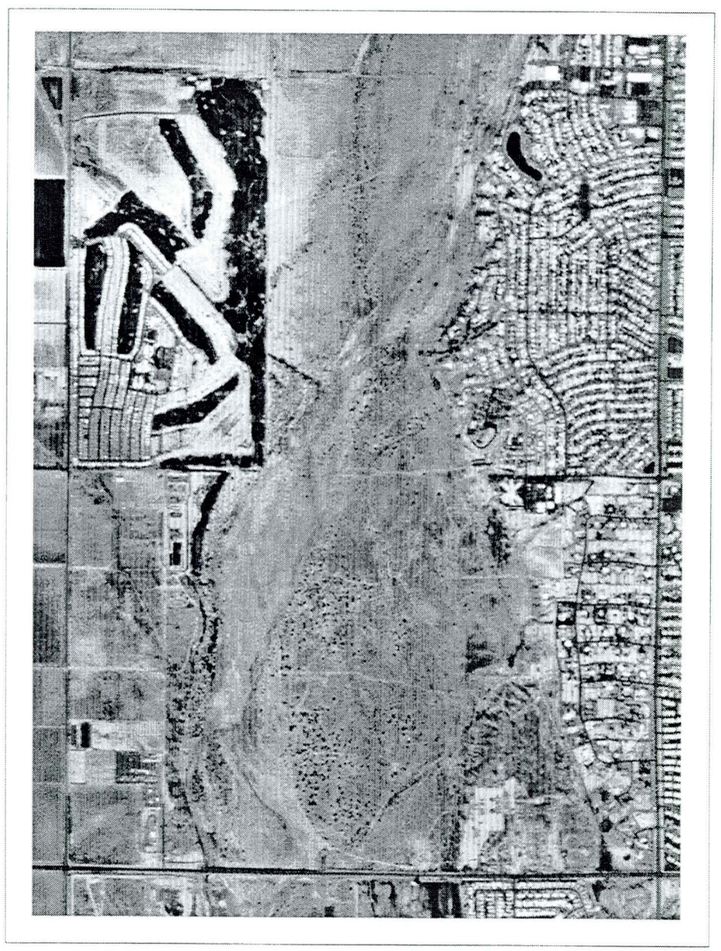
(Aerial Mapping Company, 1985)

March 21, 1985



(United States Geological Survey, 1992)

September 6, 1992



(United States Geological Survey, 1997)

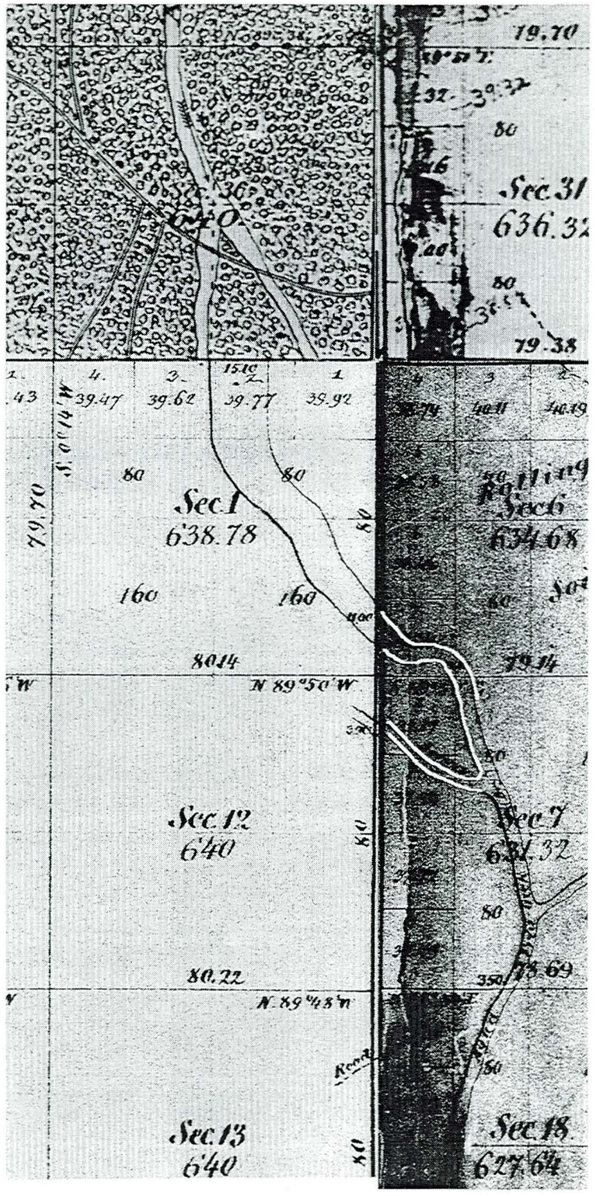
April 30, 1997

N

2000 0 2000 4000 6000 8000 Feet

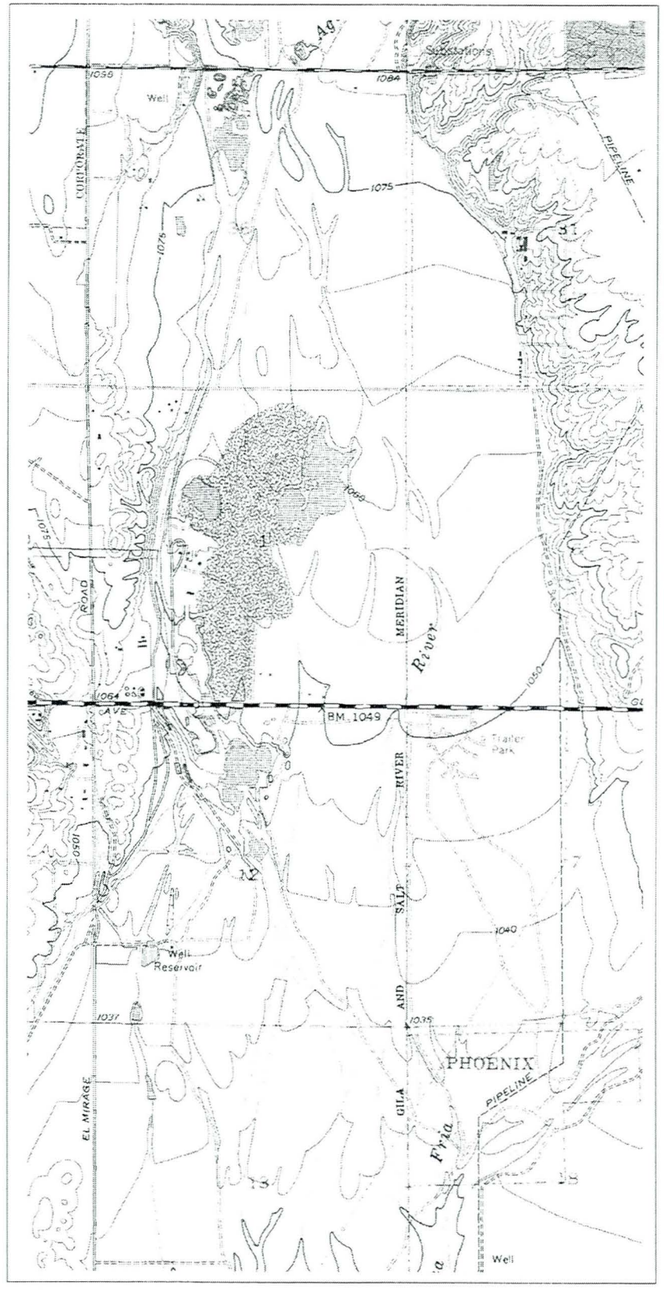
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 10 - Olive Avenue to New River confluence



(General Land Office, 1870, 1895, 1896)

1896/1870
1895

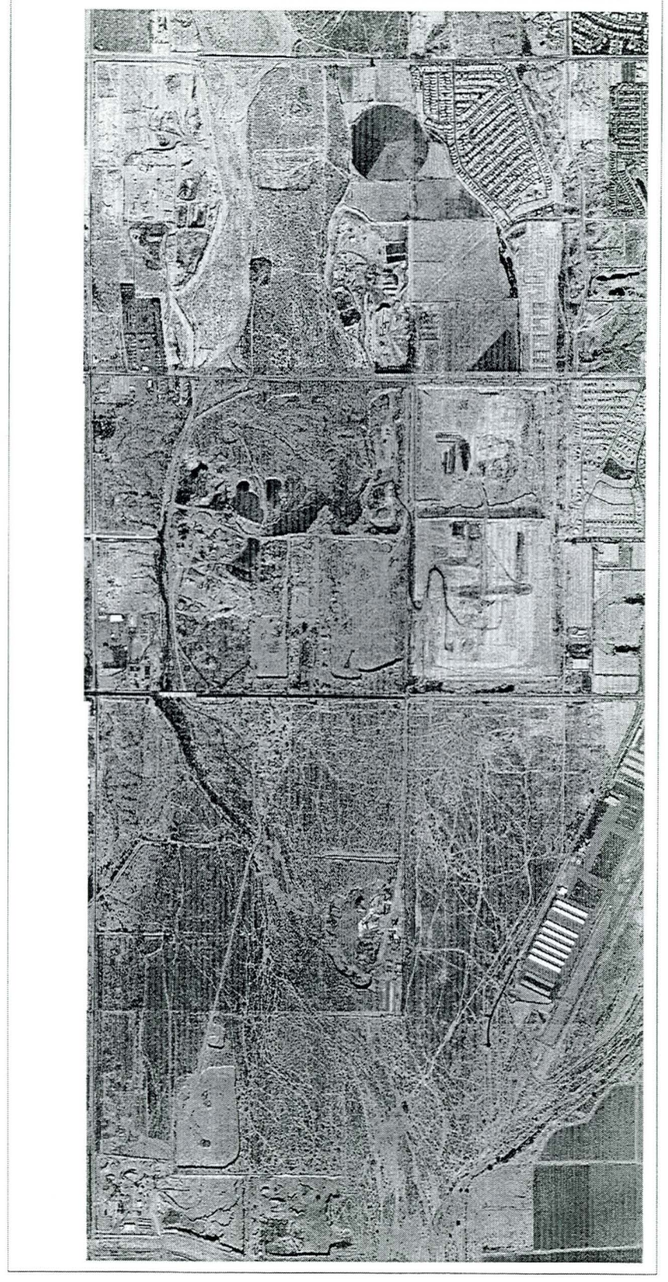


(United States Geological Survey, 1982)

Original Mapping: 1954, 1957
Revision: 1978

N

2500 0 2500 5000 7500 10000 Feet

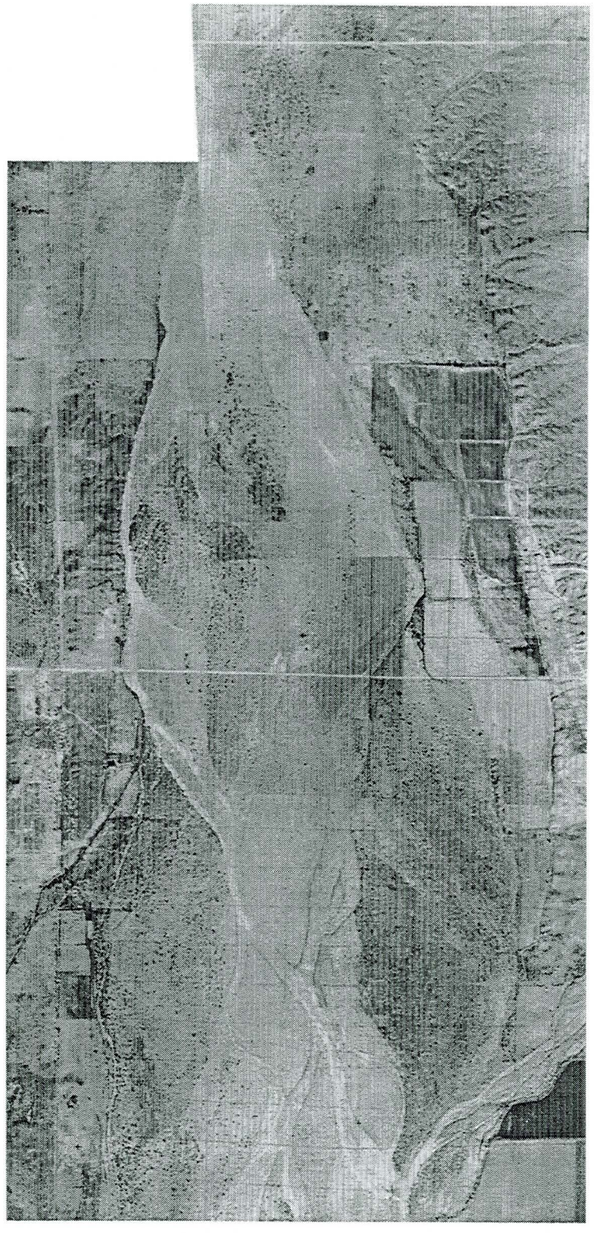


(Flood Control District of Maricopa County, 1999)

1999

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 10 - Olive Avenue to New River confluence



(Arizona Salt River Project, 1934)

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949

(Agricultural Stabilization & Conservation Service, 1954)

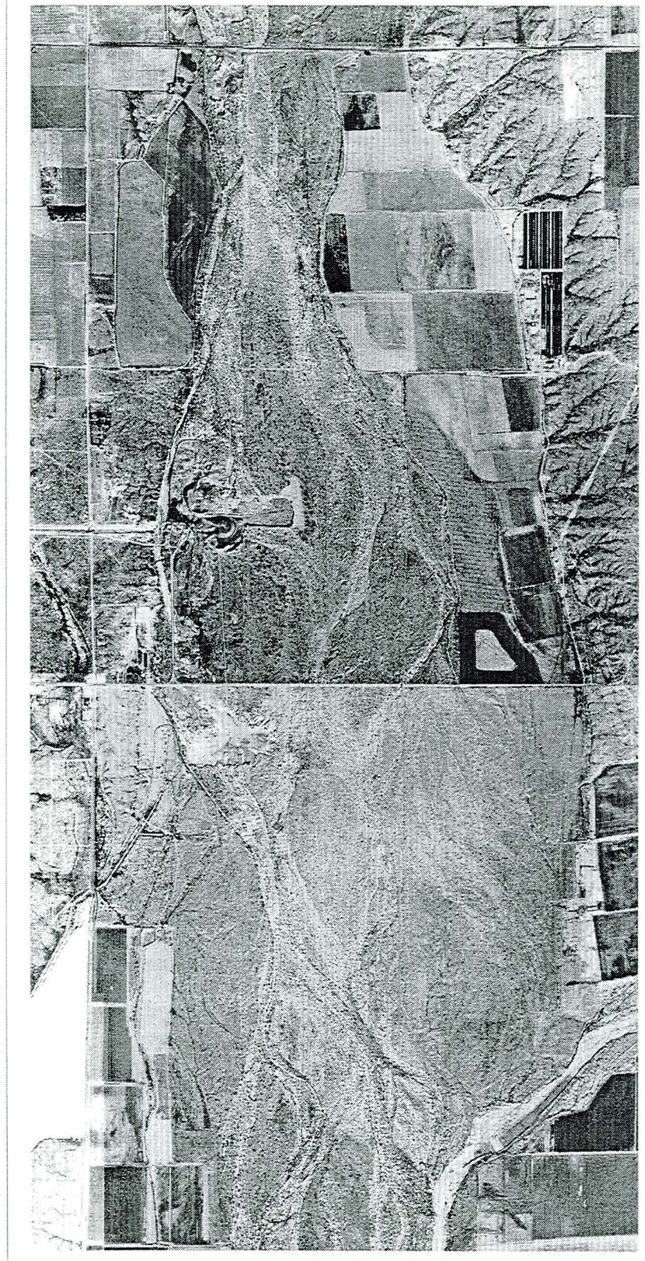
January 24, 1954

N

2500 0 2500 5000 7500 10000 Feet

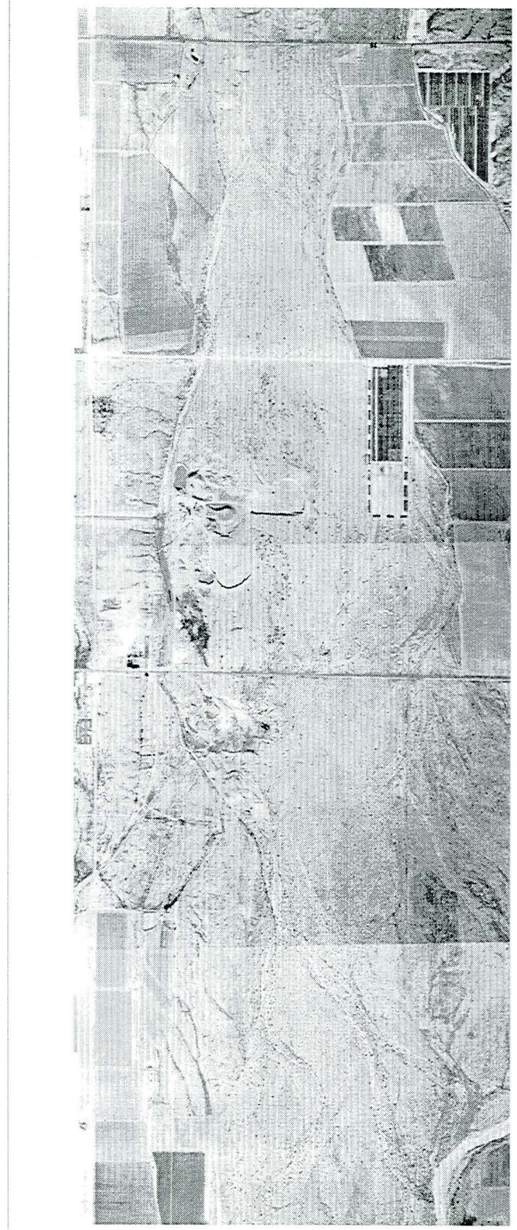
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 10 - Olive Avenue to New River confluence



(Flood Control District of Maricopa County, 1959)

1959



(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964

(Landiscor Aerial Information, 1967)

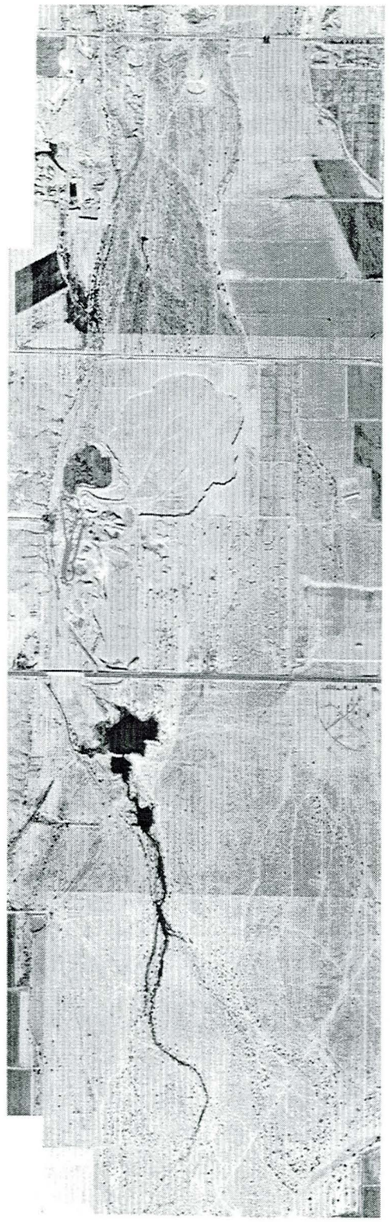
October 9, 1967

N

2500 0 2500 5000 7500 10000 Feet

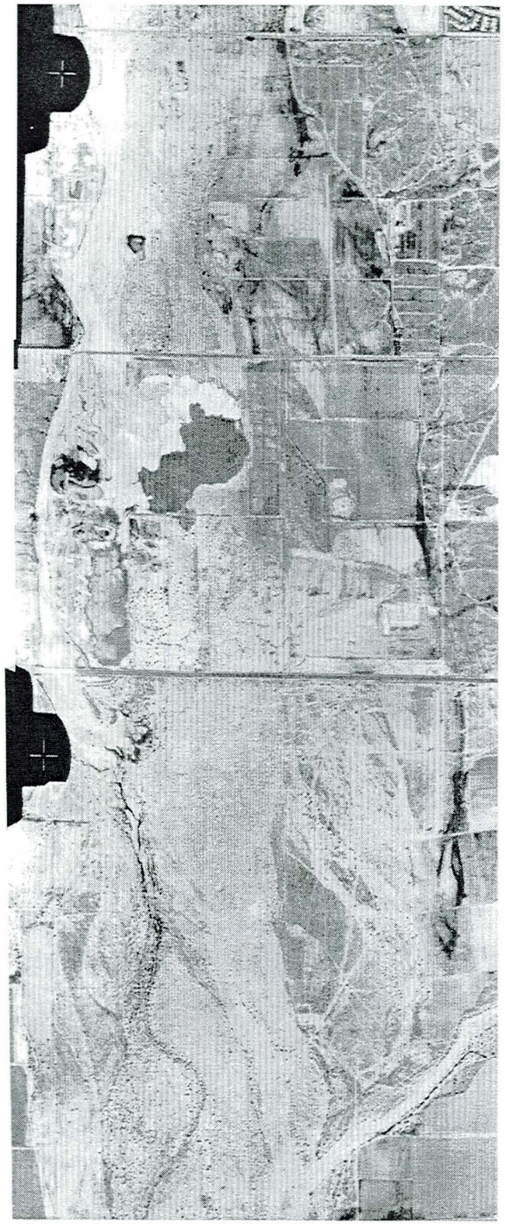
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 10 - Olive Avenue to New River confluence



(Cooper Aerial Surveys Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979

(Landiscor Aerial Information, 1980)

December 30, 1980

N

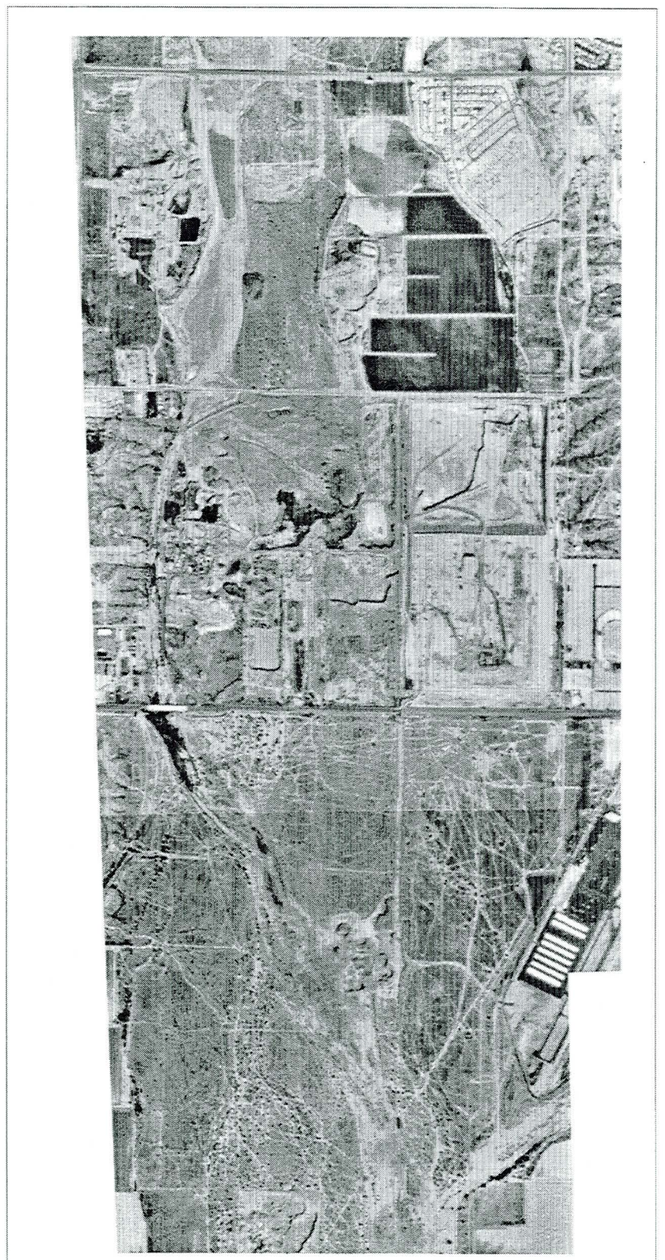
2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 10 - Olive Avenue to New River confluence

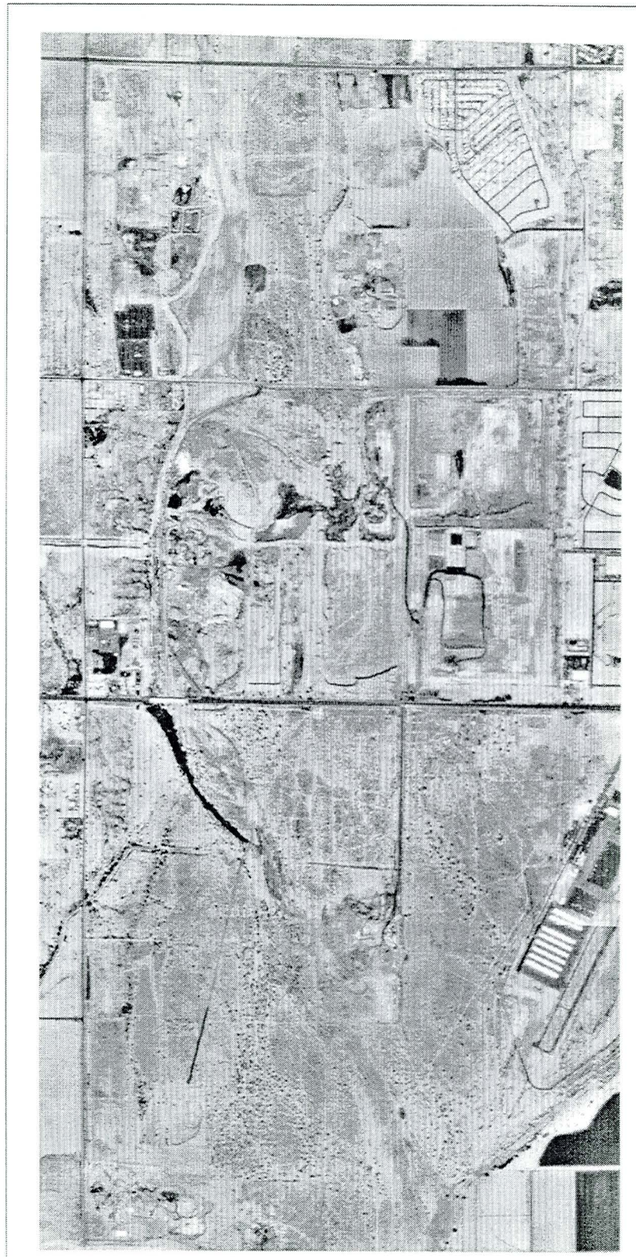
(Aerial Mapping Company, 1985)

March 21, 1985



(United States Geological Survey, 1982)

September 6, 1992



(United States Geological Survey, 1997)

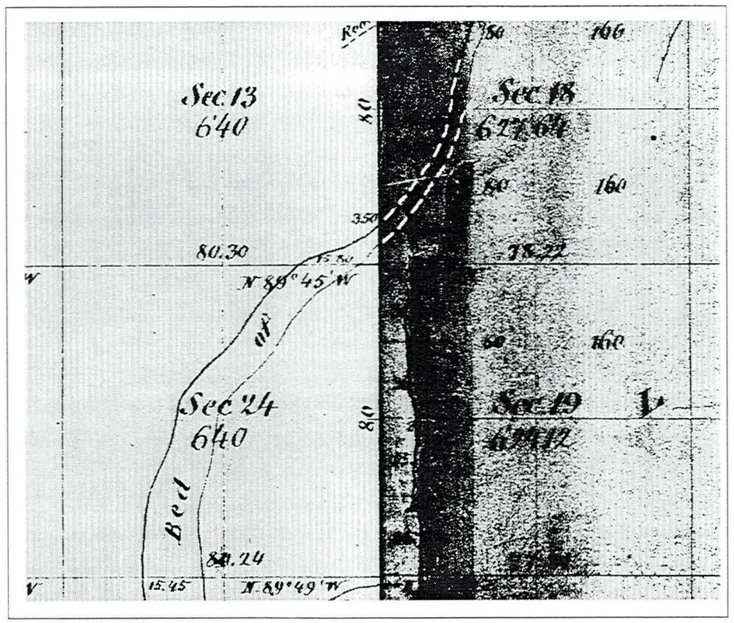
April 30, 1997

N

2500 0 2500 5000 7500 10000 Feet

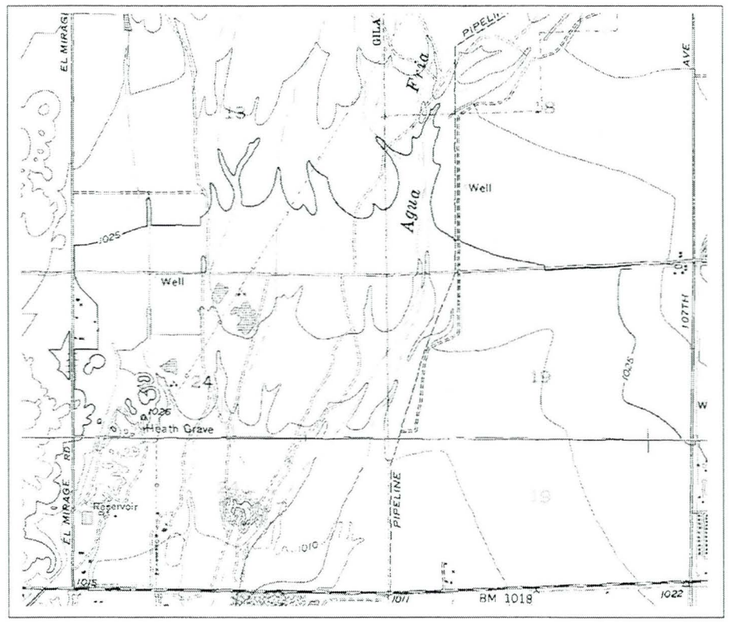
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 11 - New River confluence to Indian School Road



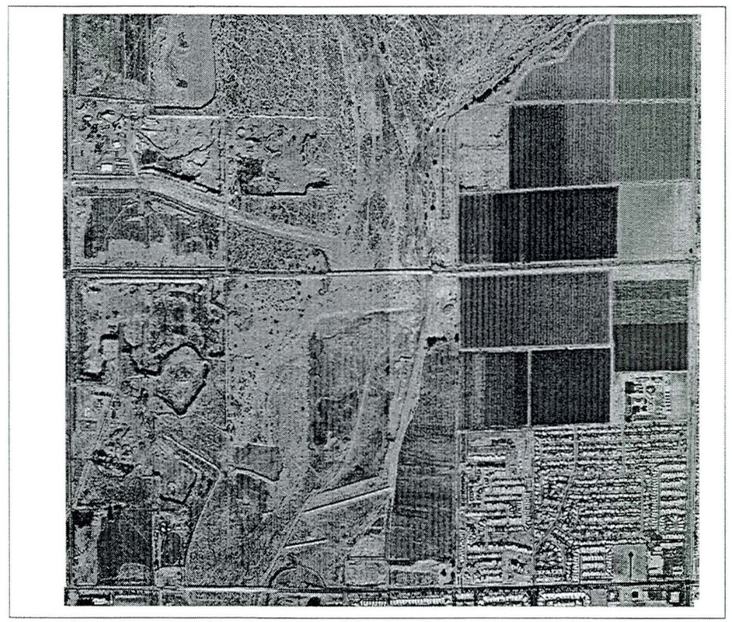
(General Land Office, 1895)

1895



(United States Geological Survey, 1982)

Original Mapping: 1954, 1957
Revisions: 1978



(Flood Control District of Maricopa County, 1999)

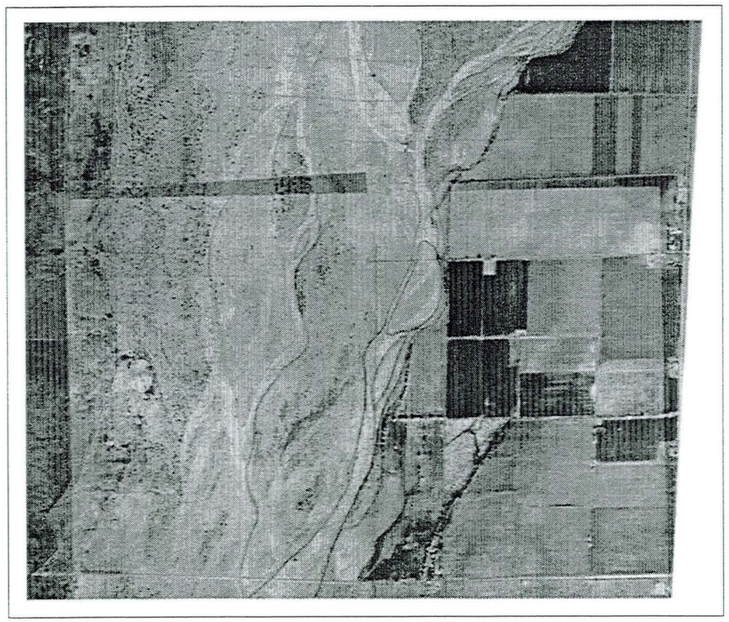
1999

N

2500 0 2500 5000 7500 10000 Feet

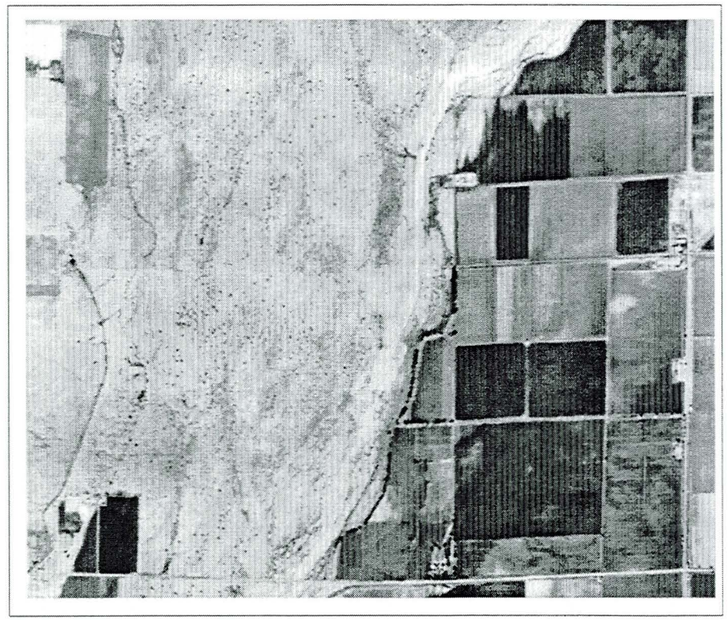
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 11 - New River confluence to Indian School Road



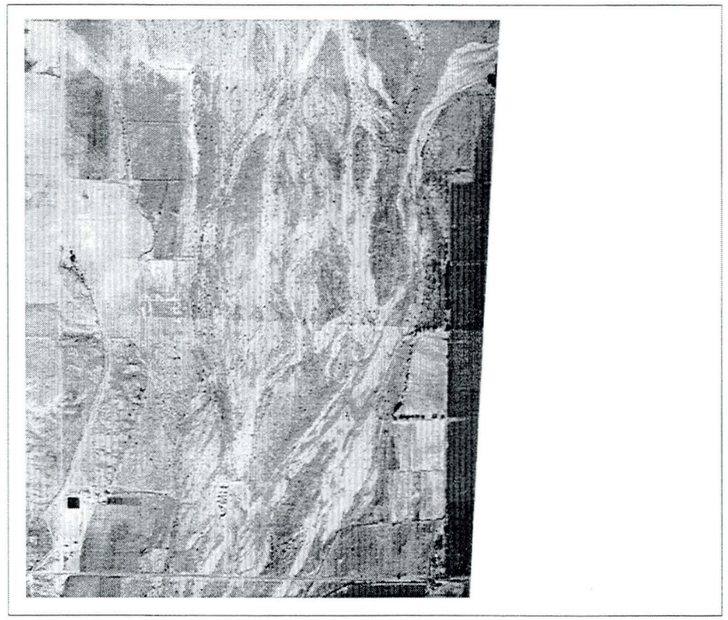
(Arizona Salt River Project, 1934)

1934



(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

January 24, 1954

N

2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

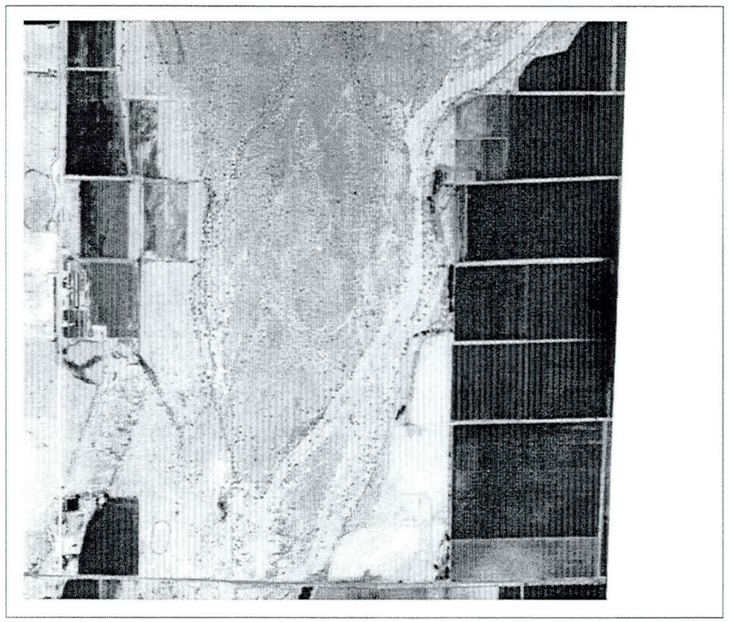
Reach 11 - New River confluence to Indian School Road

(Flood Control District of Maricopa County, 1959)

1959

(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964



(Landiscor Aerial Information, 1967)

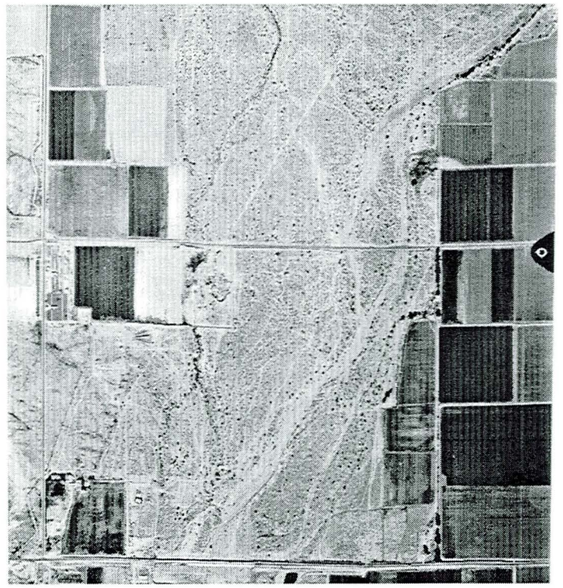
October 9, 1967

N

2500 0 2500 5000 7500 10000 Feet

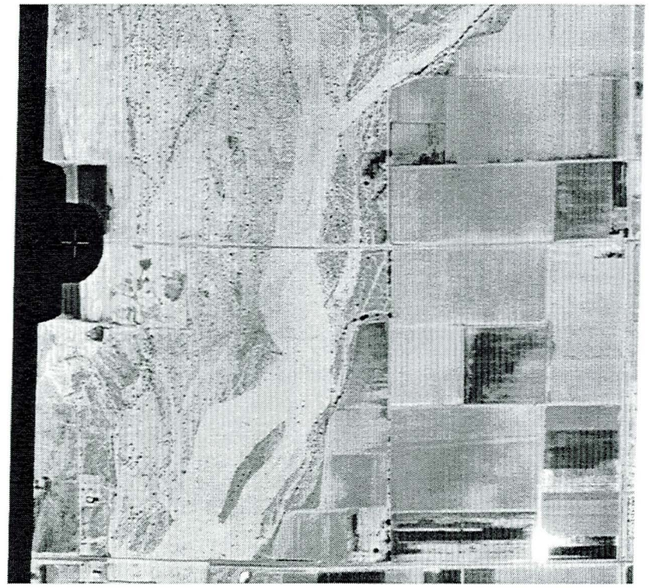
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 11 - New River confluence to Indian School Road



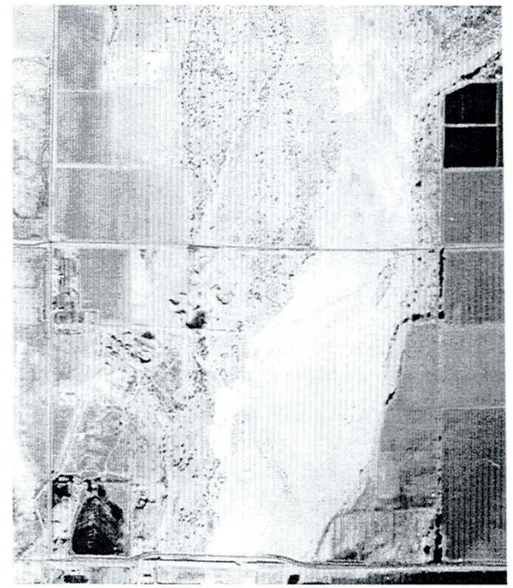
(Cooper Aerial Surveys Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979



(Landiscor Aerial Information, 1980)

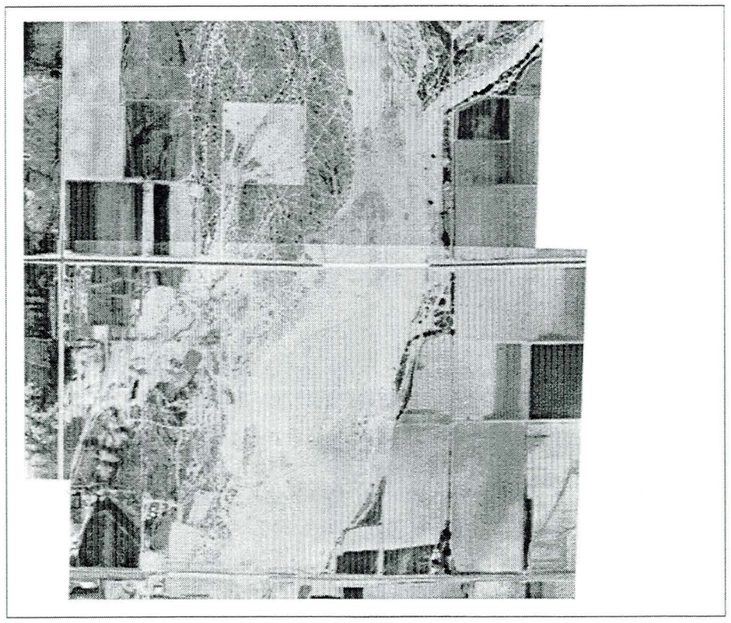
December 30, 1980

N

2500 0 2500 5000 7500 10000 Feet

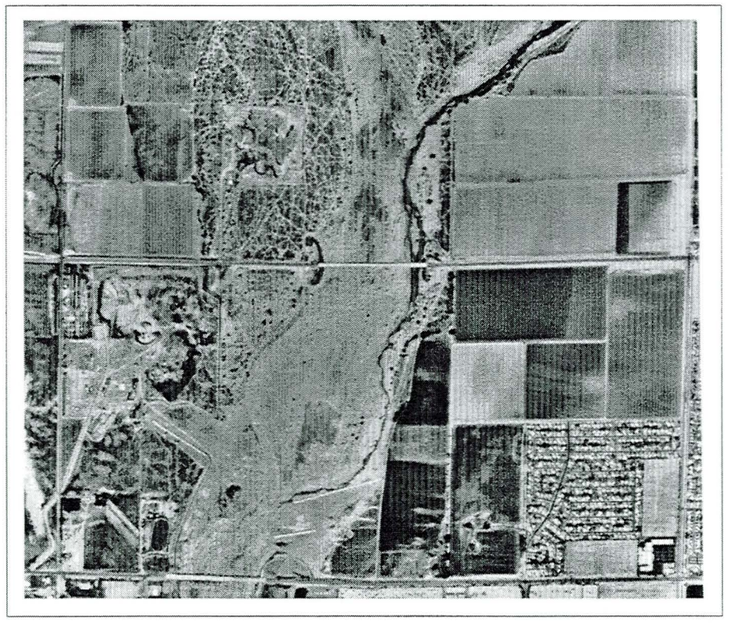
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 11 - New River confluence to Indian School Road



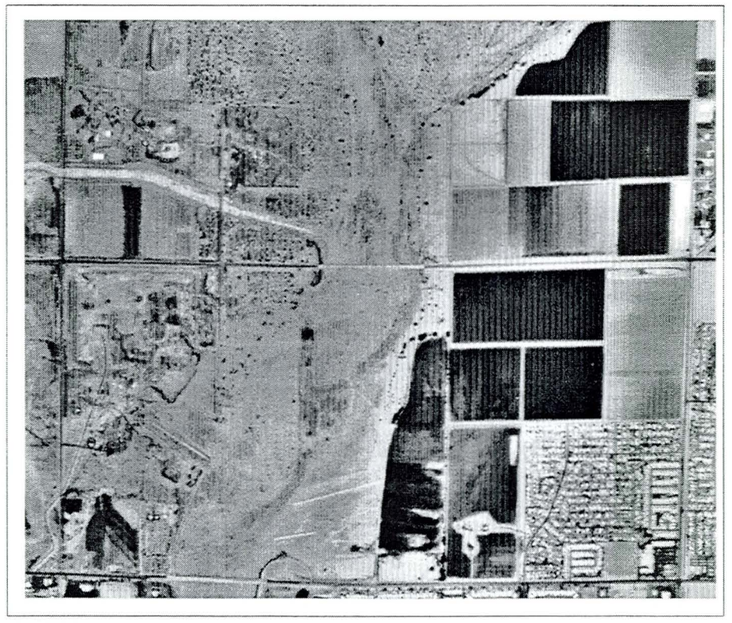
(Aerial Mapping Company, 1985)

March 21, 1985



(United States Geological Survey, 1992)

September 6, 1992



(United States Geological Survey, 1997)

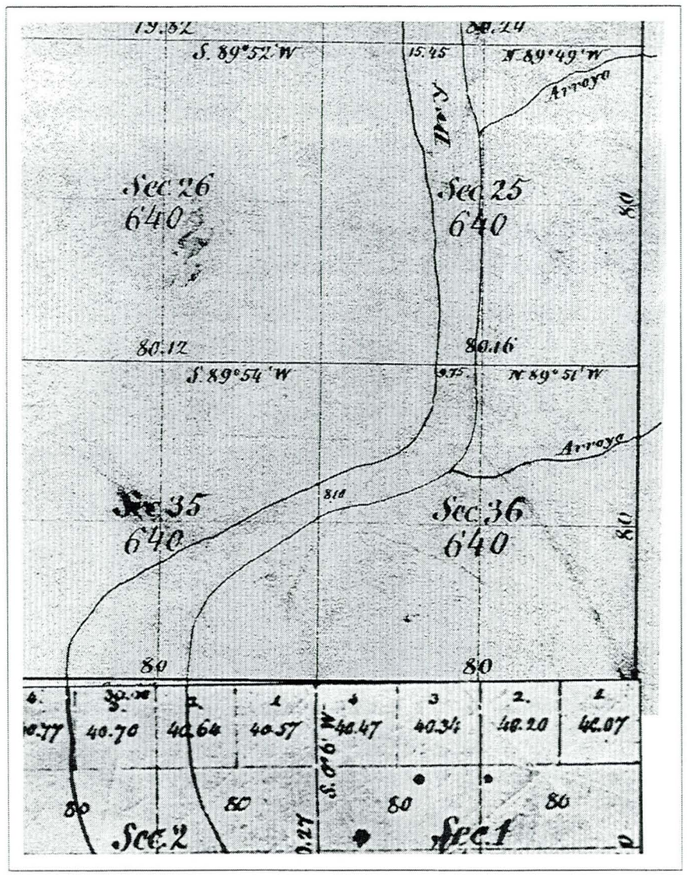
April 30, 1997

N

2500 0 2500 5000 7500 10000 Feet

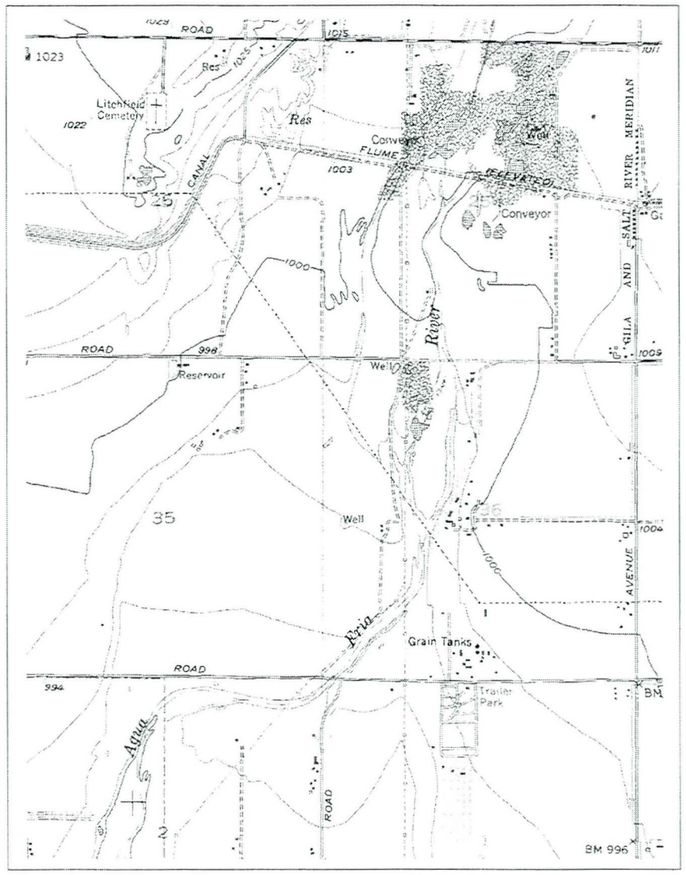
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 12 - Indian School Road to Interstate 10



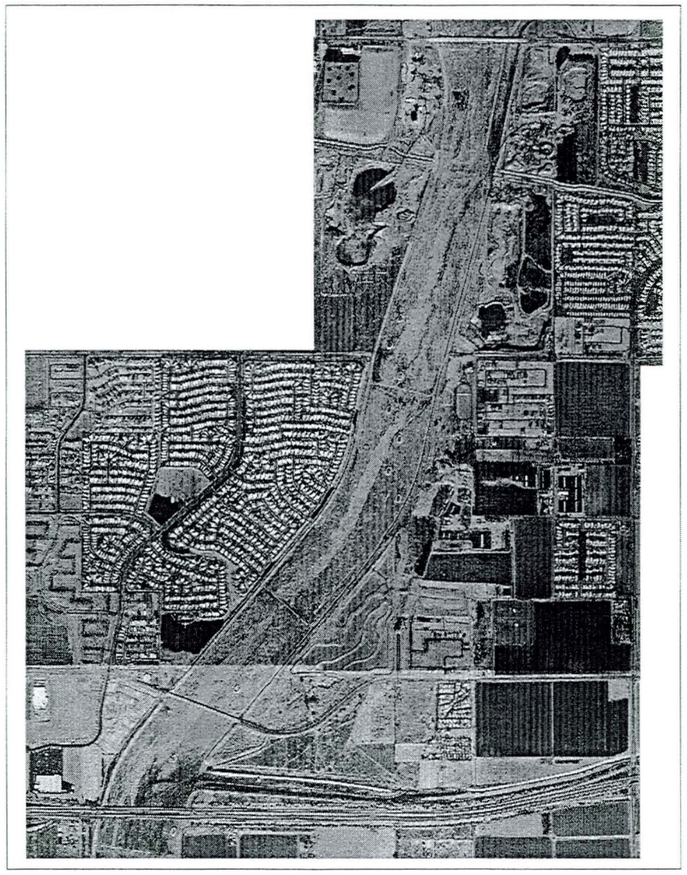
(General Land Office, 1895)

1895



(United States Geological Survey, 1982)

Original Mapping: 1954, 1957
Revisions: 1978



(Flood Control District of Maricopa County, 1999)

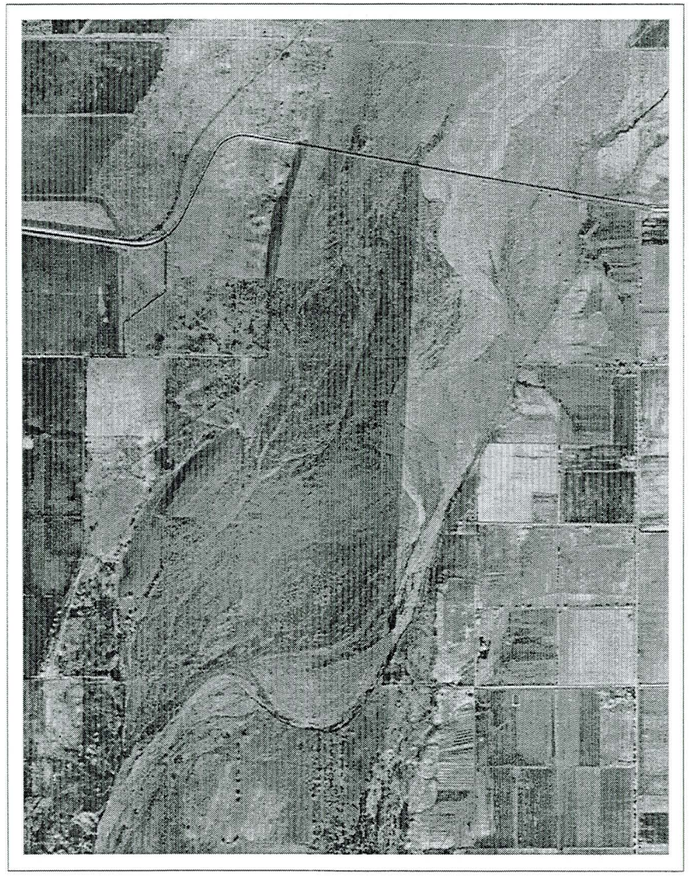
1999

N

2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 12 - Indian School Road to Interstate 10



(Arizona Salt River Project, 1934)

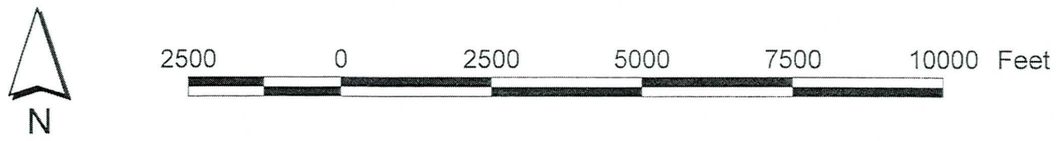
1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949

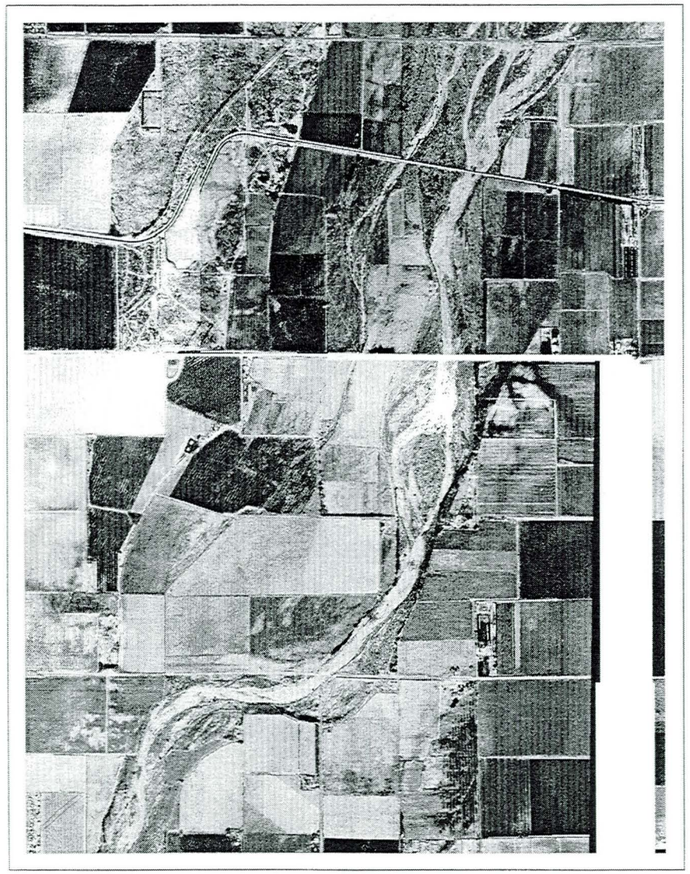
(Agricultural Stabilization & Conservation Service, 1954)

January 24, 1954



Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 12 - Indian School Road to Interstate 10

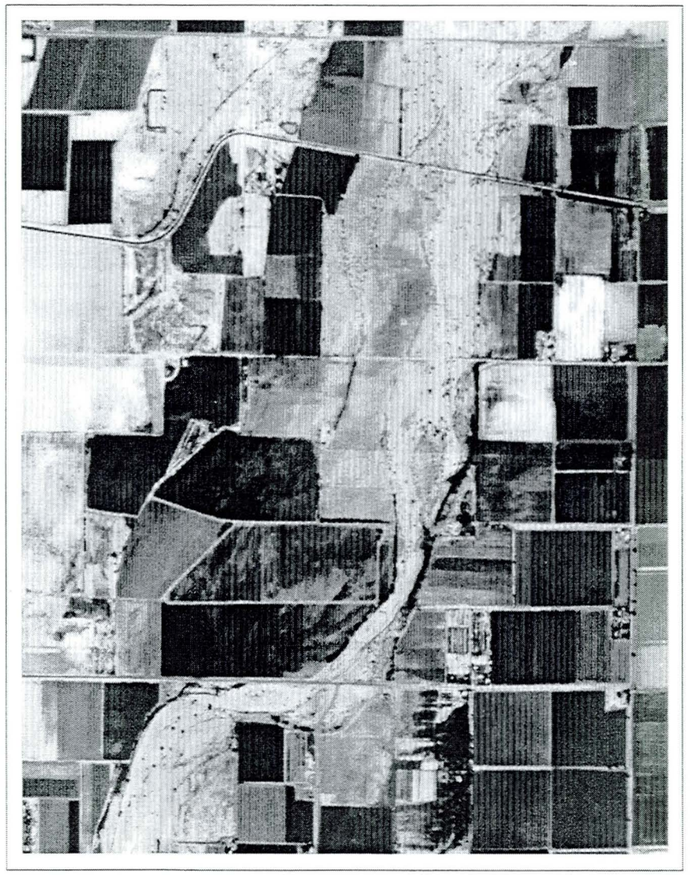


(Flood Control District of Maricopa County, 1959)

1959

(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964



(Landiscor Aerial Information, 1967)

October 9, 1967

N

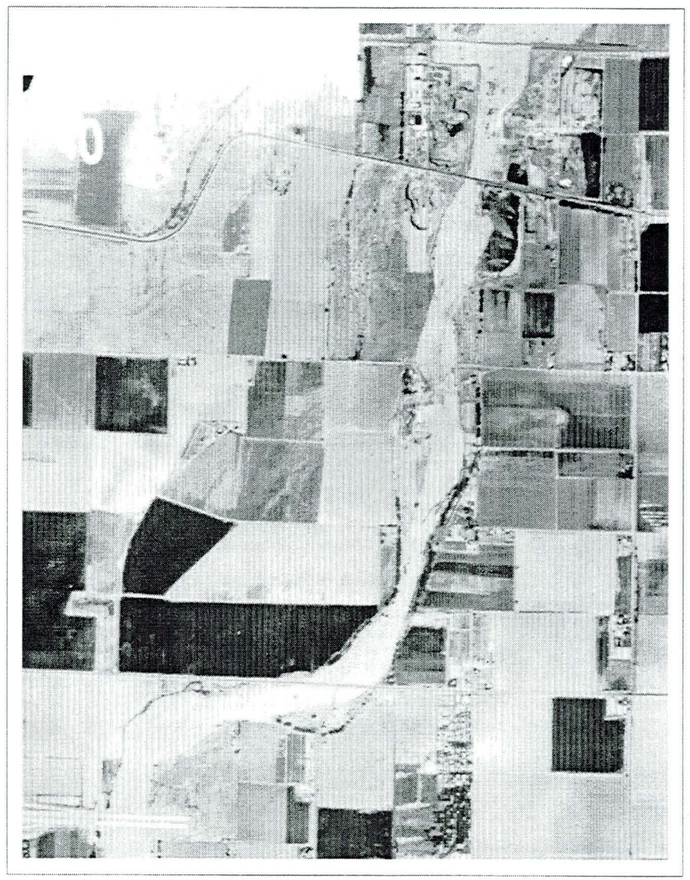
3000 0 3000 6000 9000 12000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 12 - Indian School Road to Interstate 10

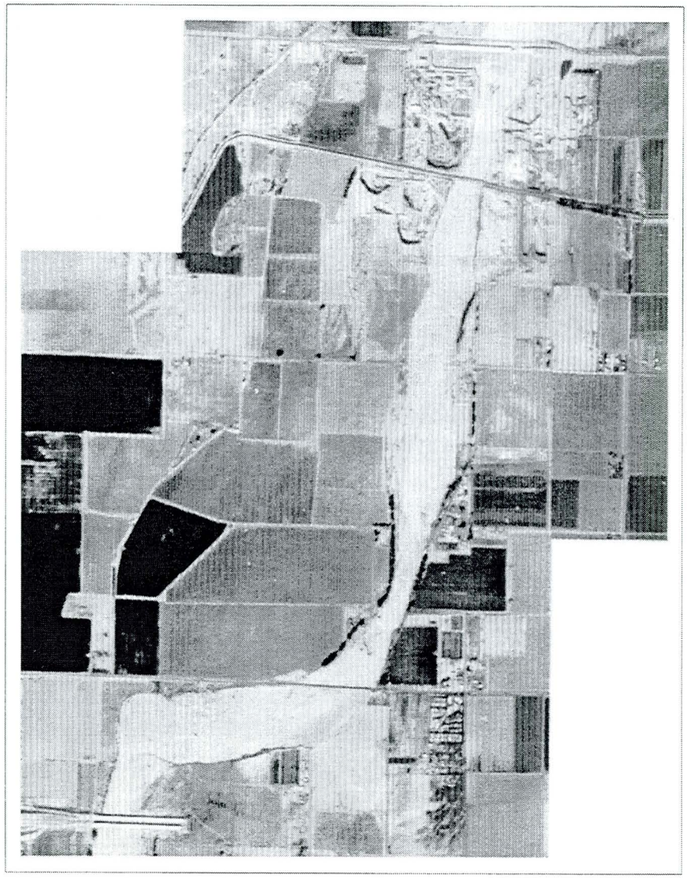
(Cooper Aerial Surveys Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979



(Landiscor Aerial Information, 1980)

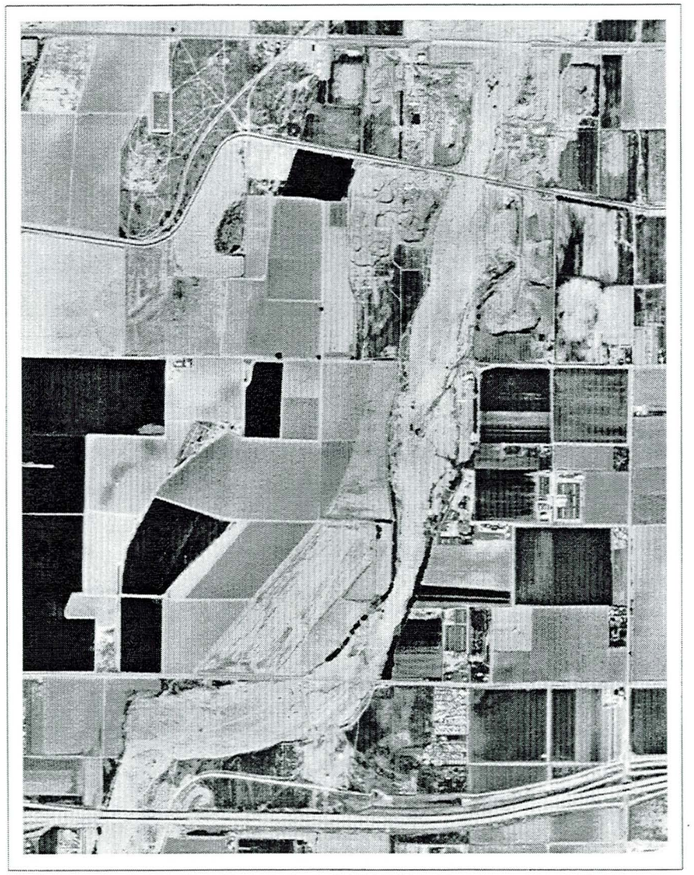
December 30, 1980

N

2500 0 2500 5000 7500 10000 Feet

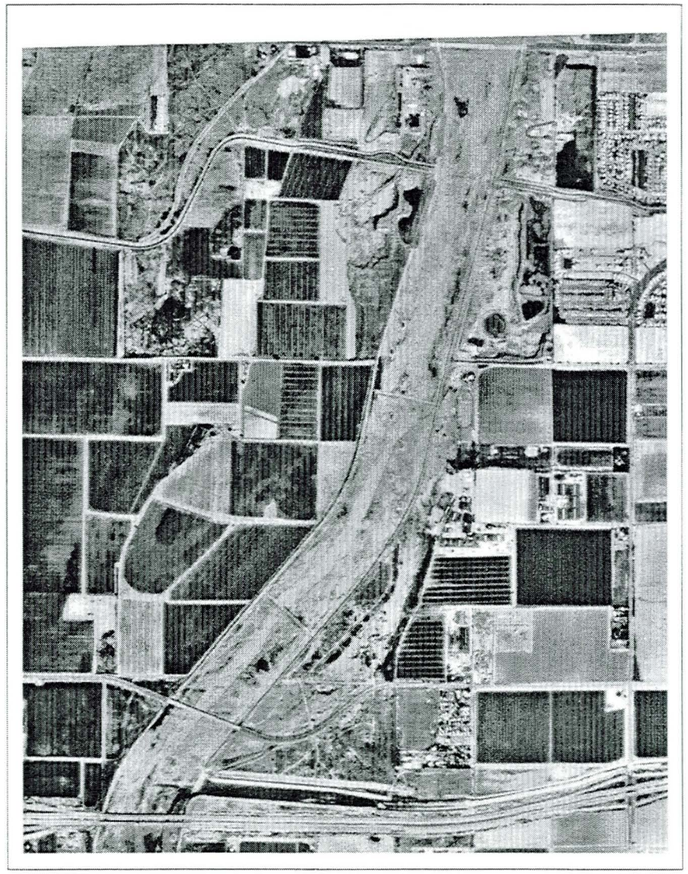
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 12 - Indian School Road to Interstate 10



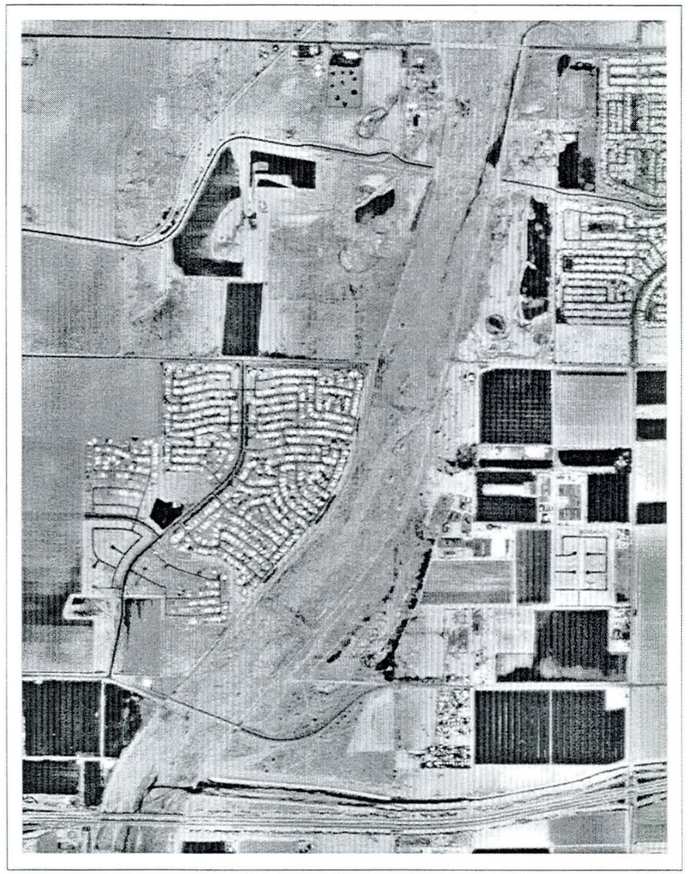
(Aerial Mapping Company, 1985)

March 21, 1985



(United States Geological Survey, 1992)

September 6, 1992



(United States Geological Survey, 1997)

April 30, 1997

N

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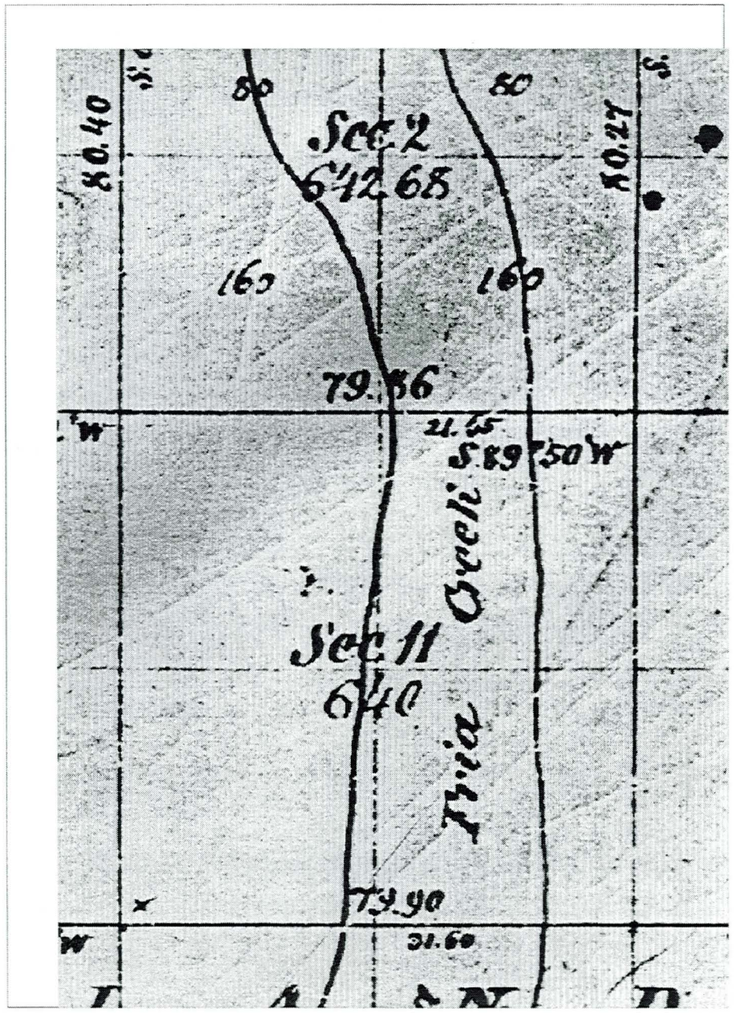
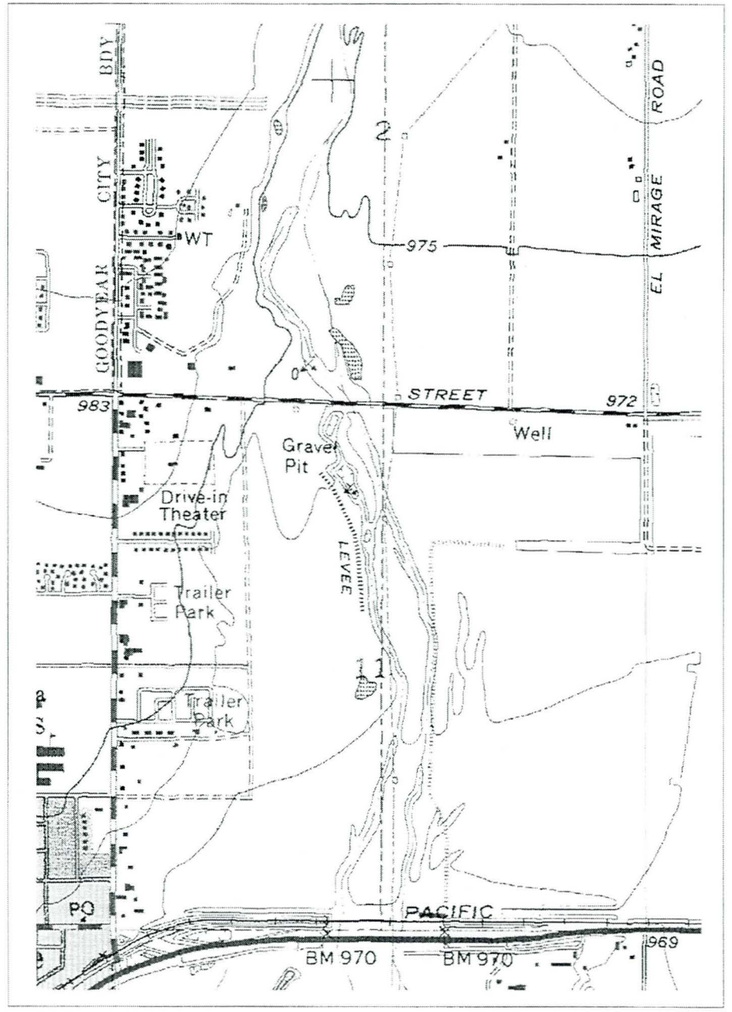
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 13 - Interstate 10 to Buckeye Road



(General Land Office, 1870)



(United States Geological Survey, 1982)

(Flood Control District of Maricopa County, 1999)

1870

Original Mapping: 1954, 1957
Revisions: 1978

1999

N

1500 0 1500 3000 4500 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 13 - Interstate 10 to Buckeye Road

(Arizona Salt River Project, 1934)

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949

(Agricultural Stabilization & Conservation Service, 1954)

January 24, 1954

N

1500 0 1500 3000 4500 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

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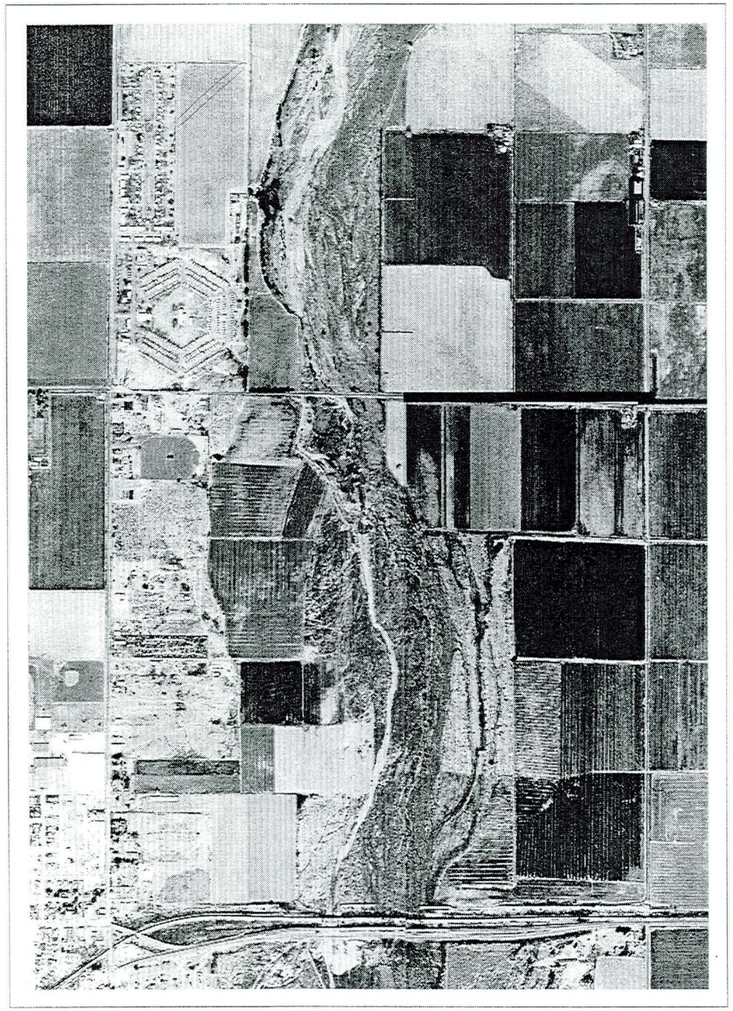
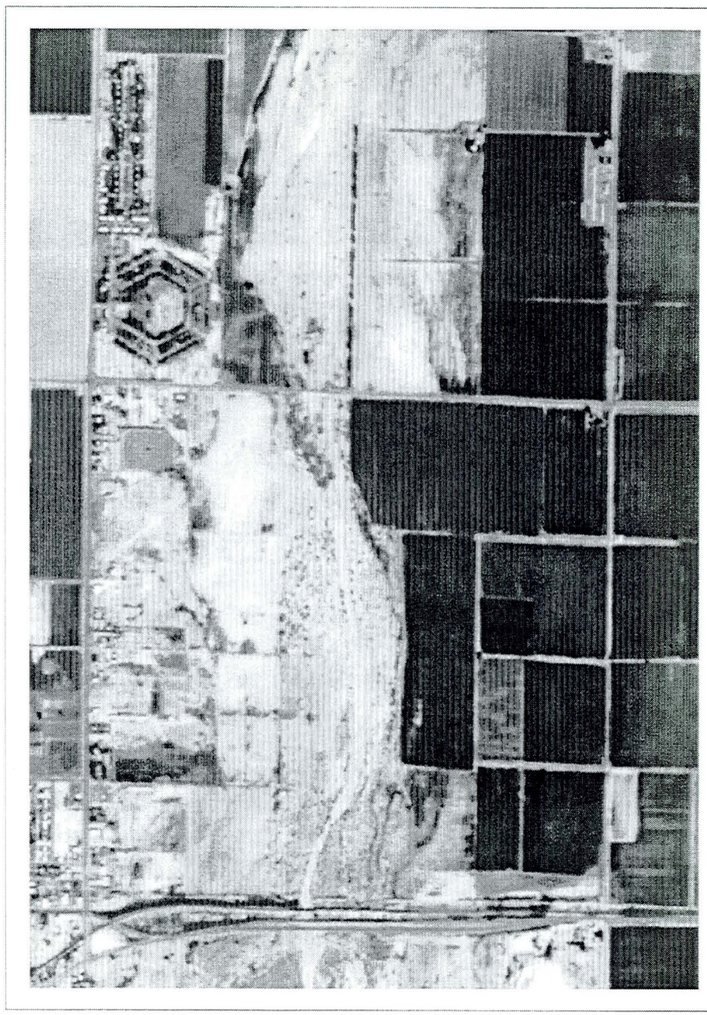


(Flood Control District of Maricopa County, 1959)

1959

(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964



(Landiscor Aerial Information, 1967)

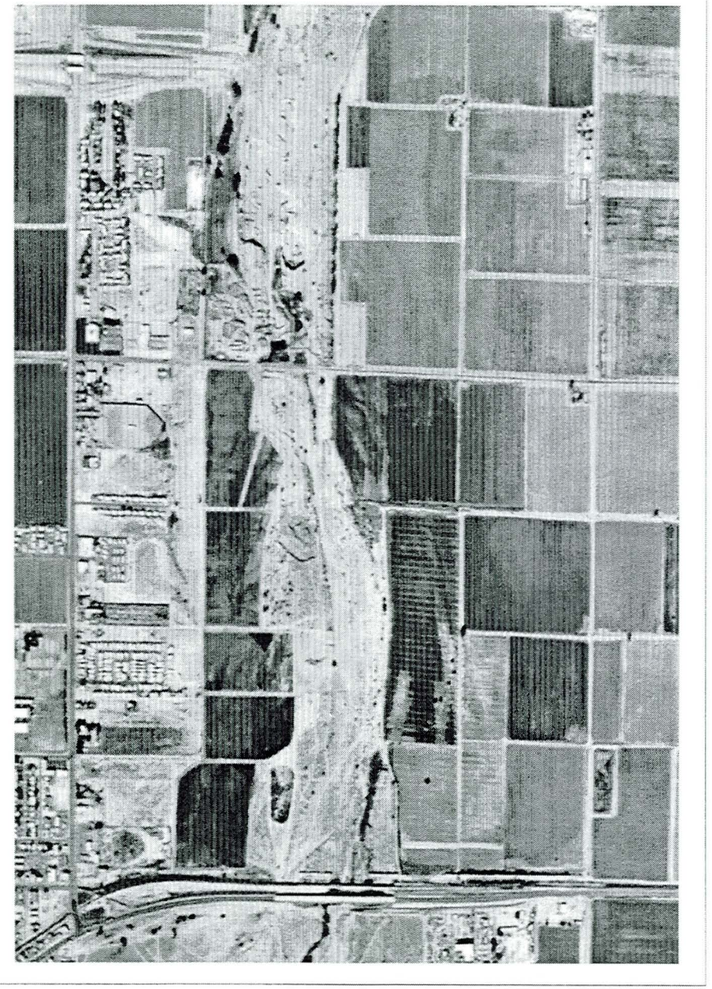
October 9, 1967

N

1500 0 1500 3000 4500 Feet

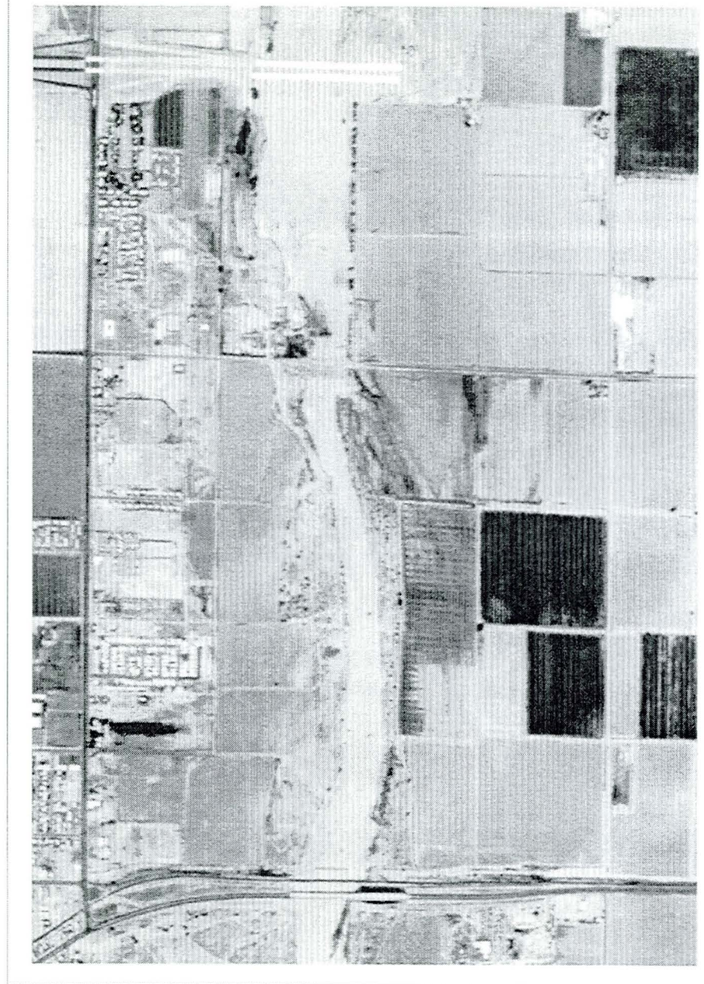
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 13 - Interstate 10 to Buckeye Road



(Cooper Aerial Surveys Company, 1977)

December 5, 1977



(United States Department of Agriculture, 1979)

May 13, 1979

(Landiscor Aerial Information, 1980)

December 30, 1980

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1500 0 1500 3000 4500 Feet

Agua Fria Watercourse Master Plan
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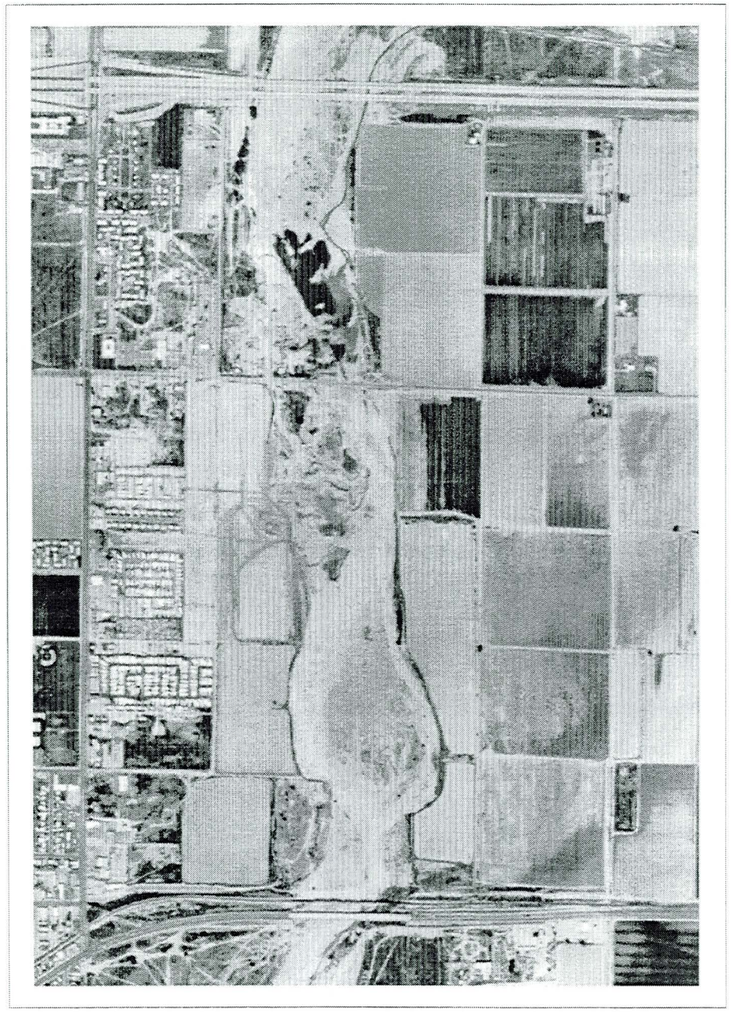
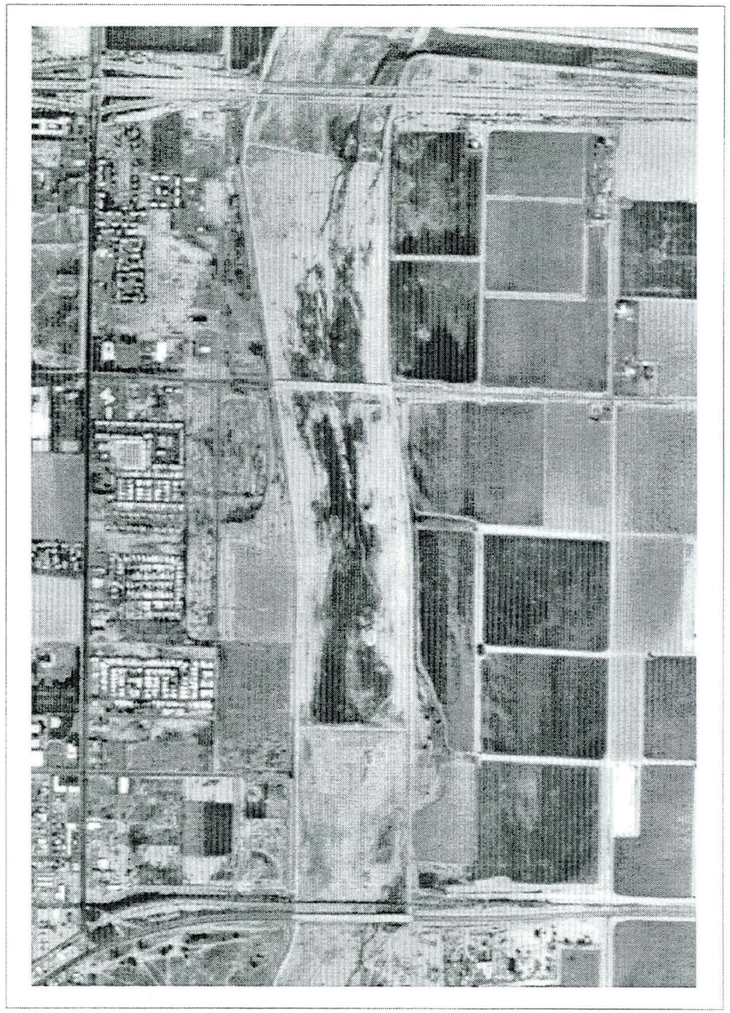


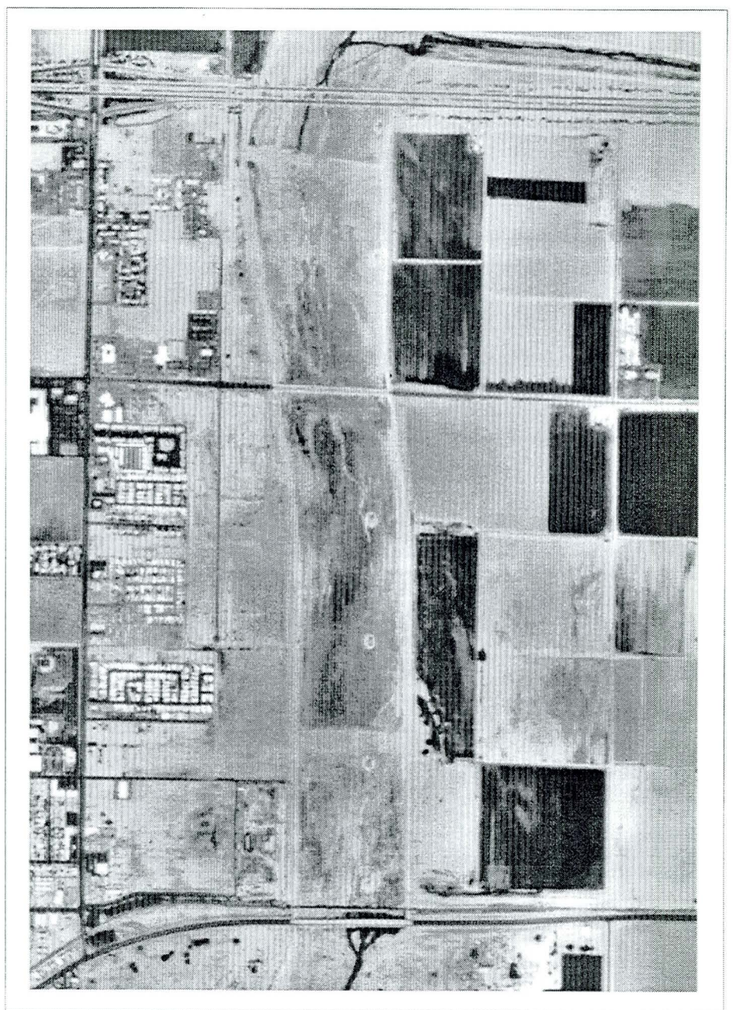
(Aerial Mapping Company, 1985)

March 21, 1985



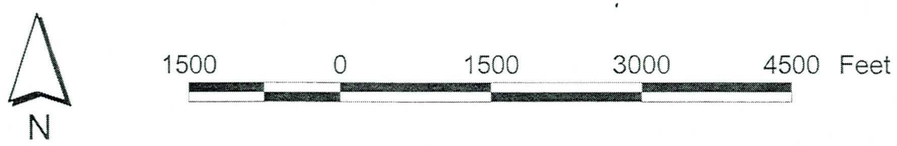
(United States Geological Survey, 1992)

September 6, 1992



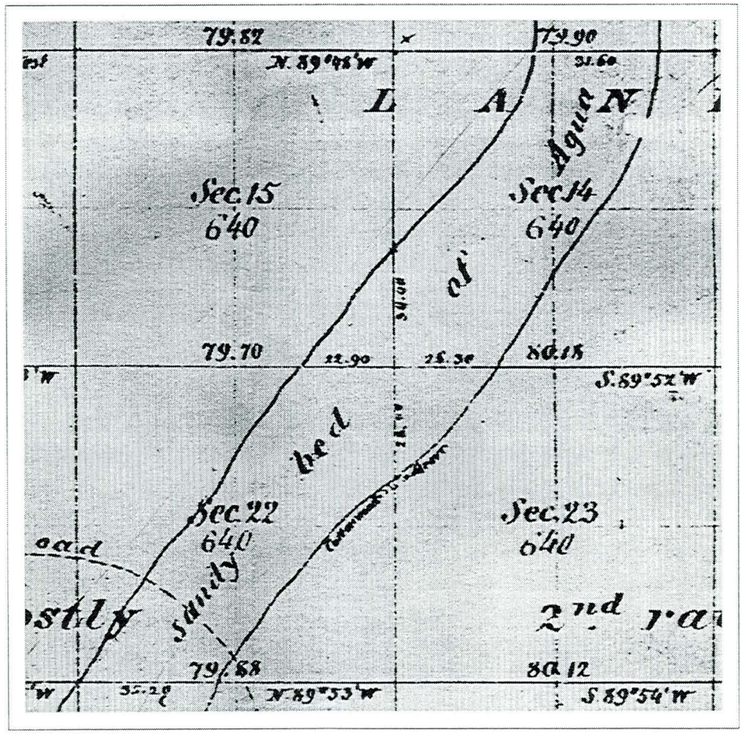
(United States Geological Survey, 1997)

April 30, 1997



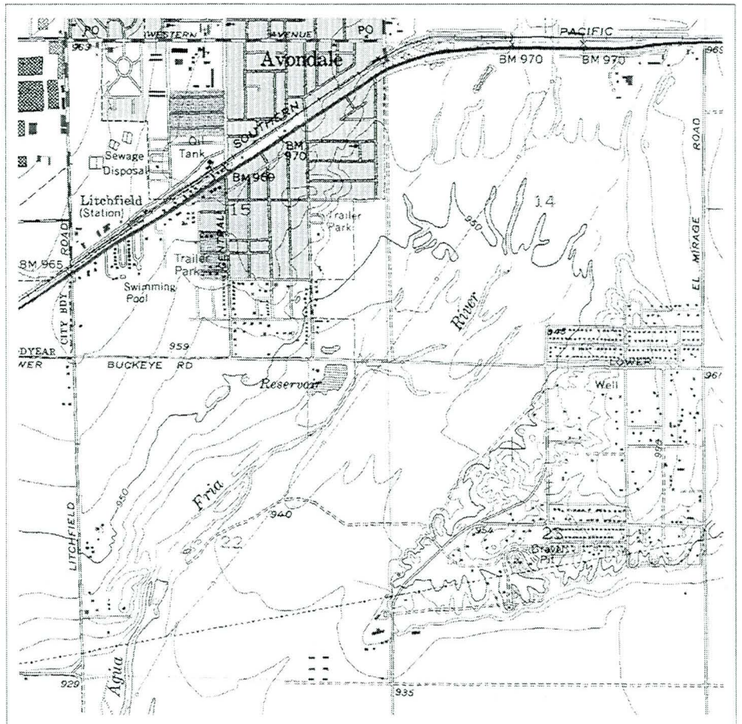
Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 14 - Buckeye Road to Broadway Road



(General Land Office, 1870)

1870



(United States Geological Survey, 1982)

Origianl Mapping: 1954, 1957
Revisions: 1978

(Flood Control District of Maricopa County, 1999)

1999

N

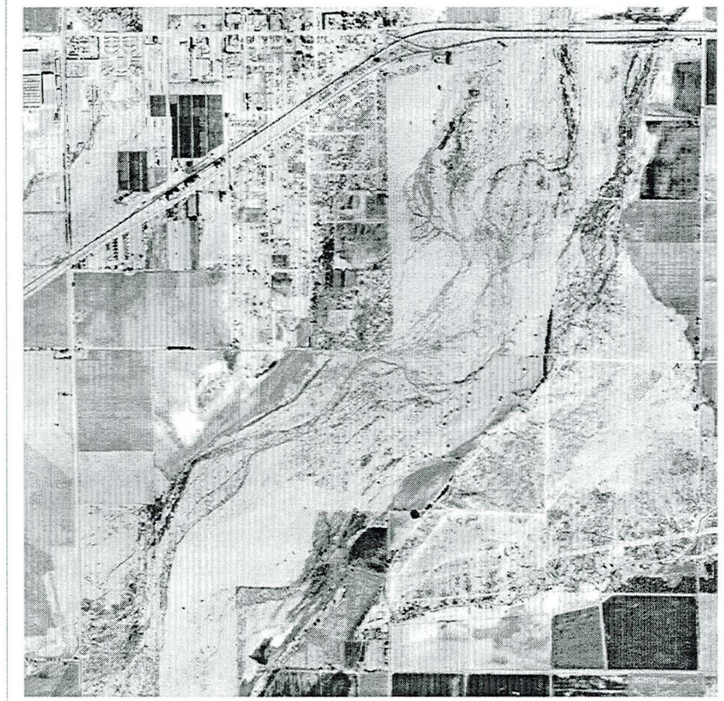
2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 14 - Buckeye Road to Broadway Road

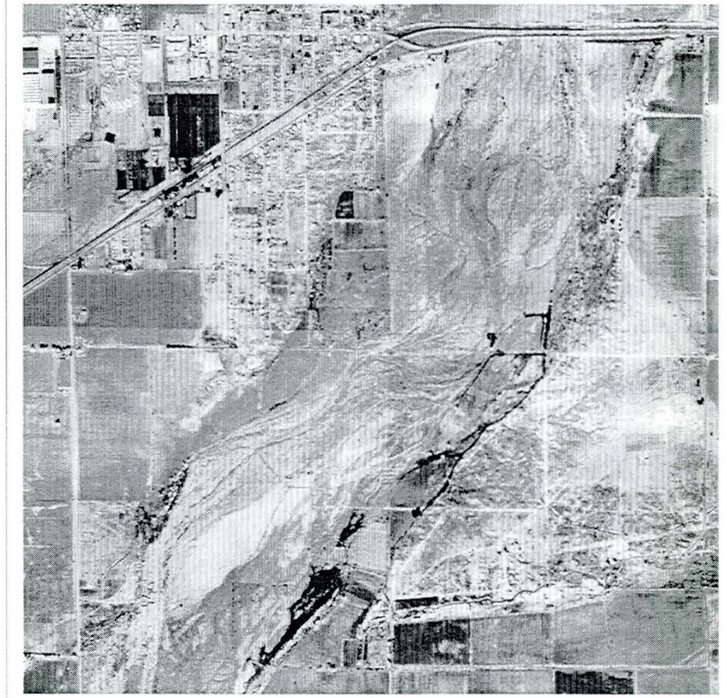
(Arizona Salt River Project, 1934)

1934



(Agricultural Stabilization & Conservation Service, 1949)

Feb. 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

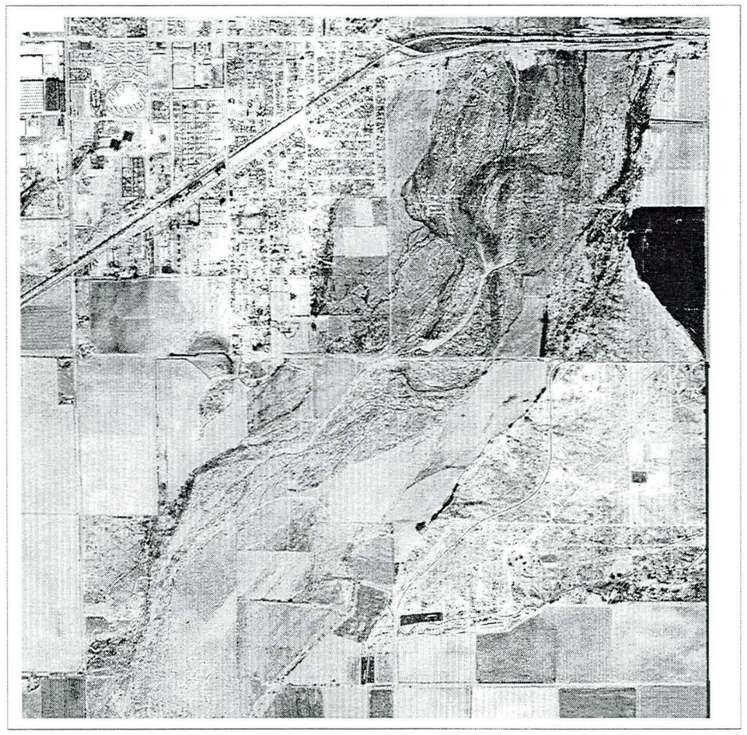
Jan. 24, 1954

N

2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 14 - Buckeye Road to Broadway Road

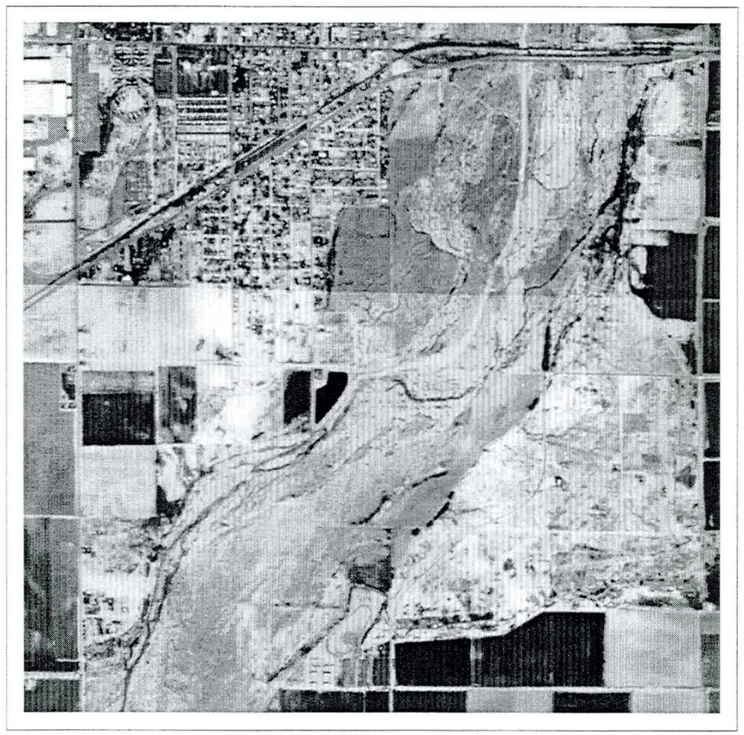


(Flood Control District of Maricopa County, 1959)

1959

(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964



(Landiscor Aerial Information, 1967)

October 9, 1967

N

2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

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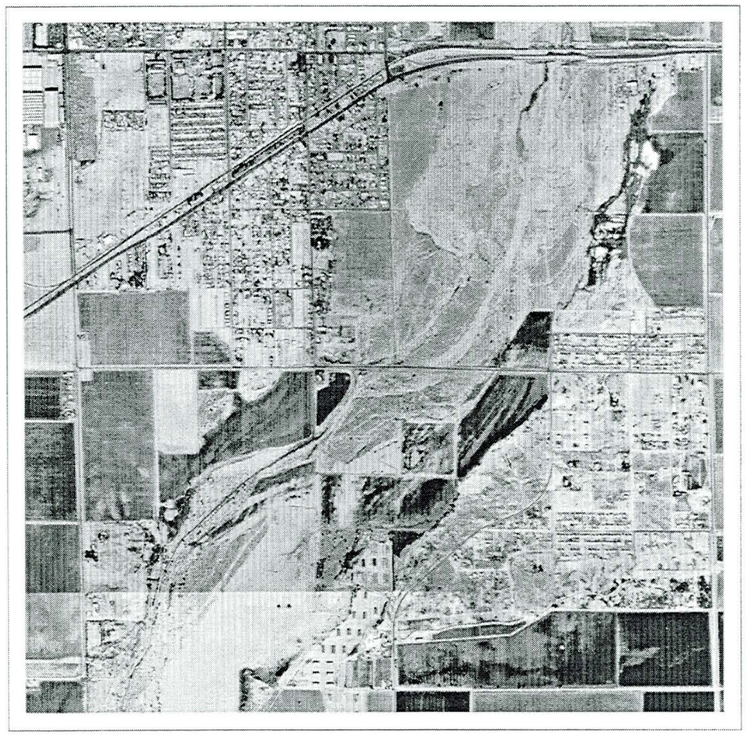


(Cooper Aerial Surveys Company, 1977)

December 5, 1977

(United States Department of Agriculture, 1979)

May 13, 1979

(Landiscor Aerial Information, 1980)

December 30, 1980

N

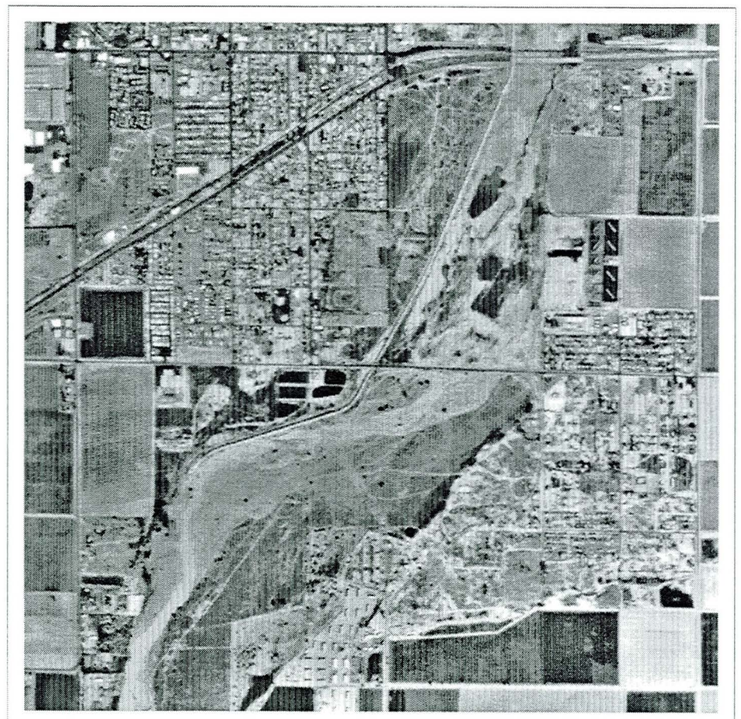
2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 14 - Buckeye Road to Broadway Road

(Aerial Mapping Company, 1985)

March 21, 1985



(United States Geological Survey, 1992)

September 6, 1992

(United States Geological Survey, 1997)

April 30, 1997

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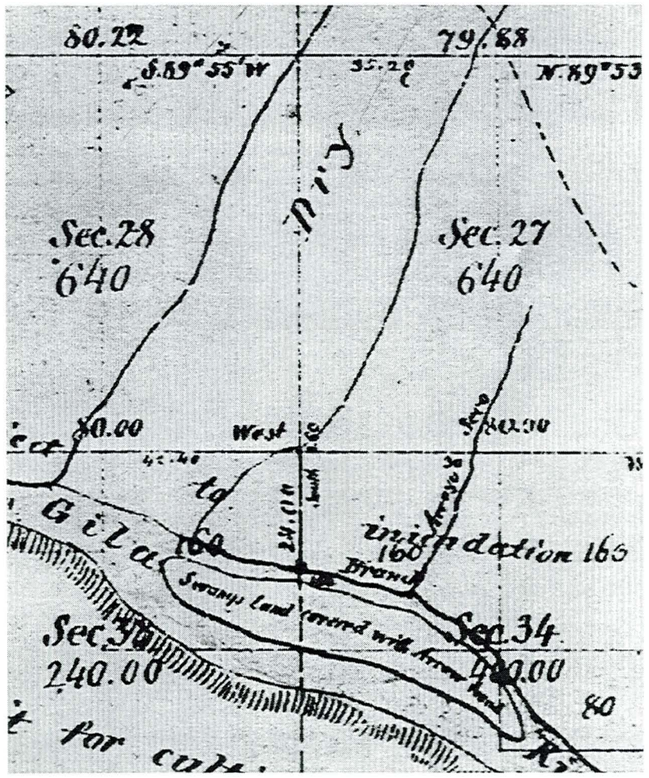
2500 0 2500 5000 7500 10000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 15 - Broadway Road to the Gila River



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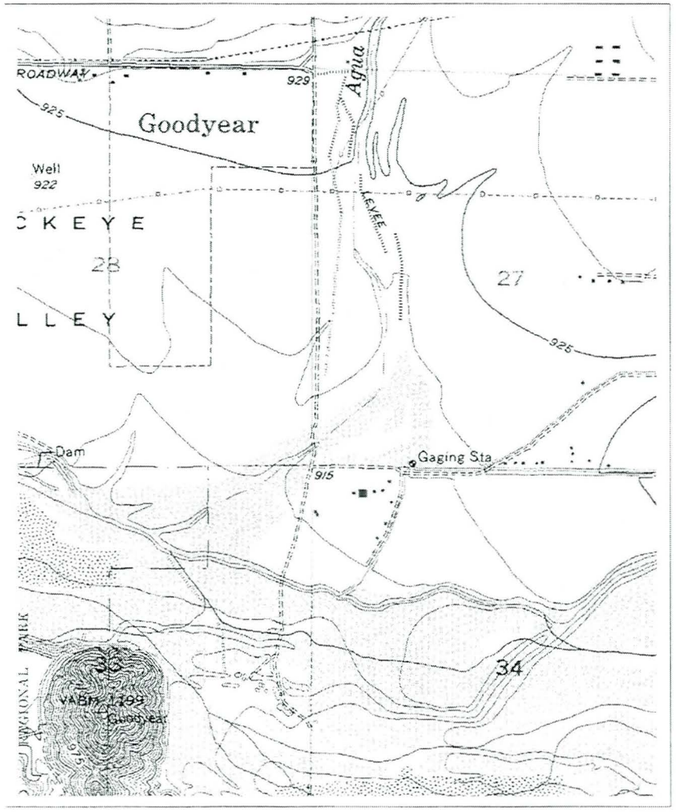
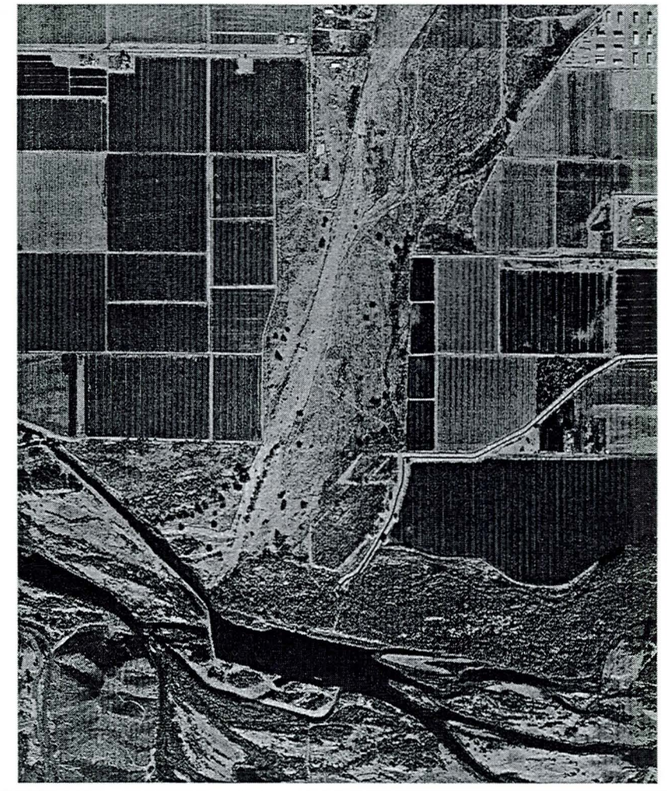
1870



(United States Geological Survey, 1982)

Original Mapping: 1954, 1957
Revisions: 1978



(Flood Control District of Maricopa County, 1999)

1999

N

2000 0 2000 4000 6000 Feet

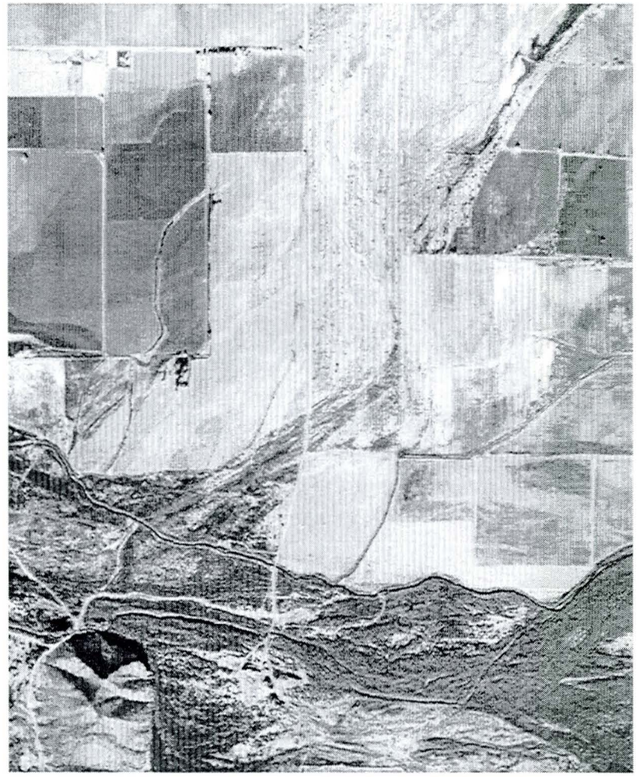
Reach 15 - Broadway Road to the Gila River

(Arizona Salt River Project, 1934)

1934

(Agricultural Stabilization & Conservation Service, 1949)

February 14, 1949



(Agricultural Stabilization & Conservation Service, 1954)

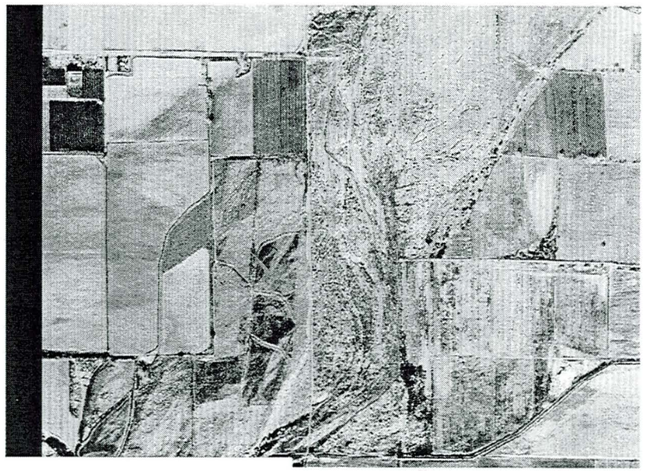
January 24, 1954

N

2000 0 2000 4000 6000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Reach 15 - Broadway Road to the Gila River



(Flood Control District of Maricopa County, 1959)

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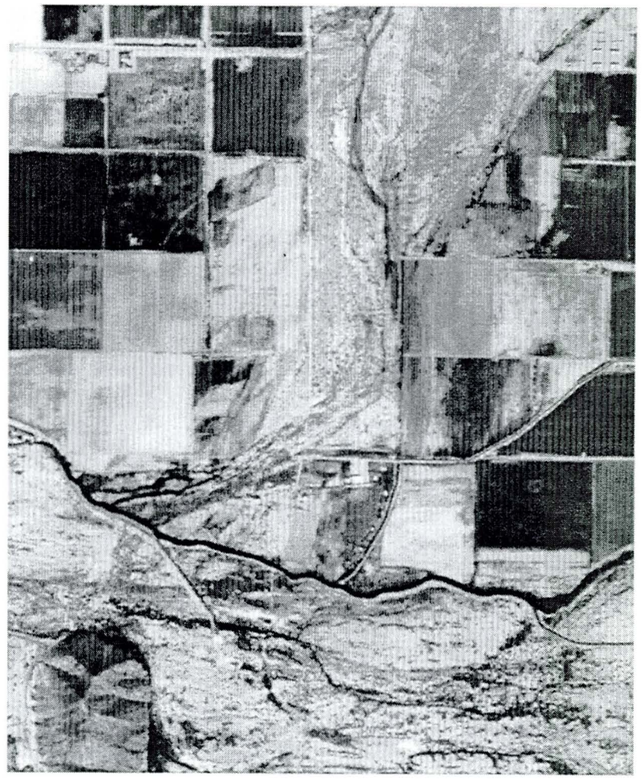
(Agricultural Stabilization & Conservation Service, 1964)

January 23, 1964



(Landiscor Aerial Information, 1967)

October 9, 1967

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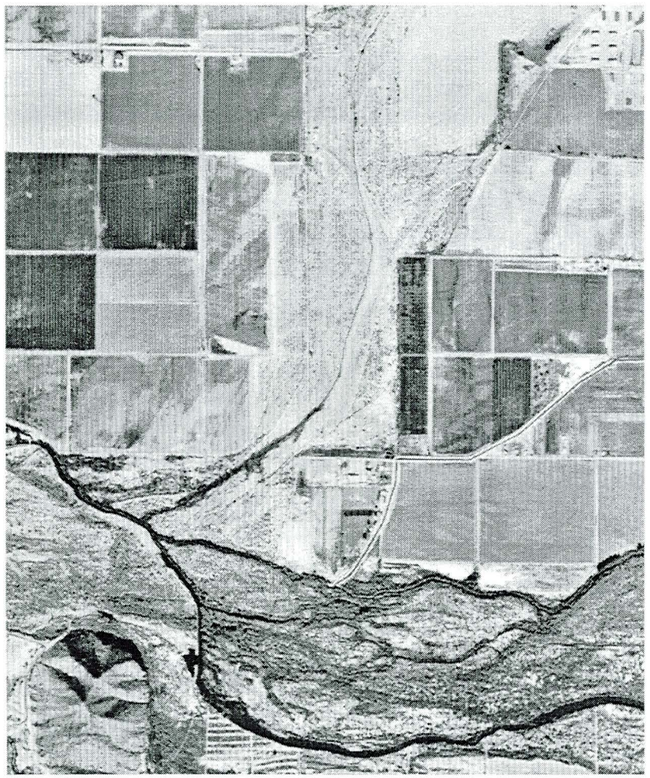

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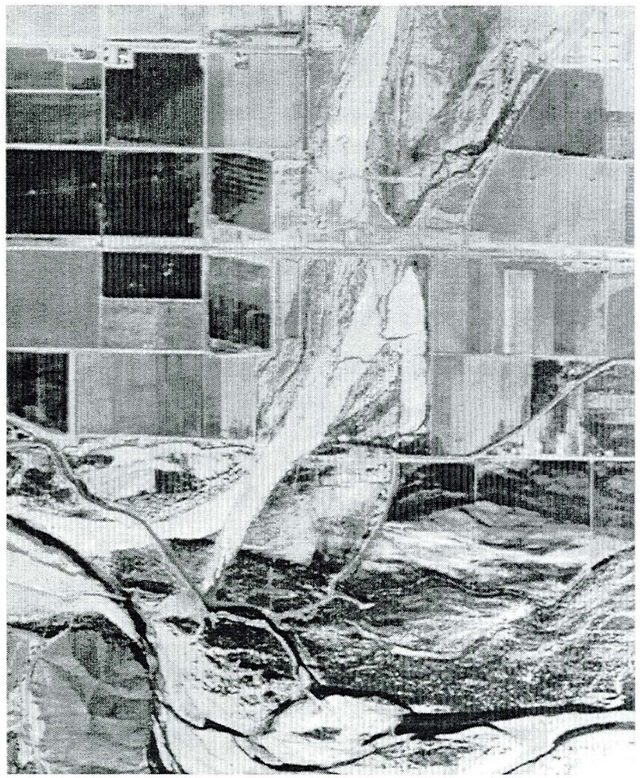
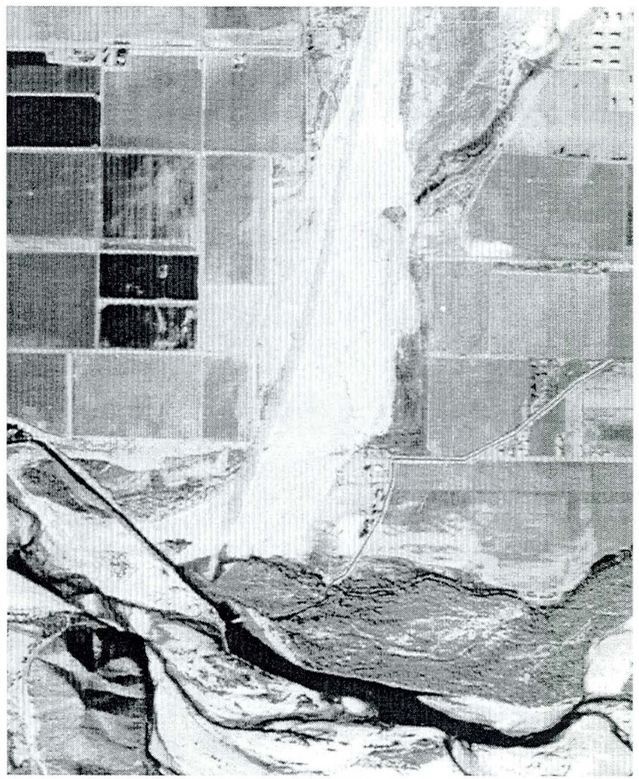


(United States Department of Agriculture, 1979)

May 13, 1979



(Landiscor Aerial Information, 1980)

December 30, 1980

N

2000 0 2000 4000 6000 Feet

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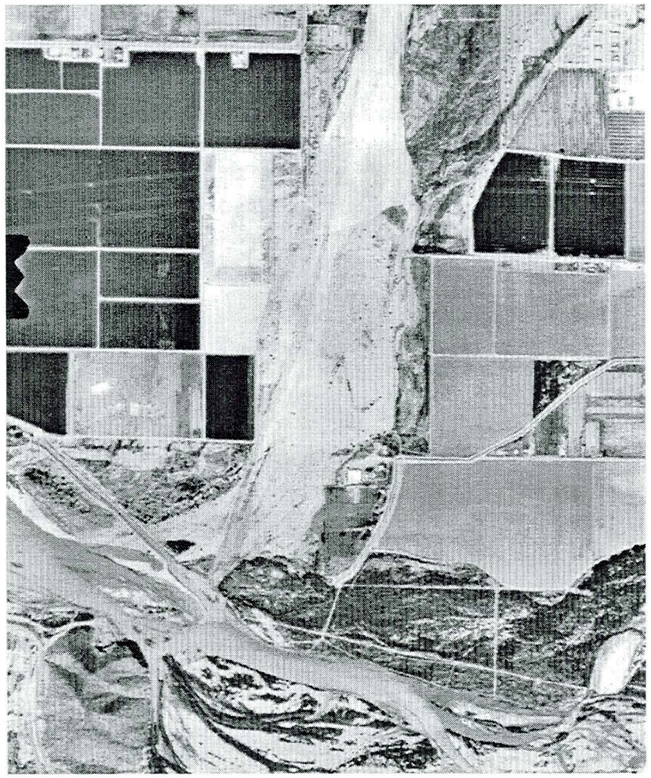
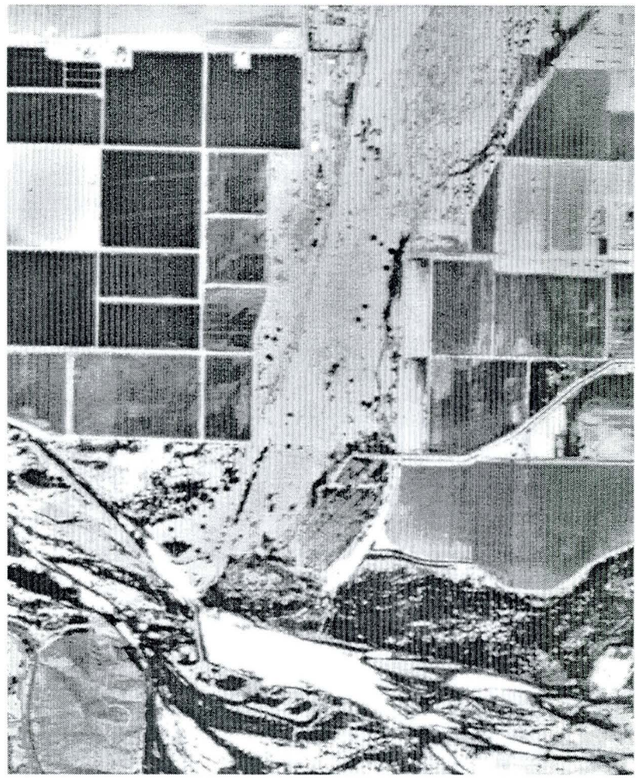


(Aerial Mapping Company, 1985)

March 21, 1985

(United States Geological Survey, 1992)

September 6, 1992



(United States Geological Survey, 1997)

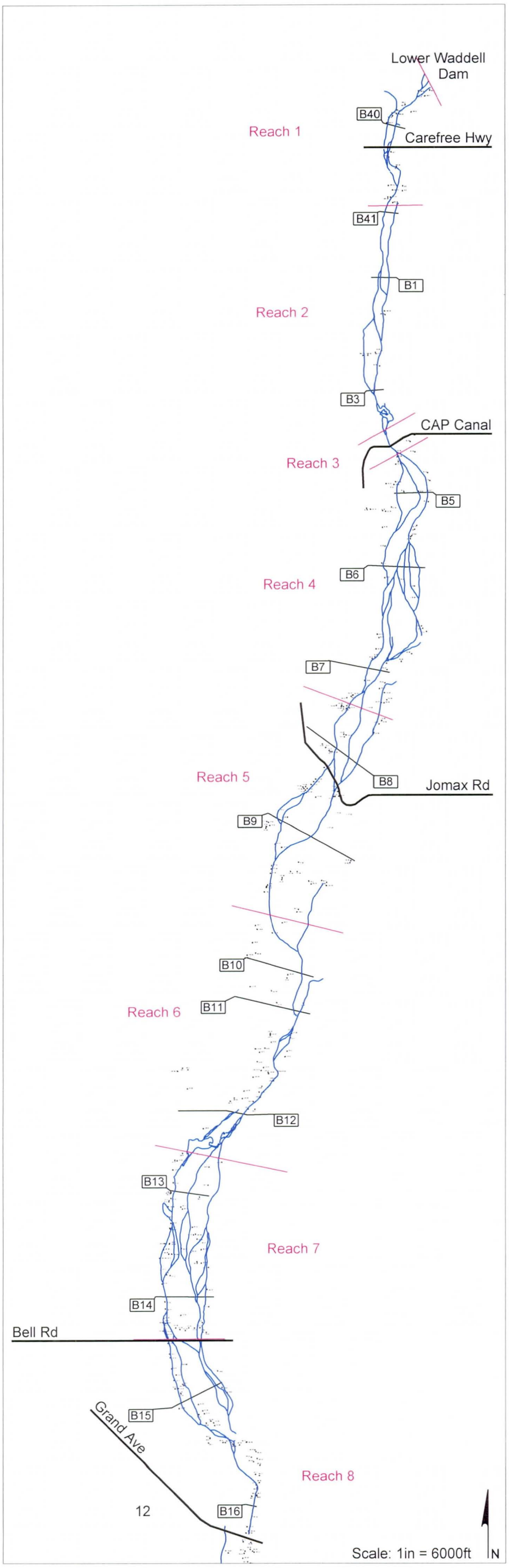
April 30, 1997

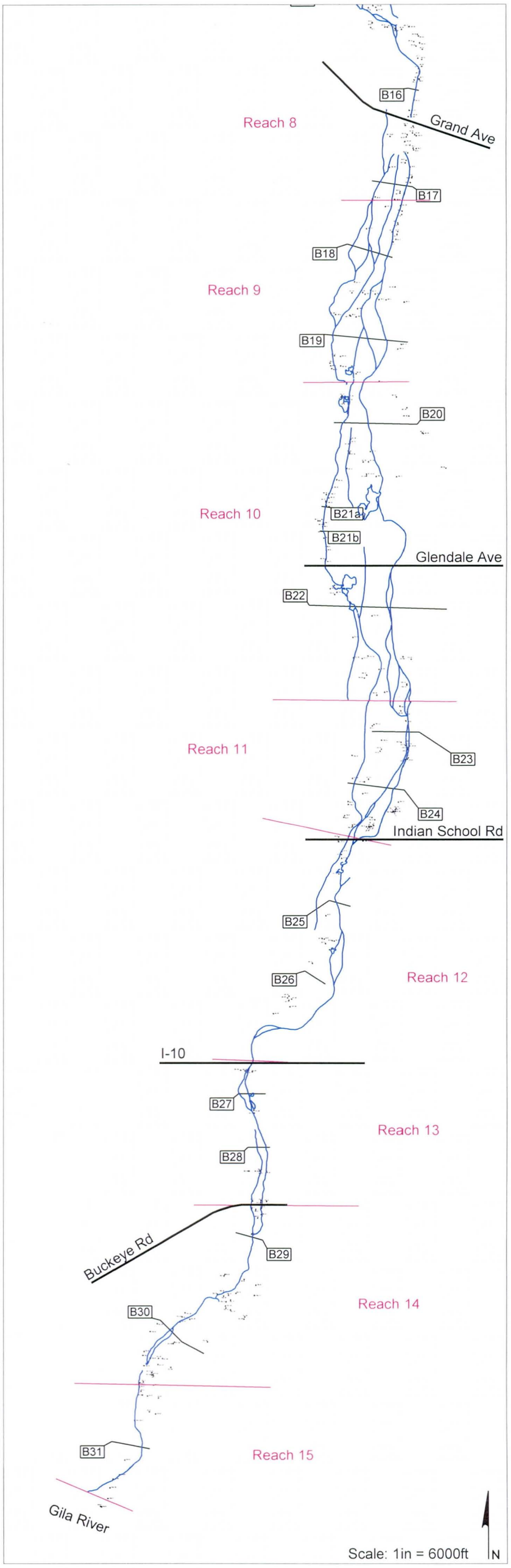
N

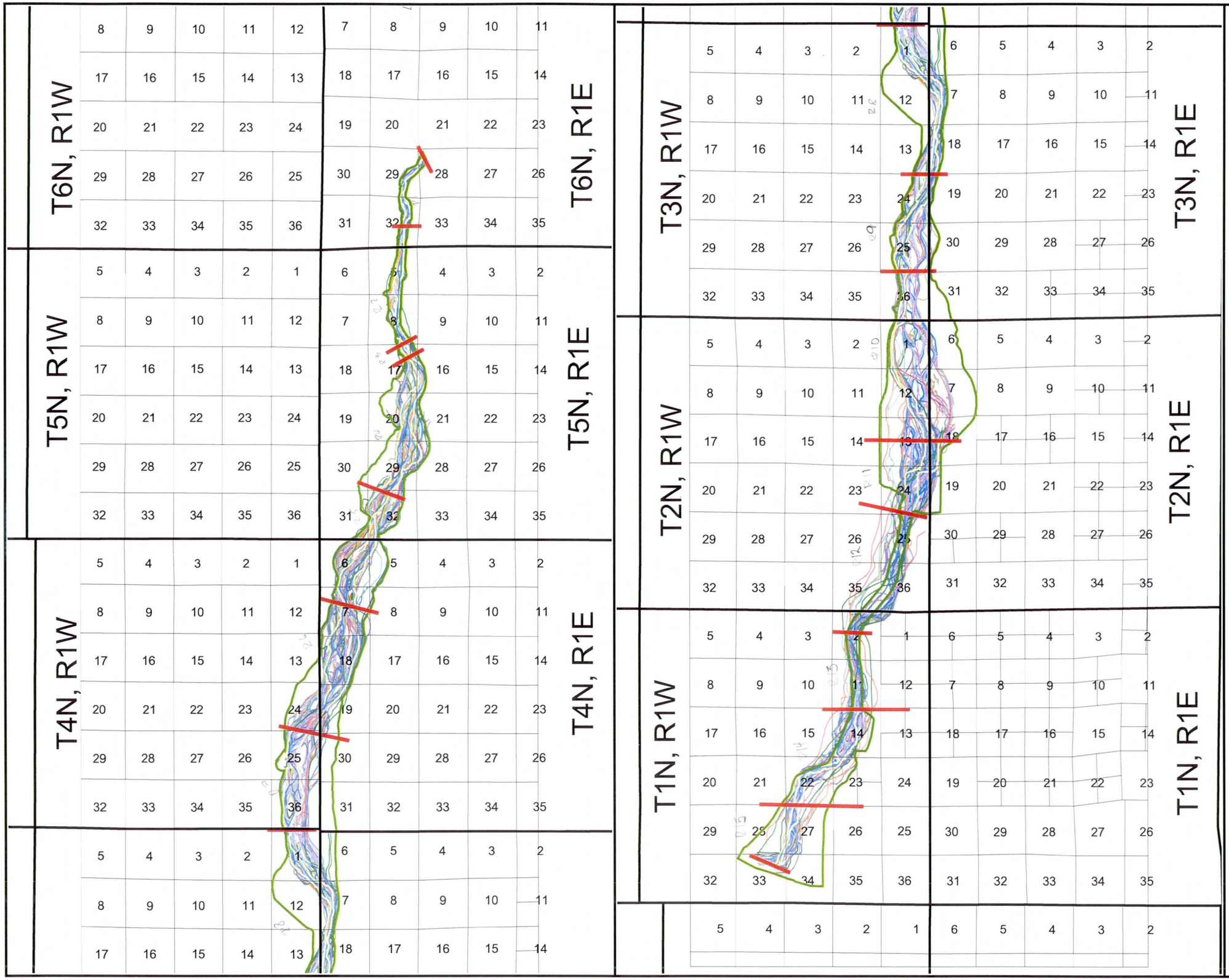
2000 0 2000 4000 6000 Feet

Agua Fria Watercourse Master Plan
JE Fuller / Hydrology & Geomorphology, Inc.

Agua Fria River WMP
Index to Field Sections







Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

Historical Thalweg and Channel Bank Locations

LEGEND

- BANK_1934
- BANK_1949
- BANK_1951
- BANK_1954
- BANK_1959
- BANK_1964
- BANK_1967
- BANK_1977
- BANK_1979
- BANK_1980
- BANK_1985
- BANK_1992
- BANK_1997
- BANK_1999
- BANK_GLO
- THALWEG_1903
- THALWEG_1934
- THALWEG_1949
- THALWEG_1951
- THALWEG_1954
- THALWEG_1957
- THALWEG_1959
- THALWEG_1964
- THALWEG_1967
- THALWEG_1977
- THALWEG_1979
- THALWEG_1980
- THALWEG_1981
- THALWEG_1985
- THALWEG_1992
- THALWEG_1997
- THALWEG_1999
- Reach Boundaries
- Long Term Erosion Hazard Zone

N
W E
S

1 0 1 2 Miles

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Flood Control District of Maricopa County

Agua Fria River
Watercourse Master Plan

Areas of Special Concern

LEGEND

- 34 — Areas of concern
- Severe erosion hazard zone
- Lateral migration erosion hazard zone
- Long term erosion hazard zone
- FEMA Floodplains
- FEMA Floodway
- Reach boundaries

N
W E
S

1 0 1 2 Miles

JE FULLER
HYDROLOGY & GEOMORPHOLOGY, INC.

Lower Lake

Carefree Highway

Morgan City Wash

Dolores Road alignment

N

0 1000 Feet

Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

Erosion Hazard Zones Reach 1

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

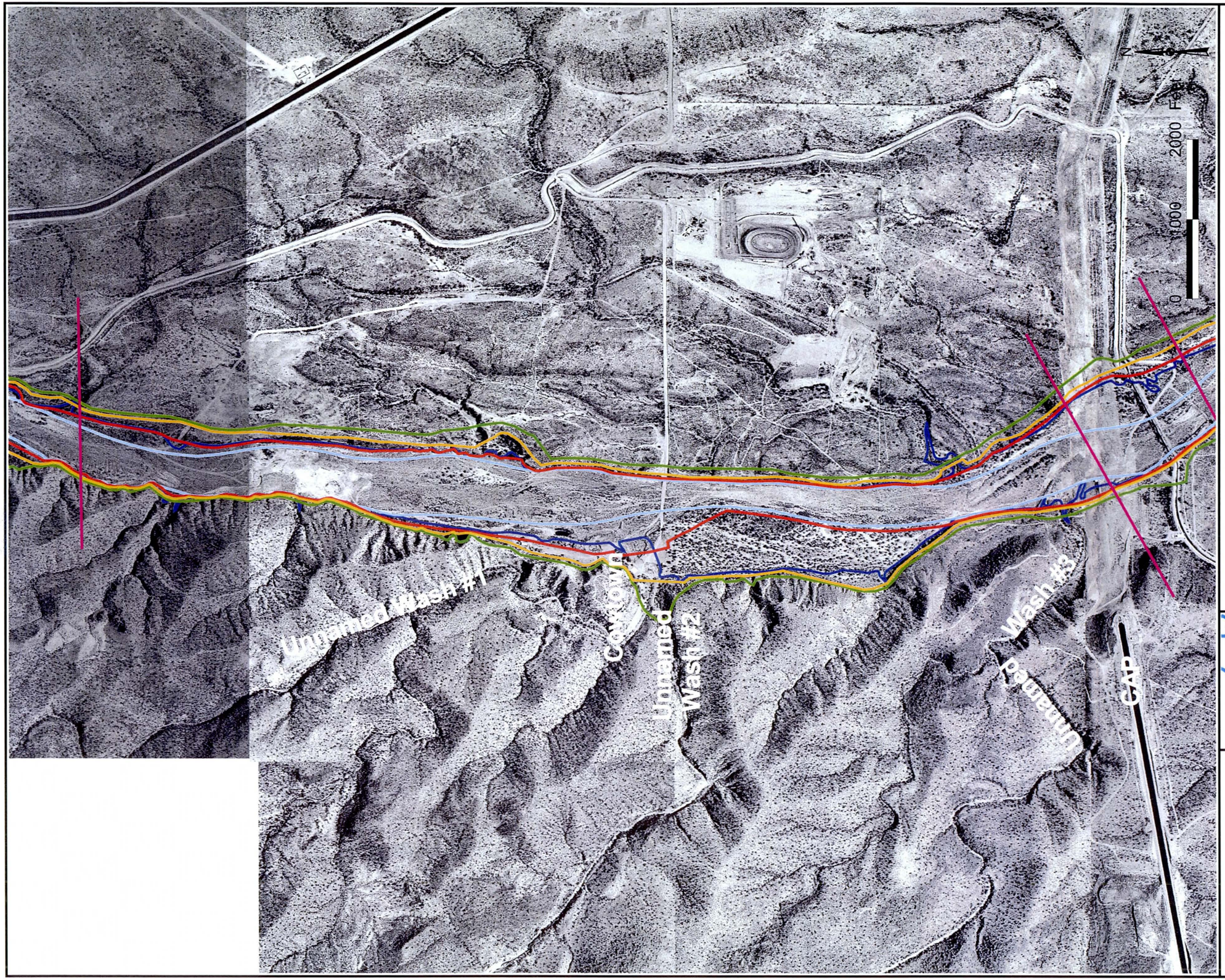
INDEX MAP

JE FULLER
HYDROLOGY & GEOMORPHOLOGY, INC.

Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

Erosion Hazard Zones Reach 2

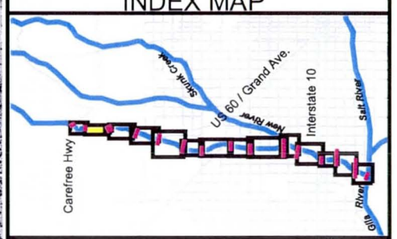


LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

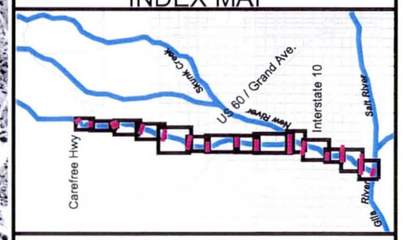
Erosion Hazard Zones Reach 3

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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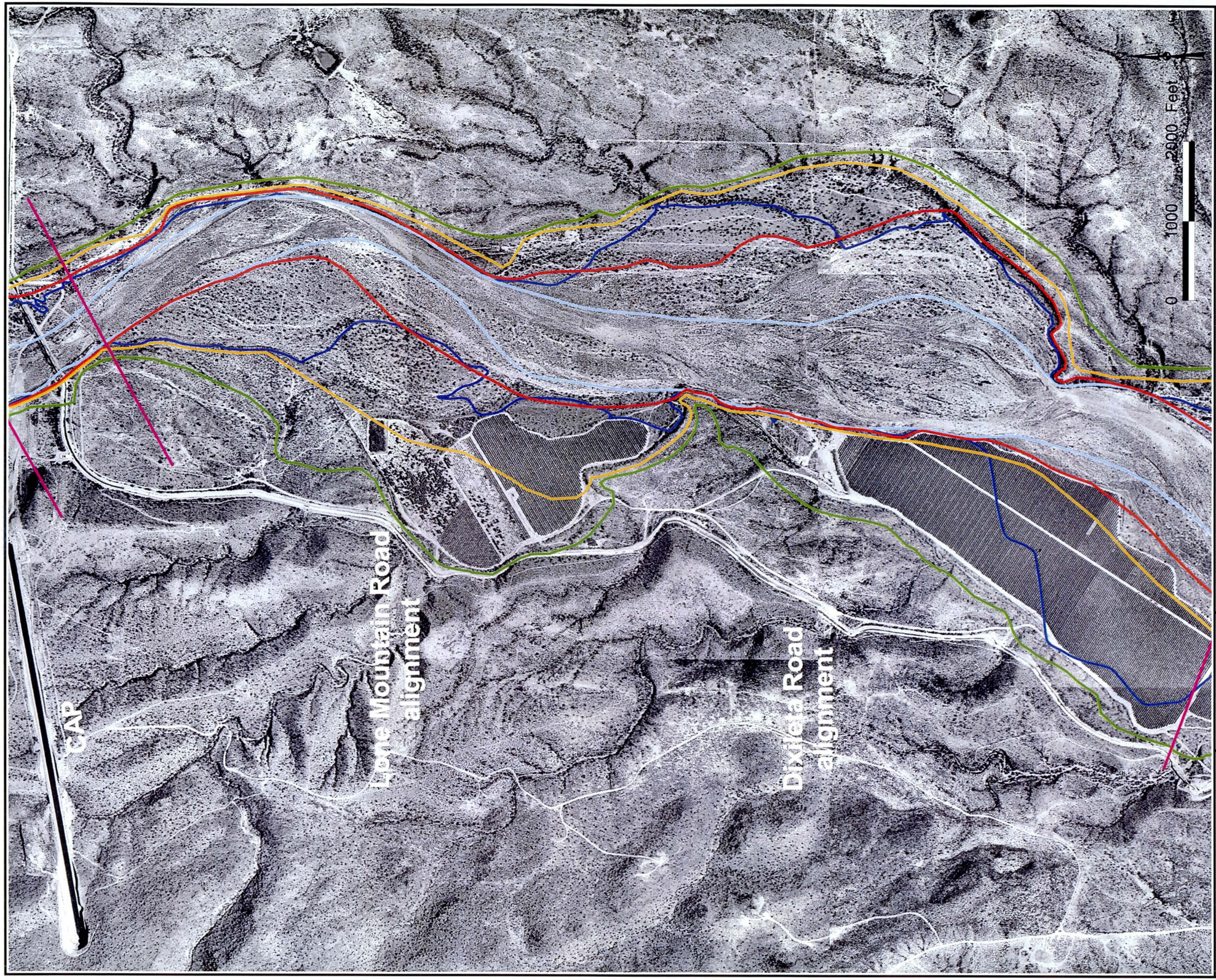


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

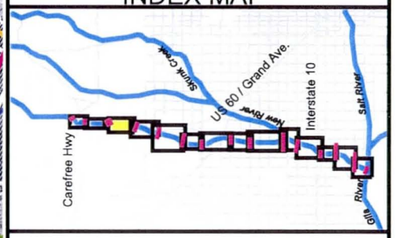
Erosion Hazard Zones Reach 4

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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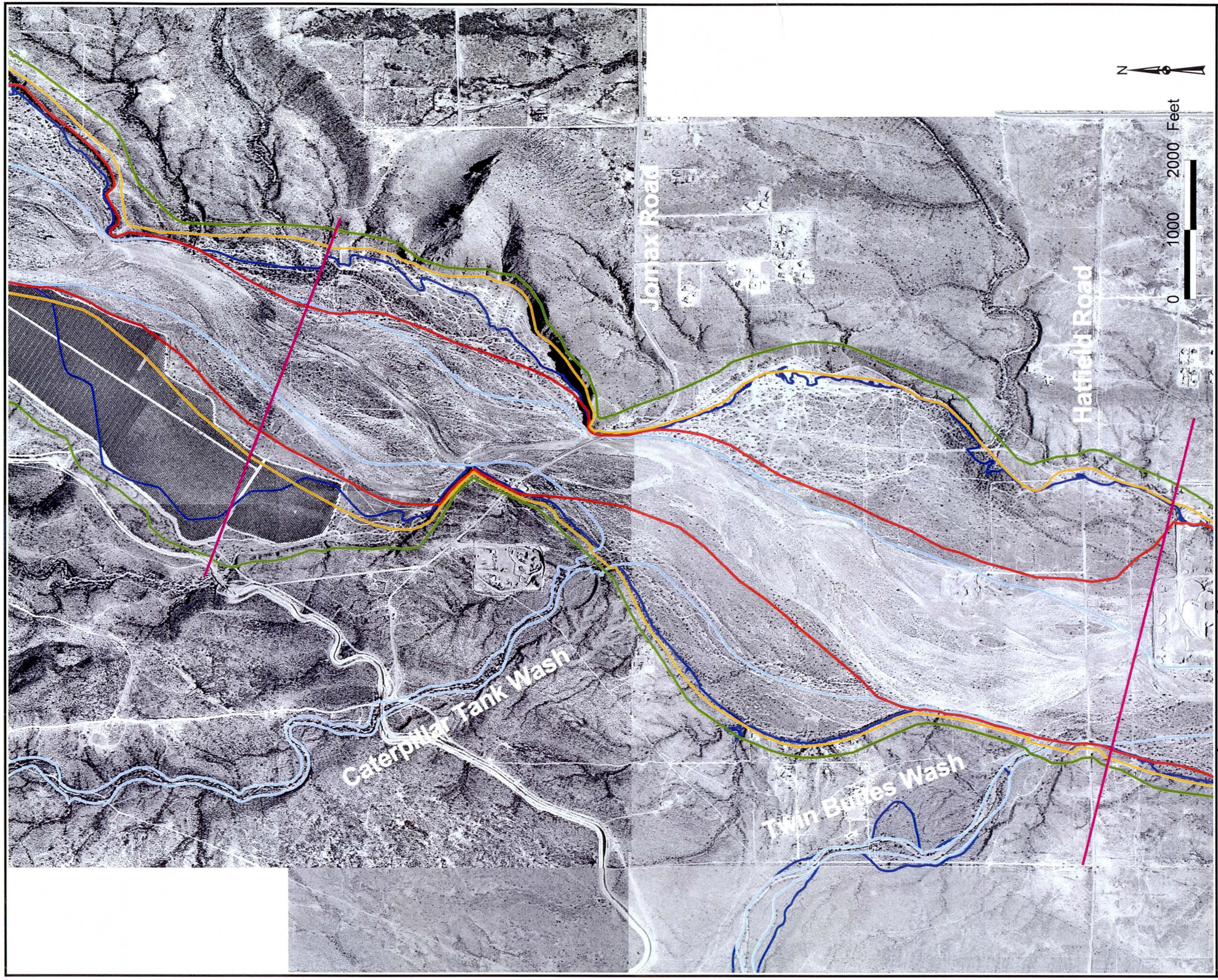


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

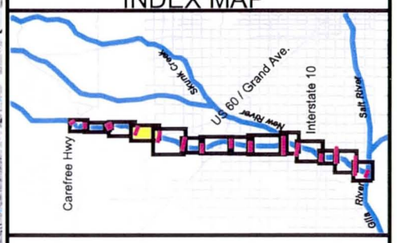
Erosion Hazard Zones Reach 5

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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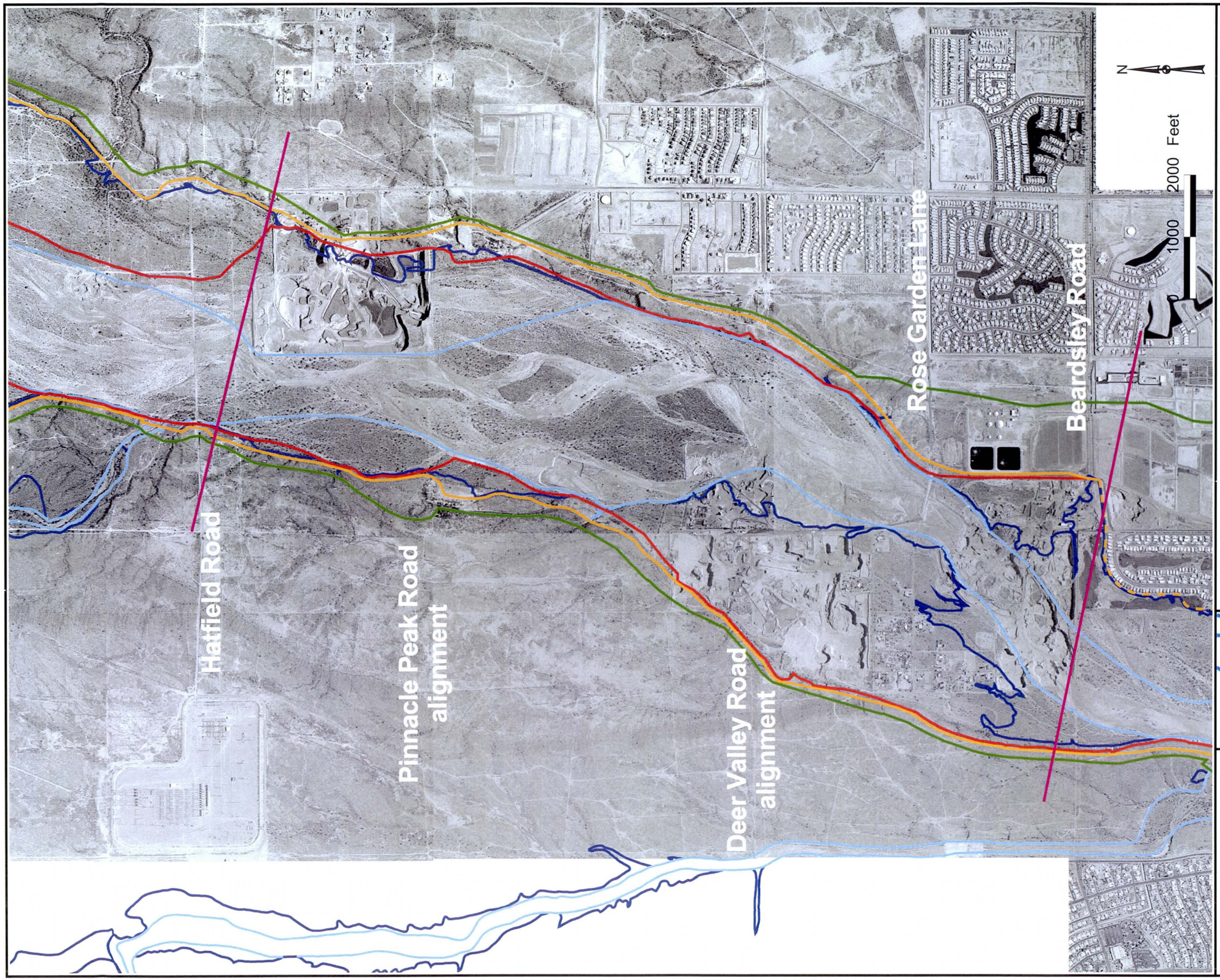


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

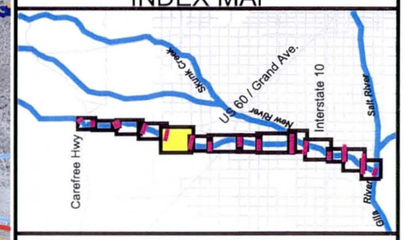
Erosion Hazard Zones Reach 6

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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Agua Fria River Watercourse Master Plan

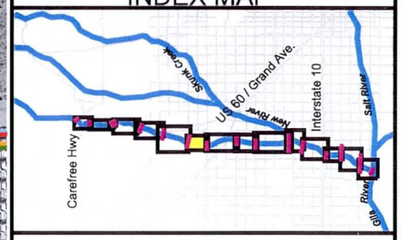
Erosion Hazard Zones Reach 7

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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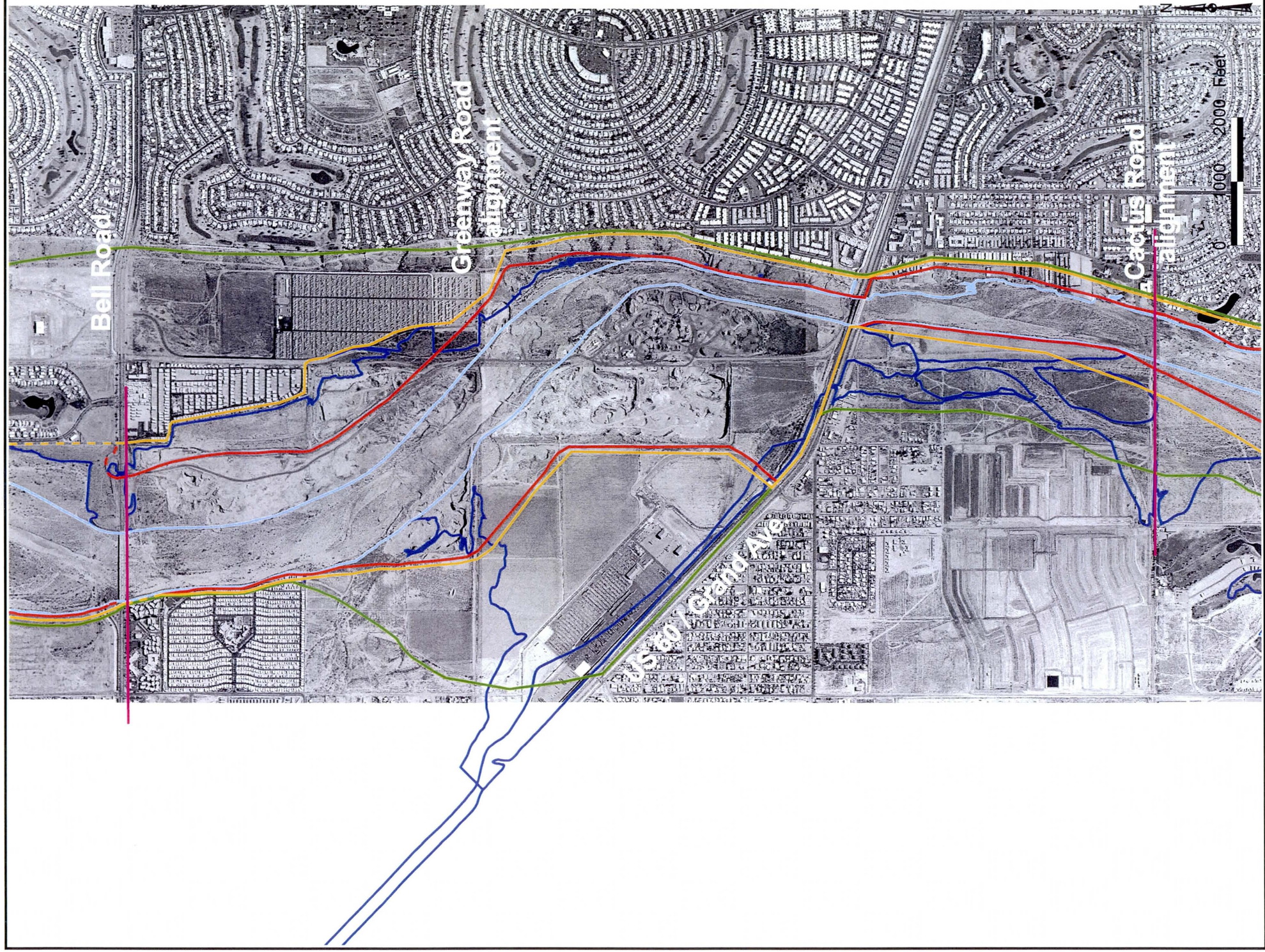


Flood Control District of Maricopa County

Agua Fria River
Watercourse Master Plan

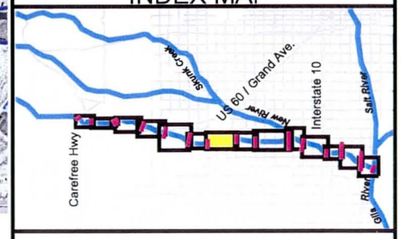
Erosion Hazard Zones
Reach 8

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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of
Maricopa County

Agua Fria River
Watercourse Master Plan

Erosion Hazard Zones
Reach 9

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP

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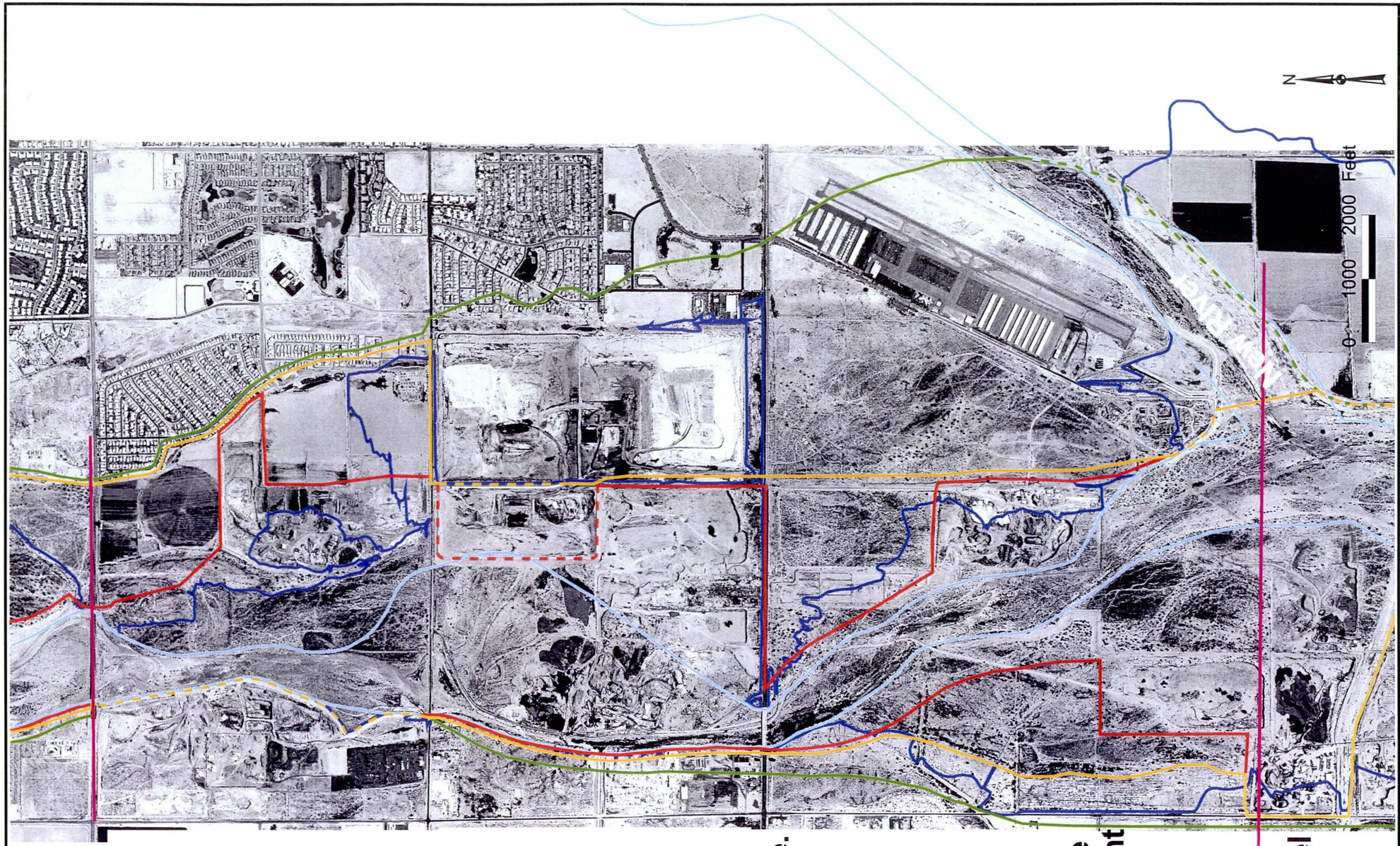


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

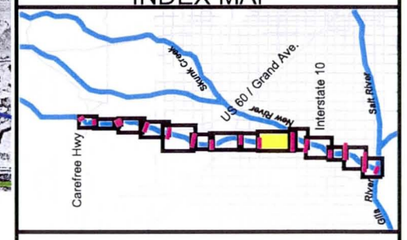
Erosion Hazard Zones Reach 10

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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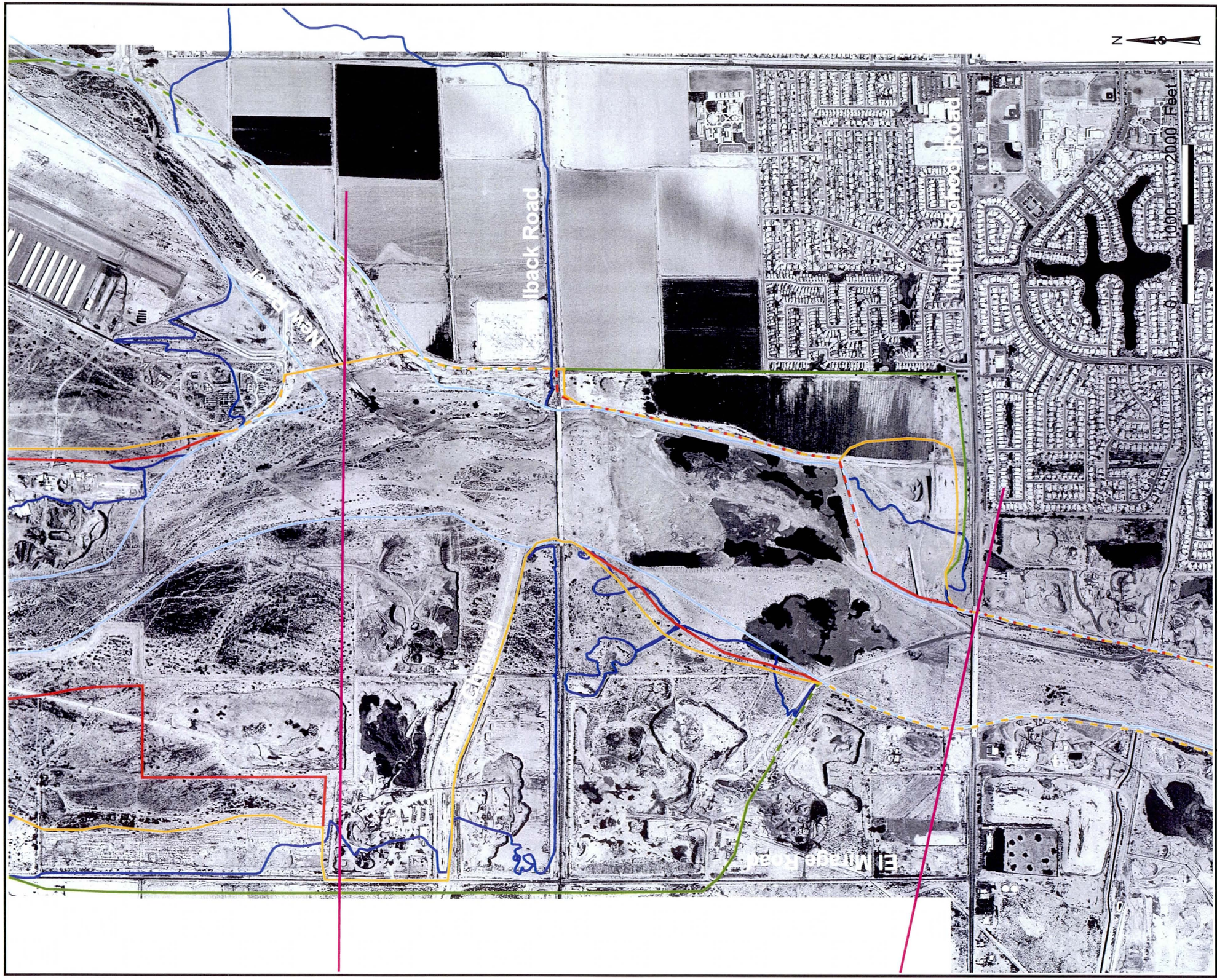


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

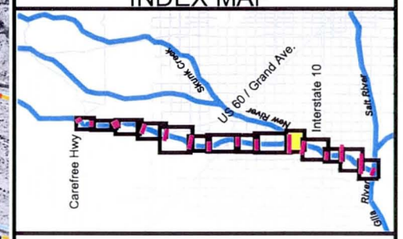
Erosion Hazard Zones Reach 11

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

Erosion Hazard Zones Reach 12

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP

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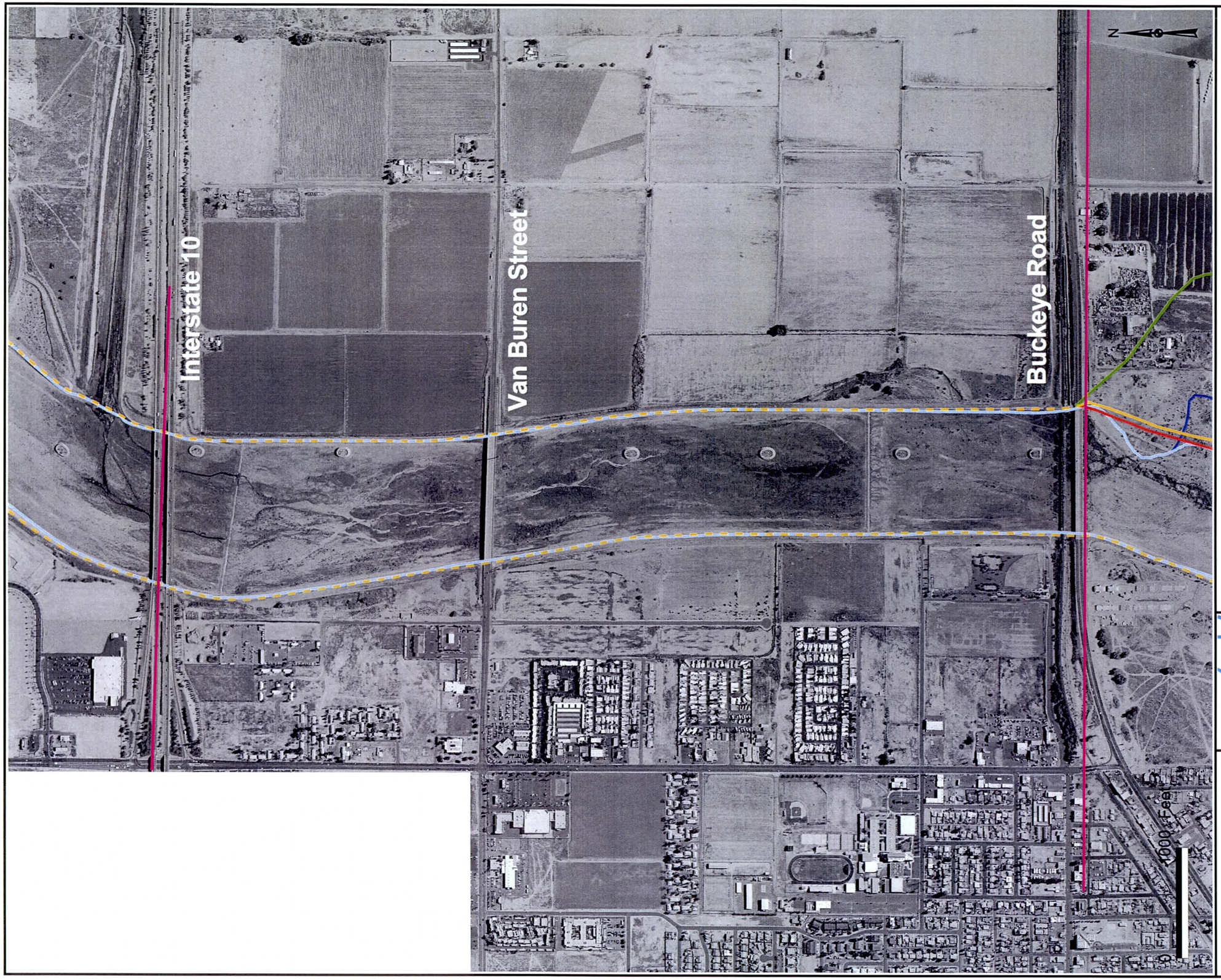


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

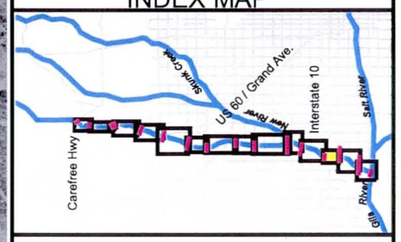
Erosion Hazard Zones Reach 13

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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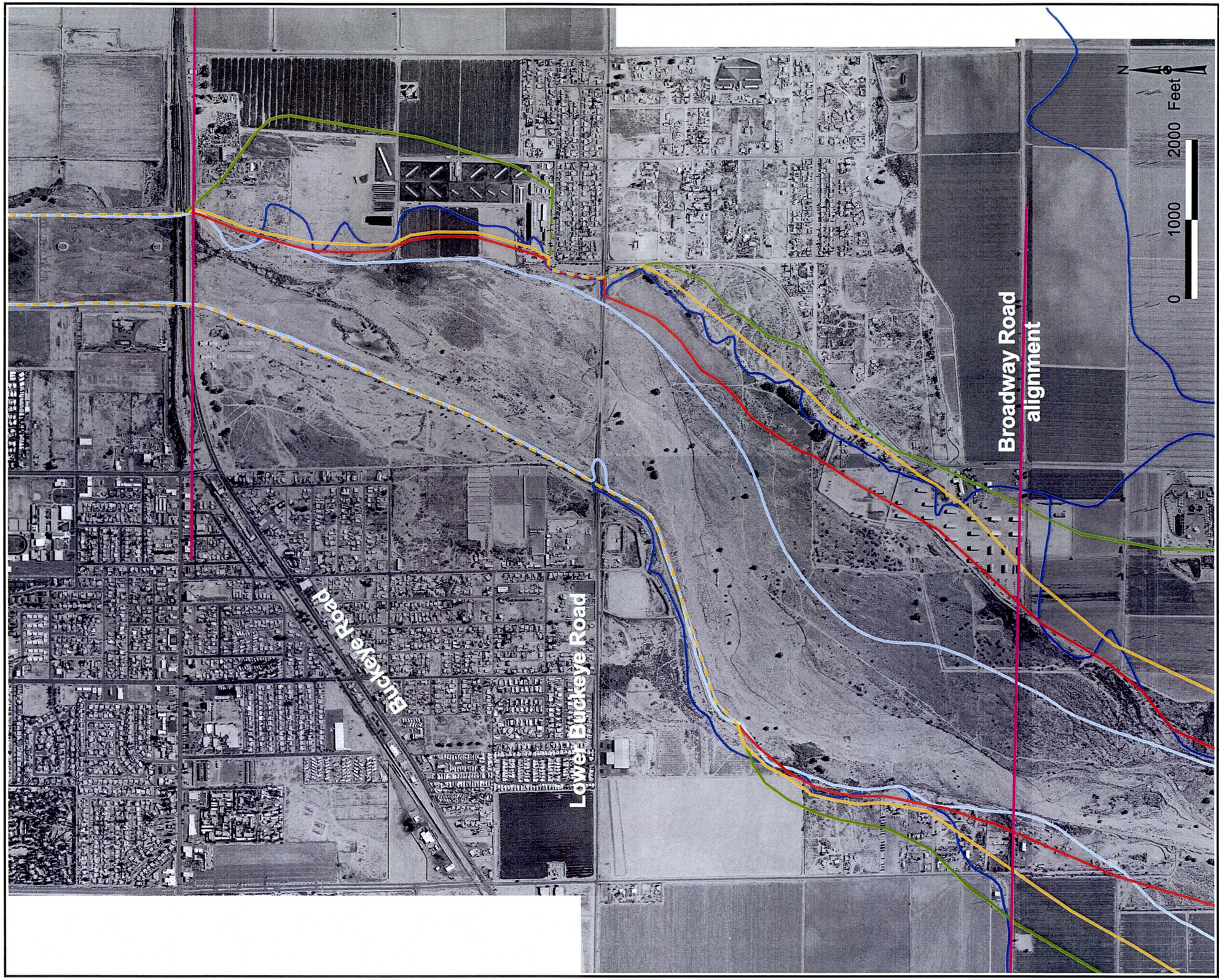


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

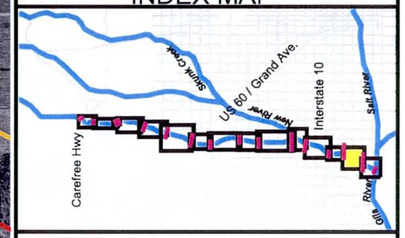
Erosion Hazard Zones Reach 14

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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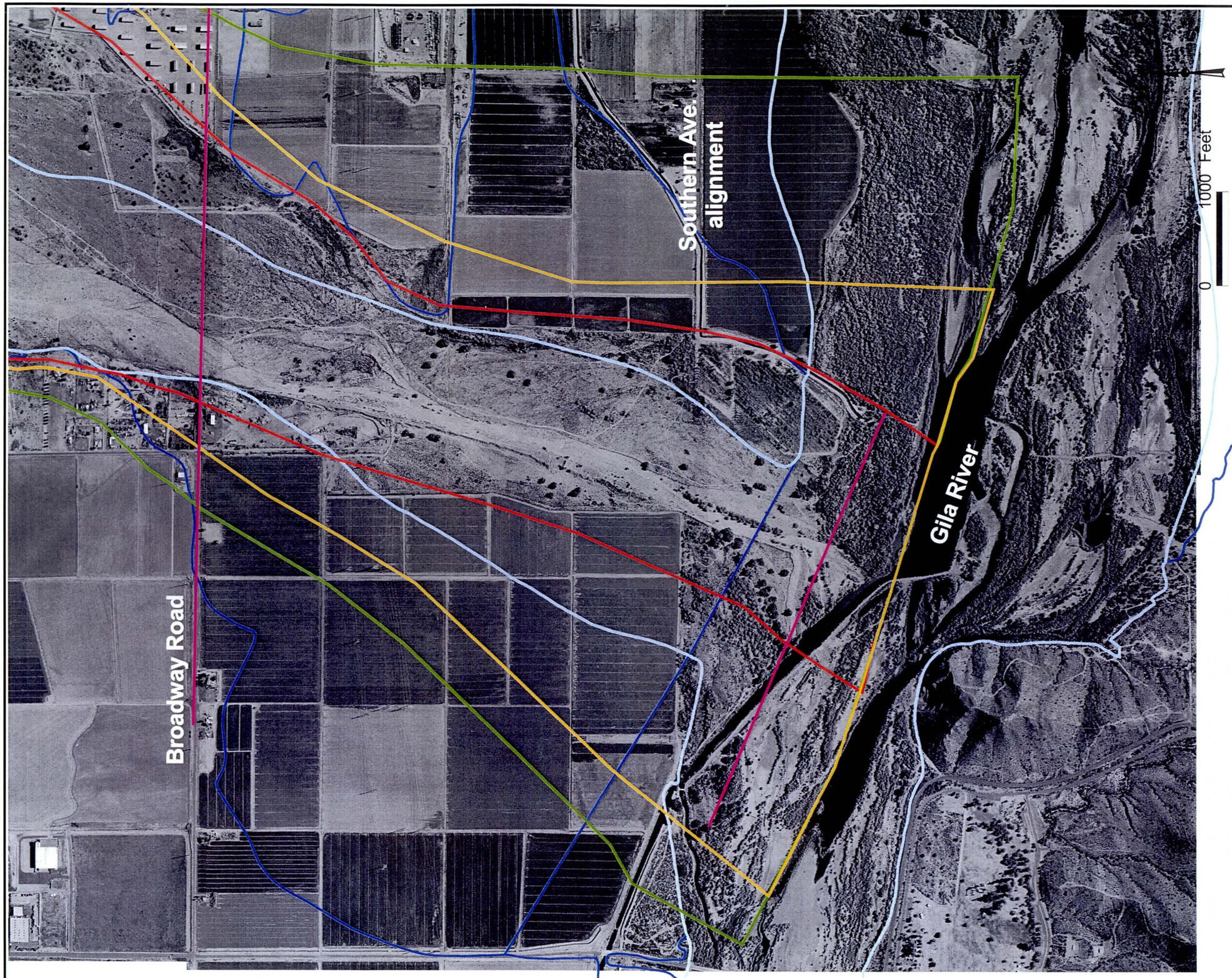


Flood Control District of Maricopa County

Agua Fria River Watercourse Master Plan

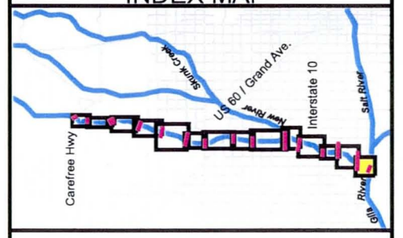
Erosion Hazard Zones Reach 15

LEGEND

- Reach Boundaries
- Long Term Erosion Hazard Zone
- Lateral Migration Erosion Hazard Zone
- Severe Erosion Hazard Zone
- 1996 Floodplain
- 1996 Floodway

Erosion hazard lines dashed where coincident with engineered levee or bank protection measures.

INDEX MAP



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