

***Upper Peace River
An Analysis of Minimum Flows and Levels
Volume 2: Technical Appendices***



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DRAFT - Volume 2: Technical Appendices

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Southwest Florida Water Management District
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DRAFT

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An Analysis of Minimum Flows and Levels
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Technical Appendices

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Fish Data - FD

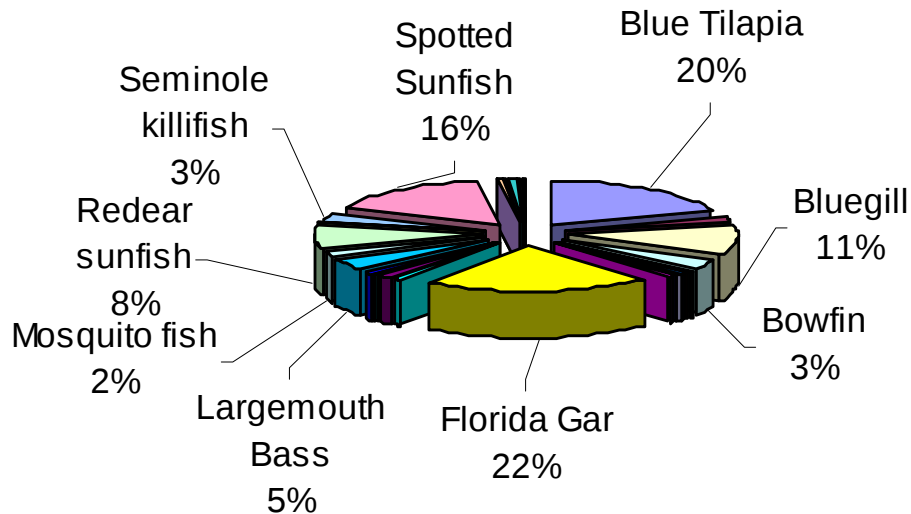
This appendix contains a number of different figures and tables related to fish abundance and fish passage in the upper Peace River. A fish species list compiled from FFWCC data was prepared for reference. Several pie diagrams with accompanying tables are presented that summarize the relative abundance of different fish species at three upstream sites sampled by the FFWCC. A table for converting fish lengths to fish depths for the most common fish species encountered on the upper Peace River was generated.

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Fish species found at upper Peace River sampling sites with percent abundance based on all samples collected at that site. Species list includes all species found by FFWCC at all sites on Peace River.

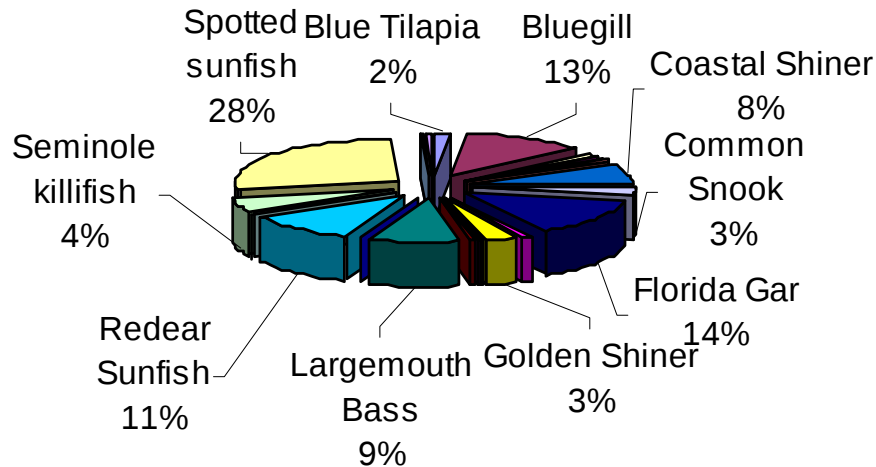
Common name	Scientific name	Code	Homeland % Abundance	Ft. Meade % Abundance	Wauchula % Abundance
Florida gar	<i>Lepisosteus platyrhincus</i>	FGAR	22.01	13.79	14.77
Blue tilapia	<i>Tilapia aurea</i>	BETI	20.09	1.57	5.54
Spotted sunfish	<i>Lepomis punctatus</i>	SPSU	16.15	27.50	16.95
Bluegill	<i>Lepomis macrochirus</i>	BLUE	11.11	12.58	13.48
Redear sunfish	<i>Lepomis microlophus</i>	RESU	8.40	11.11	6.92
Largemouth bass	<i>Micropterus salmoides</i>	LMB	4.72	8.74	12.90
Bowfin	<i>Amia calva</i>	BOW	3.05	1.07	0.96
Seminole killifish	<i>Fundulus seminolis</i>	SEKI	2.70	4.27	3.68
Eastern mosquitofish	<i>Gambusia holbrooki</i>	MOSQ	1.63	0.13	0.21
Black crappie	<i>Pomoxis nigromaculatus</i>	BLCR	1.34		0.04
Golden shiner	<i>Notemigonus crysoleucas</i>	GOSH	1.32	2.94	0.12
Gizzard shad	<i>Dorosoma cepedianum</i>	GISH	0.97	1.07	0.03
Sailfin molly	<i>Poecilia latipinna</i>	SAMO	0.74	0.30	0.06
Warmouth	<i>Lepomis gulosus</i>	WAR	0.63	0.30	0.50
Threadfin shad	<i>Dorosoma petenense</i>	THSH	0.58		0.02
Coastal shiner	<i>Notropis petersoni</i>	COSH	0.56	7.68	4.62
Brown bullhead	<i>Ameiurus nebulosus</i>	BRBU	0.52	0.17	0.46
Lake chubsucker	<i>Erimyzon sucetta</i>	LACH	0.52	0.30	1.48
Longnose gar	<i>Lepisosteus osseus</i>	LGAR	0.49	0.53	1.69
Channel catfish	<i>Ictalurus punctatus</i>	CHCA	0.44	0.77	2.61
Brook silverside	<i>Labidesthes sicculus</i>	BRSI	0.41	0.73	1.56
White catfish	<i>Ameiurus catus</i>	WHCA	0.38	0.50	0.51
Dollar sunfish	<i>Lepomis marginatus</i>	DOSU	0.38		0.17
Walking catfish	<i>Clarias batrachus</i>	WACA	0.30		0.43
Yellow bullhead	<i>Ameiurus natalis</i>	YEBU	0.26		0.09
Hogchoker	<i>Trinectes maculatus</i>	HOG	0.24	0.37	2.50
Common snook	<i>Centropomus undecimalis</i>	COSN	0.06	3.40	2.66
Taillight shiner	<i>Notropis maculatus</i>	TASH	0.02		
Striped mullet	<i>Mugil cephalus</i>	STMU		0.17	4.41
Atlantic needlefish	<i>Strongylura marina</i>	ATNE			0.22
American eel	<i>Anguilla rostrata</i>	AMEE			0.16
Tidewater silverside	<i>Menidia peninsulae</i>	TISI			0.13
Bluefin killifish	<i>Lucania goodei</i>	BLKI			0.06
Pirate perch	<i>Aphredoderus sayanus</i>	PIPE			0.06
Suckermouth catfish	<i>Hypostomus plecostomus</i>	SUCA			0.02
Tadpole madtom	<i>Noturus gyrinus</i>	TAMA			0.02
Swamp darter	<i>Etheostoma fusiforme</i>	SWDA			0.02
Freshwater goby	<i>Gobionellus shufeldti</i>	FWGO			
Golden topminnow	<i>Fundulus chrysotus</i>	GOTO			
Grass carp	<i>Ctenopharyngodon idella</i>	GRCA			
Menhaden	<i>Brevoortia sp.</i>	MEN			
Yellowfin mojarra	<i>Gerres cinereus</i>	YEMO			

Homeland Fish Community Composition Percent Abundance



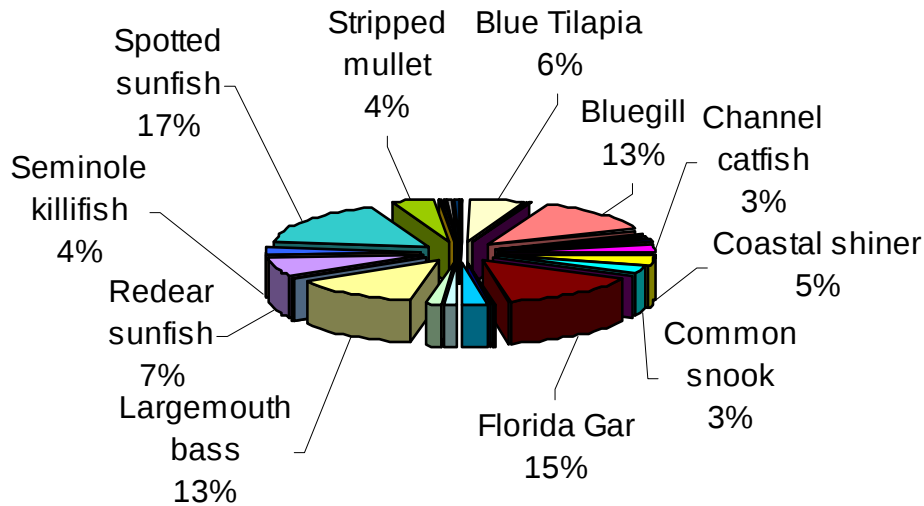
Common name	Scientific name	Homeland % Abundance
Florida gar	<i>Lepisosteus platyrhincus</i>	22.01
Blue tilapia	<i>Tilapia aurea</i>	20.09
Spotted sunfish	<i>Lepomis punctatus</i>	16.15
Bluegill	<i>Lepomis macrochirus</i>	11.11
Redear sunfish	<i>Lepomis microlophus</i>	8.40
Largemouth bass	<i>Micropterus salmoides</i>	4.72
Bowfin	<i>Amia calva</i>	3.05
Seminole killifish	<i>Fundulus seminolis</i>	2.70
Eastern mosquitofish	<i>Gambusia holbrooki</i>	1.63
Black crappie	<i>Pomoxis nigromaculatus</i>	1.34
Golden shiner	<i>Notemigonus crysoleucas</i>	1.32
Gizzard shad	<i>Dorosoma cepedianum</i>	0.97
Sailfin molly	<i>Poecilia latipinna</i>	0.74
Warmouth	<i>Lepomis gulosus</i>	0.63
Threadfin shad	<i>Dorosoma petenense</i>	0.58
Coastal shiner	<i>Notropis petersoni</i>	0.56
Brown bullhead	<i>Ameiurus nebulosus</i>	0.52
Lake chubsucker	<i>Erimyzon sucetta</i>	0.52
Longnose gar	<i>Lepisosteus osseus</i>	0.49
Channel catfish	<i>Ictalurus punctatus</i>	0.44
Brook silverside	<i>Labidesthes sicculus</i>	0.41
White catfish	<i>Ameiurus catus</i>	0.38
Dollar sunfish	<i>Lepomis marginatus</i>	0.38
Walking catfish	<i>Clarias batrachus</i>	0.30
Yellow bullhead	<i>Ameiurus natalis</i>	0.26
Hogchoker	<i>Trinectes maculatus</i>	0.24
Common snook	<i>Centropomus undecimalis</i>	0.06
Taillight shiner	<i>Notropis maculatus</i>	0.02

Ft. Meade Fish Community Composition Percent Abundance



Common name	Scientific name	Ft. Meade % Abundance
Spotted sunfish	<i>Lepomis punctatus</i>	27.50
Florida gar	<i>Lepisosteus platyrhincus</i>	13.79
Bluegill	<i>Lepomis macrochirus</i>	12.58
Redear sunfish	<i>Lepomis microlophus</i>	11.11
Largemouth bass	<i>Micropterus salmoides</i>	8.74
Coastal shiner	<i>Notropis petersoni</i>	7.68
Seminole killifish	<i>Fundulus seminolis</i>	4.27
Common snook	<i>Centropomus undecimalis</i>	3.40
Golden shiner	<i>Notemigonus crysoleucas</i>	2.94
Blue tilapia	<i>Tilapia aurea</i>	1.57
Bowfin	<i>Amia calva</i>	1.07
Gizzard shad	<i>Dorosoma cepedianum</i>	1.07
Channel catfish	<i>Ictalurus punctatus</i>	0.77
Brook silverside	<i>Labidesthes sicculus</i>	0.73
Longnose gar	<i>Lepisosteus osseus</i>	0.53
White catfish	<i>Ameiurus catus</i>	0.50
Hogchoker	<i>Trinectes maculatus</i>	0.37
Sailfin molly	<i>Poecilia latipinna</i>	0.30
Warmouth	<i>Lepomis gulosus</i>	0.30
Lake chubsucker	<i>Erimyzon sucetta</i>	0.30
Brown bullhead	<i>Ameiurus nebulosus</i>	0.17
Striped mullet	<i>Mugil cephalus</i>	0.17
Eastern mosquitofish	<i>Gambusia holbrooki</i>	0.13

Wauchula Fish Community Composition Percent Abundance



Common name	Scientific name	Wauchula % Abundance
Spotted sunfish	<i>Lepomis punctatus</i>	16.95
Florida gar	<i>Lepisosteus platyrhincus</i>	14.77
Bluegill	<i>Lepomis macrochirus</i>	13.48
Largemouth bass	<i>Micropterus salmoides</i>	12.90
Redear sunfish	<i>Lepomis microlophus</i>	6.92
Blue tilapia	<i>Tilapia aurea</i>	5.54
Coastal shiner	<i>Notropis petersoni</i>	4.62
Striped mullet	<i>Mugil cephalus</i>	4.41
Seminole killifish	<i>Fundulus seminolis</i>	3.68
Common snook	<i>Centropomus undecimalis</i>	2.66
Channel catfish	<i>Ictalurus punctatus</i>	2.61
Hogchoker	<i>Trinectes maculatus</i>	2.50
Longnose gar	<i>Lepisosteus osseus</i>	1.69
Brook silverside	<i>Labidesthes sicculus</i>	1.56
Lake chubsucker	<i>Erimyzon sucetta</i>	1.48
Bowfin	<i>Amia calva</i>	0.96
White catfish	<i>Ameiurus catus</i>	0.51
Warmouth	<i>Lepomis gulosus</i>	0.50
Brown bullhead	<i>Ameiurus nebulosus</i>	0.46
Walking catfish	<i>Clarias batrachus</i>	0.43
Atlantic needlefish	<i>Strongylura marina</i>	0.22
Eastern mosquitofish	<i>Gambusia holbrooki</i>	0.21
Dollar sunfish	<i>Lepomis marginatus</i>	0.17
American eel	<i>Anguilla rostrata</i>	0.16
Tidewater silverside	<i>Menidia peninsulae</i>	0.13
Golden shiner	<i>Notemigonus crysoleucas</i>	0.12
Yellow bullhead	<i>Ameiurus natalis</i>	0.09
Bluefin killifish	<i>Lucania goodei</i>	0.06
Sailfin molly	<i>Poecilia latipinna</i>	0.06
Pirate perch	<i>Aphredoderus sayanus</i>	0.06
Black crappie	<i>Pomoxis nigromaculatus</i>	0.04
Gizzard shad	<i>Dorosoma cepedianum</i>	0.03
Suckermouth catfish	<i>Hypostomus plecostomus</i>	0.02
Tadpole madtom	<i>Noturus gyrinus</i>	0.02
Threadfin shad	<i>Dorosoma petenense</i>	0.02
Swamp darter	<i>Etheostoma fusiforme</i>	0.02

Conversion of fish lengths to fish depths by development of length to depth ratios using published lengths for selected species.

Fish Species Common Names	Max of R (mm)	Max Rpt L (mm)	HC Max L (mm)	Ratio	Max of R Depth (mm) (inches)	Max Rpt L Depth (mm) (inches)	Hoyer Max Depth (mm) (inches)
Florida Gar	860	1331	880	7.8	110.8 4.4	171.4 6.7	113.3 4.5
Blue Tilapia	200	508		2.8	71.4 2.8	181.4 7.1	
Spotted Sunfish	140	200	200	2.5	55.4 2.2	79.1 3.1	79.1 3.1
Bluegill	203	405	320	2.4	85.2 3.4	169.9 6.7	134.2 5.3
Redear Sunfish	250		440	2.5	101.1 4.0		177.9 7.0
Largemouth Bass	700		720	3.6	194.9 7.7		200.4 7.9
Bowfin	610	870	720	5.7	106.7 4.2	152.2 6.0	125.9 5.0
Channel Catfish	1270			5.4	234.5 9.2		
Common Snook	1000	1400		5.1	196.4 7.7	275.0 10.8	
Stipped Mullet	350			4.5	78.4 3.1		
Armoured Catfish	415	600		6.7	62.3 2.5	90.0 3.5	
Black Crappie	420		400	2.9	145.7 5.7		138.8 5.5

Max of R = maximum length for the range of lengths of adult fish reported by Lee et al. (1980)

Max Rpt L = maximum reported length given by Lee et al. (1980)

HC Max L = maximum length reported by Hoyer and Canfield (1994)

Ratio = ratio of length to depth based on mean of 3 or 4 sources

Max of R Depth = body depth computed from Max of R

Max Rpt L Depth = body depth computed from Max Rpt L

HC Max D = body depth computed from HC

Sources:

Florida Game and Fresh Water Fish Commission. no date. Florida's Freshwater Fishes.

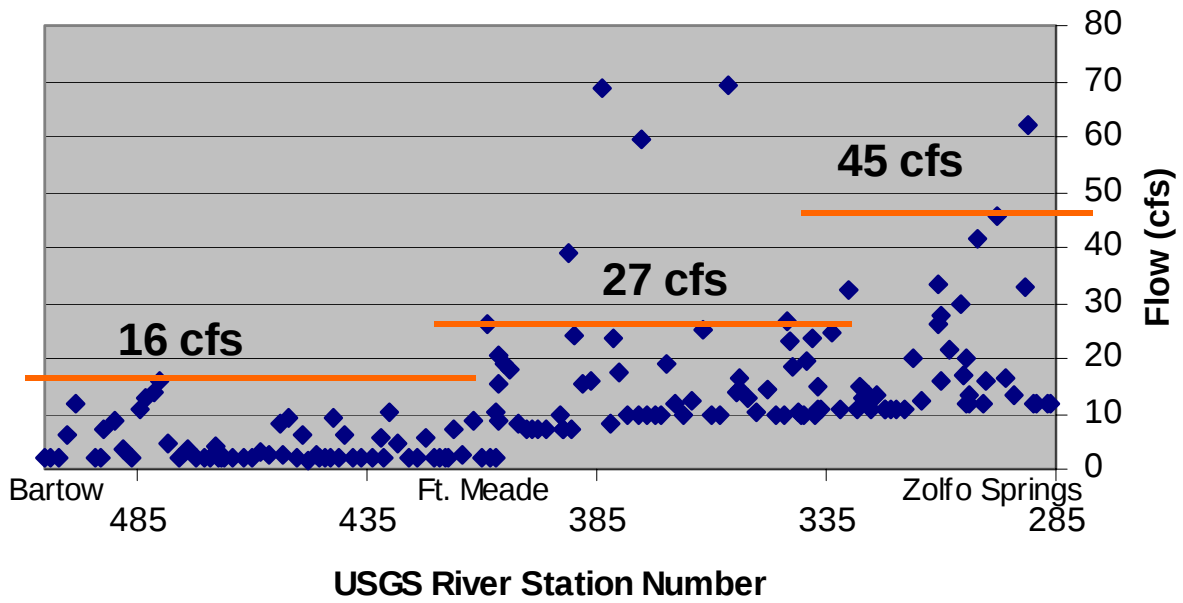
[a wall poster of 23 common freshwater fish species]

Harlan, J. and E. Speaker. 1956. Iowa Fish and Fishing. Iowa State Conservation Commission. State of Iowa. 377 pp.

Hoyer, M and D. Canfield, Jr. 1994. Handbook of Common Freshwater Fish in Florida Lakes. Florida Cooperative Extension Service. Institute of Food and Agricultural Sciences. SP 160. University of Florida. 178 pp.

Lee, D., C. Gilbert, C. Hocutt, R. Jenkins, D. McAllister, J. Stauffer, Jr. 1980. Atlas of North American Freshwater Fishes. Publication #1980-12 North Carolina Biological Survey, North Carolina State Museum of Natural History. 854 pp.

Fish Passage - Minimum Low Flow



Appendix NWI

National Wetland Inventory - NWI

National Wetland Inventory classification codes.

(From Carter, F. Golet, and E. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish Wildlife Service. 103 pp.)

M-Marine

1. Subtidal

RB-Rock

1. Bedrock
2. Rubble

UB-Unconsolidated Bottom

1. Cobble Gravel
2. Sand
3. Mud
4. Organic

AB-Aquatic Bed

1. Algal
3. Rooted Vascular
5. Unknown Submergent

RF-Reef

1. Coral
3. Worm

OW-Open Water/Unknown Bottom

2. Intertidal

AB-Aquatic Bed

1. Algal
3. Rooted Vascular
5. Unknown Submergent

RF-Reef

1. Coral
2. Worm

RS-Rocky Shore

1. Coral
3. Worm

US-Unconsolidated Shore

1. Cobble Gravel
2. Sand
3. Mud
4. Organic

E-Estuarine

1. Subtidal

RB-Rock Bottom

- 1. Bedrock
- 2. Rubble
- UB-Unconsolidated Bottom
 - 1. Cobble Gravel
 - 2. Sand
 - 3. Mud
 - 4. Organic
- AB-Aquatic Bed
 - 1. Algal
 - 3. Rooted Vascular
 - 4. Floating Vascular
 - 5. Unknown Submergent
 - 6. Unknown Surface
- RF-Reef
 - 2. Mollusc
 - 3. Worm
- OW-Open Water/Unknown Bottom
- 2. Intertidal
 - AB-Aquatic Bed
 - 1. Algal
 - 3. Rooted Vascular
 - 4. Floating Vascular
 - 5. Unknown Submergent
 - 6. Unknown Surface
 - RF-Reef
 - 2. Mollusc
 - 3. Worm
 - SB-Streambed
 - 1. Cobble-Gravel
 - 2. Sand
 - 3. Mud
 - 4. Organic
 - RS-Rocky Shore
 - 1. Bedrock
 - 2. Rubble
 - US-Unconsolidated Shore
 - 1. Cobble-Gravel
 - 2. Sand
 - 3. Mud
 - 4. Organic
 - EM-Emergent
 - 1. Persistent
 - 2. Nonpersistent
 - SS-Scrub-Shrub
 - 1. Broad Leaved Deciduous
 - 2. Needle-Leaved Deciduous
 - 3. Broad-Leaved Evergreen

4. Needle-Leaved Evergreen
5. Dead
6. Deciduous
7. Evergreen

FO-Forested

1. Broad Leaved Deciduous
2. Needle-Leaved Deciduous
3. Broad-Leaved Evergreen
4. Needle-Leaved Evergreen
5. Dead
6. Deciduous
7. Evergreen

R-Riverine

1. Tidal
2. Lower Perennial
3. Upper Perennial
4. Intermittent
5. Unknown Perennial

RB-Rock

1. Bedrock
2. Rubble

UB-Unconsolidated Bottom

1. Cobble-Gravel
2. Sand
3. Mud
4. Organic

SB-Streambed

1. Bedrock
2. Rubble
3. Cobble-Gravel
4. Sand
5. Mud
6. Organic
7. Vegetated

AB-Aquatic Bed

1. Algal
2. Aquatic Moss
3. Rooted Vascular
4. Floating Vascular
5. Unknown Submergent
6. Unknown Surface

RS-Rocky Shore

1. Bedrock
2. Rubble

US-Unconsolidated Shore

1. Cobble-Gravel
2. Sand

- 3. Mud
- 4. Organic
- 5. Vegetated
- EM-Emergent
 - 2. Nonpersistent
- OW-Open Water/Unknown Bottom
- L- Lacustrine
 - 1. Limnetic
 - RB-Rock Bottom
 - 1. Bedrock
 - 2. Rubble
 - UB-Unconsolidated Bottom
 - 1. Cobble-Gravel
 - 2. Sand
 - 3. Mud
 - 4. Organic
 - AB-Aquatic Bed
 - 1. Algal
 - 2. Aquatic Moss
 - 3. Rooted Vascular
 - 4. Floating Vascular
 - 5. Unknown Submergent
 - 6. Unknown Surface
 - OW-Open Water/Unknown Bottom
- 2-Littoral
 - RB-Rock Bottom
 - 1. Bedrock
 - 2. Rubble
 - UB-Unconsolidated Bottom
 - 1. Cobble-Gravel
 - 2. Sand
 - 3. Mud
 - 4. Organic
 - AB-Aquatic Bed
 - 1. Algal
 - 2. Aquatic Moss
 - 3. Rooted Vascular
 - 4. Floating Vascular
 - 5. Unknown Submergent
 - 6. Unknown Surface
 - RS-Rocky Shore
 - 1. Bedrock
 - 2. Rubble
 - US-Unconsolidated Shore
 - 1. Cobble-Gravel
 - 2. Sand
 - 3. Mud

- 4. Organic
- 5. Vegetated
- EM-Emergent
 - 2. Nonpersistent
- OW-Open Water/Unknown Bottom
- P-Palustrine
 - RB-Rock Bottom
 - 1. Bedrock
 - 2. Rubble
 - UB-Unconsolidated Bottom
 - 1. Cobble-Gravel
 - 2. Sand
 - 3. Mud
 - 4. Organic
 - AB-Aquatic Bed
 - 1. Algal
 - 2. Aquatic Moss
 - 3. Rooted Vascular
 - 4. Floating Vascular
 - 5. Unknown Submergent
 - 6. Unknown Surface
 - US-Unconsolidated Shore
 - 1. Cobble-Gravel
 - 2. Sand
 - 3. Mud
 - 4. Organic
 - 5. Vegetated
 - ML-Moss-Lichen
 - 1. Moss
 - 2. Lichen
 - EM-Emergent
 - 1. Persistent
 - 2. Nonpersistent
 - SS-Scrub-Shrub
 - 1. Broad-Leaved Deciduous
 - 2. Needle-Leaved Deciduous
 - 3. Broad-Leaved Evergreen
 - 4. Needle-Leaved Evergreen
 - 5. Dead
 - 6. Deciduous
 - 7. Evergreen
 - FO-Forested
 - 1. Broad-Leaved Deciduous
 - 2. Needle-Leaved Deciduous
 - 3. Broad-Leaved Evergreen
 - 4. Needle-Leaved Evergreen
 - 5. Dead

6. Deciduous

7. Evergreen

OW-Open Water/Unknown Bottom

Modifiers

Water Regime

Non-Tidal

A Temporary Flooded

B Saturated

C Seasonally Flooded

D Seasonally Flooded/Well Drained

E Seasonally Flooded/Saturated

F Semipermanently Flooded

G Intermittently Exposed

H Permanently Flooded

J Intermittently Flooded

K Artificially Flooded

W Intermittently Flooded/Temporary

Y Saturated Semipermanent/Seasonal

Z Intermittently Exposed/Permanent

U Unknown

Tidal

K Artificially Flooded

L Subtidal

M Irregularly Exposed

N Regularly Flooded

P Irregularly Flooded

S Temporary-Tidal

R Seasonal-Tidal

T Semipermanent-Tidal

V Permanent-Tidal

U Unknown

Water Chemistry

Coastal Halinity

1. Hyperhaline

2. Euhaline

3. Mixohaline (Brackish)

4. Polyhaline

5. Mesohaline

6. Oligohaline

0. Fresh

Inland Salinity

7. Hypersaline

8. Eusaline

9. Mixosaline

0. Fresh

pH Modifiers for all Fresh Water

a Acid

t Circumneutral

l Alkaline

Soil

g Organic

n Mineral

Special Modifiers

b Beaver

d Partially Drained/Ditched

f Farmed

h Diked/Impounded

r Artificial Substrate

s Spoil

x Excavated

APPENDIX IH

Instream Habitats - IH

This appendix contains a number of different figures and tables related to instream habitat analyses in the Upper Peace River. Surveyed cross-sections of all study sites in the Upper Peace River including floodplain and replicate instream channel transects. List of plant species distinguished between herbaceous, scrub and tree categories encountered within the bank confines of the river. General occurrence of these plants as to banktop, shoreline, riverbank and channel distribution are also noted. List of macroinvertebrates found in the main channel near habitat study sites of the Upper Peace River; data from Lanquist (1953) and Farrell and Billets (1987). Elevational distribution of instream habitats per site superimposed over center channel profile. Total and longest consecutive number of days of inundation per year at the mean elevation of exposed root and snag habitats found in each site.

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Elevational distribution of instream habitats - Site 48	IH-43
Elevational distribution of instream habitats - Site 33	IH-44
Elevational distribution of instream habitats - Site 15	IH-44

Instream Habitats - Bartow to Ft. Meade

Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 181	IH-45
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 178	IH-46
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 161	IH-47
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 150	IH-48
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 146	IH-49
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 143	IH-50
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 134	IH-51
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 119	IH-52

Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 181	IH-53
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 178	IH-54
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 161	IH-55
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 150	IH-56
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 146	IH-57
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 143	IH-58
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 134	IH-59
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 119	IH-60

Instream Habitats - Ft. Meade to Zolfo Springs

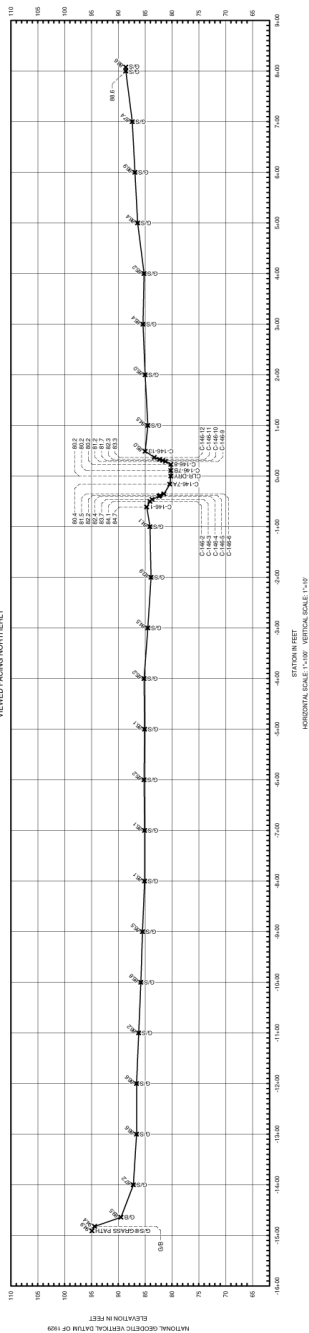
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 106	IH-61
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 99	IH-62
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 91	IH-63
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 83	IH-64
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 79	IH-65
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 52	IH-66
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 49	IH-67
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 48	IH-68
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 33	IH-69
Total and longest consecutive number of days of inundation at the mean elevation of exposed root habitats - Site 15	IH-70

Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 106	IH-71
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 91	IH-72
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 83	IH-73
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 79	IH-74
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 52	IH-75
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 33	IH-76
Total and longest consecutive number of days of inundation at the mean elevation of snag habitat - Site 15	IH-77

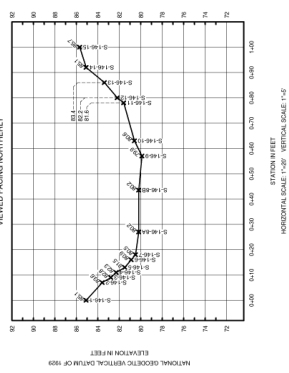




TOWNSHIP 30 SOUTH, RANGE 25 EAST



CROSS SECTION S-146
ON A MAGNETIC BEARING OF NORTH 89°00' EAST
VIEWED FACING NORTHERLY



BENCHMARK:

TERM 34-30-25-2: SET RAILROAD SPIKE IN EAST SIDE OF 12" OAK TREE,
50' NORTH OF EDGE OF PAVEMENT

[illegible]

PEACE RIVER BASIN
MINIMUM FLOWS AND LEVELS
UPPER PEACE RIVER
TRANSECTS AND CROSS SECTIONS (LINE #146)
SECTION 34, TOWNSHIP 30 SOUTH, RANGE 25 EAST
POLK COUNTY, FLORIDA

THIS DRAWING CONSISTS OF 19 SHEETS
EACH IS INCOMPLETE WITHOUT THE OTHERS.

DRAWN BY	CRW	CHECKED	APPROVED
DATE DRAWN	9/17/01	SCALE	AS SHOWN
			SHEET 15 OF 19

DWG. NO. 20-000-633

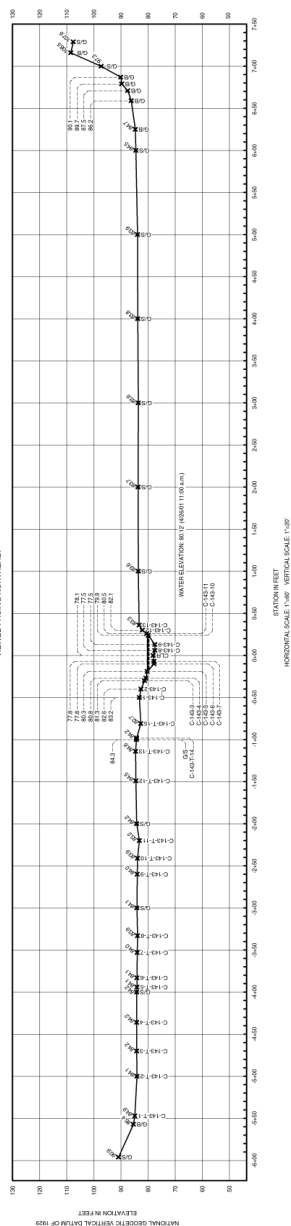
W.D. #01129
AUTOCAD FILE: 203000633.DWG
COSO FILE: 203000633.DWG [UDO]
REFER TO F.B. 20231, PAGES 73-78 AND F.B. 20232, PAGE 14

IH-9

LINE #143

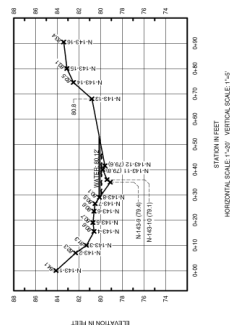
TRANSECT 143

HEADS ON A MAGNETIC BEARING OF NORTH 90°00' EAST
VIEWED FACING NORTHERLY



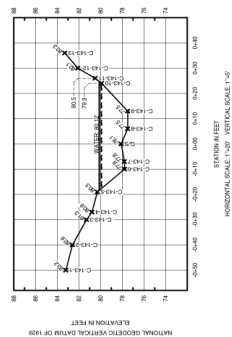
TRANSECT N-143

TRANS ECT N-143
HEADS ON A MAGNETIC BEARING OF NORTH 60°00' EAST
VIEWED FACING NORTHWESTERLY



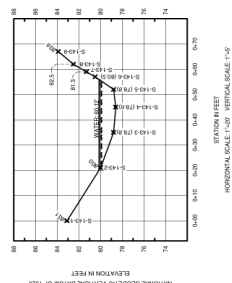
TRANSECT C-143

HEADS ON A MAGNETIC BEARING OF NORTH 90°00' EAST
VIEWED FACING NORTHERLY

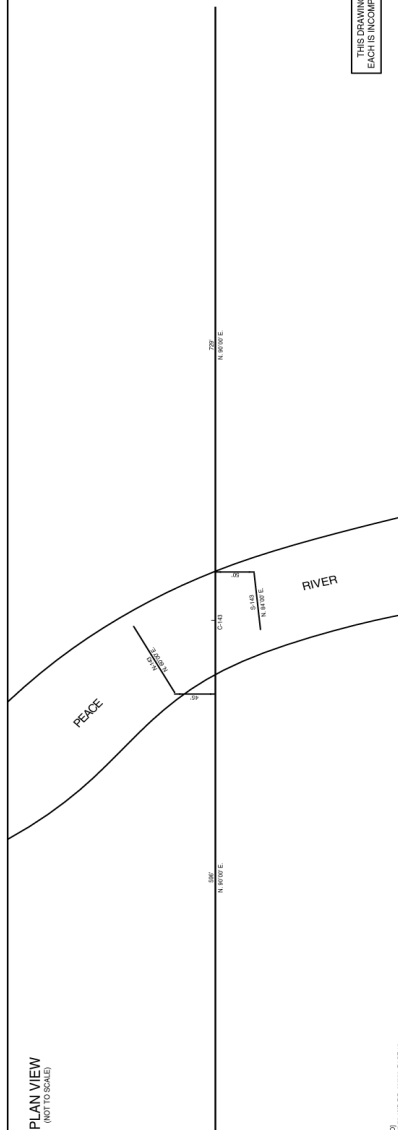


TRANSECT S-143

TRANSIT 3-143
HEADS ON A MAGNETIC BEARING OF NORTH 84°00' EAST
VIEWED FACING NORTHERLY



PLAN VIEW
(NOT TO SCALE)



BENCHMARK:

LIMITED TOPOGRAPHIC SURVEY

[illegible]

THIS DRAWING CONSISTS OF 19 SHEETS
EACH IS INCOMPLETE WITHOUT THE OTHERS.

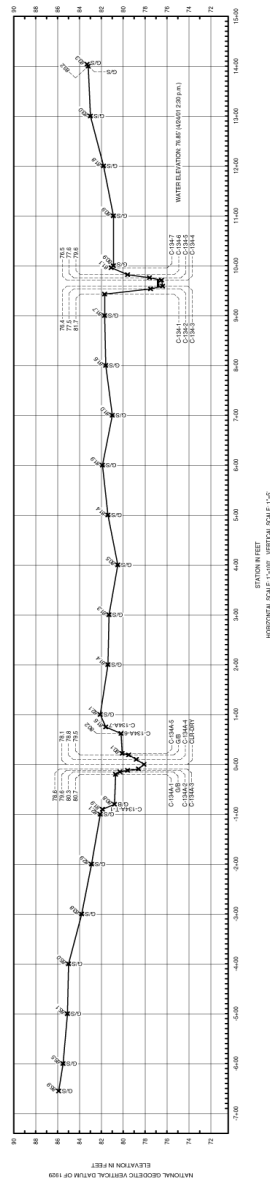
TOWNSHIP 31 SOUTH, RANGE 25 EAST

SECTION 11

LINE #134

TRANSECT 134

HEADS ON A MAGNETIC BEARING OF NORTH 25°00' EAST
VIEWED FACING NORTHWESTERLY

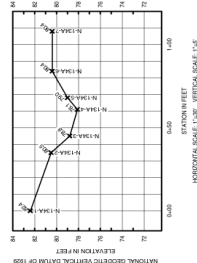


LEGEND

CLR CENTERLINE OF RIVER
G/B GRADE BREAK
G/S GROUND SHOT

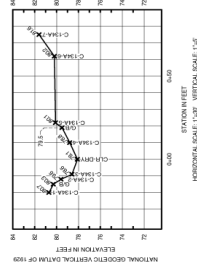
CROSS SECTION N-134A

CROSS SECTION N-134A
LEADS ON A MAGNETIC BEARING OF NORTH 35°00' EAST
VIEWED FACING NORTHWESTERLY



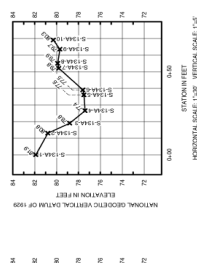
CROSS SECTION C-134A

CROSS SECTION C-134A
HEADS ON A MAGNETIC BEARING OF NORTH 25°00' EAST
VIEWED FACING NORTHWESTERLY



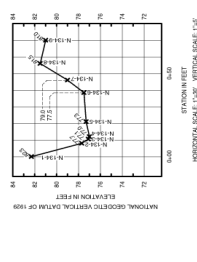
CROSS SECTION S-134A

CROSS SECTION S-134A
HEADS ON A MAGNETIC BEARING OF NORTH 5°00' EAST
VIEWED FACING NORTHWESTERLY



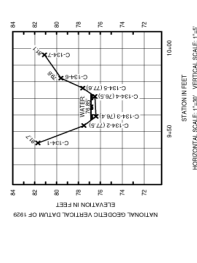
CROSS SECTION N-134

CROSS SECTION N-134
HEADS ON A MAGNETIC BEARING OF NORTH 29°00' EAST
VIEWED FACING NORTHWESTERLY



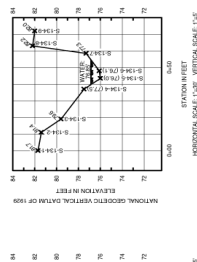
CROSS SECTION C-134

CROSS SECTION C-134
HEADS ON A MAGNETIC BEARING OF NORTH 25° 00' EAST
VIEWED FACING NORTHWESTERLY

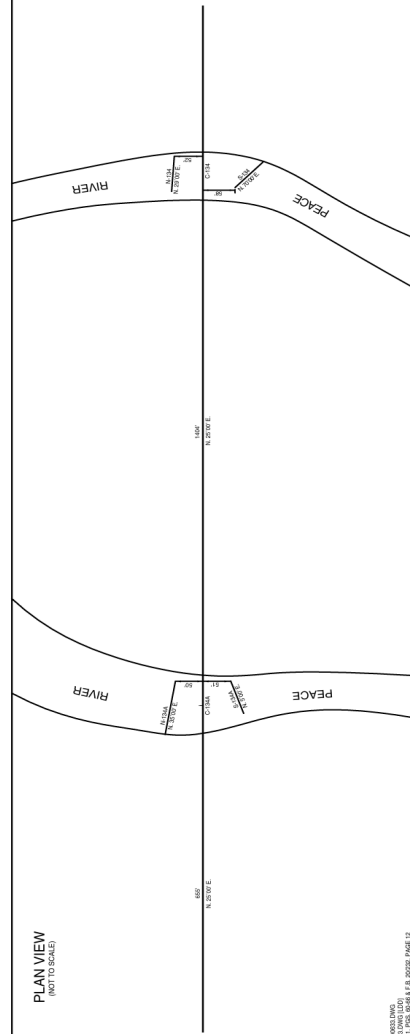


CROSS SECTION S-134

CROSS SECTION S-134
HEADS ON A MAGNETIC BEARING OF NORTH 70°00' EAST
VIEWED FACING NORTHWESTERLY



PLAN VIEW
(NOT TO SCALE)



RECOMMENDATION

TEAM 11-31-25-1. SET PK NAIL & DISK IN ROOT OF 24" TREE
ELEVATION: 87.80'

LIMITED TOPOGRAPHIC SURVEY

[illegible]

DATE	TIME	LOCATION	BY	FILE
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT				

PEACE RIVER BASIN
MINIMUM FLOWS AND LEVELS
UPPER PEACE RIVER

TRANSECTS AND CROSS SECTIONS (LINE #134)

DRAWN BY	CHECKED	APPROVED
	CRW	
	SCALE	SHEET OF

DATE RECEIVED	AS SHOWN	DATE
9/12/01		13 19

DWG. NO. 20-000-63



TOWNSHIP 31 SOUTH, RANGE 25 EAST



BENCHMARK:
 TBM 35-01-05-100, SET RAILROAD SPIKE IN 3" SWEET GUM TREE
 ELEVATION: 75.62'

LIMITED TOPOGRAPHIC SURVEY

[illegible]

PEACE RIVER BASIN
MINIMUM FLOWS AND LEVELS
UPPER PEACE RIVER
TRANSECTS AND CROSS SECTIONS (LINE #106E - AL)

THIS DRAWING CONSISTS OF 19 SHEETS
EACH IS INCOMPLETE WITHOUT THE OTHERS.

SECTION 36, TOWNSHIP 31 SOUTH, RANGE 25 EAST	POLK COUNTY, FLORIDA	
DRAWN BY <i>CRW</i>	CHECKED	APPROVED
DATE DRAWN	SCALE	SHEET OF
	817261	11 19

NAME NO 20-000-62

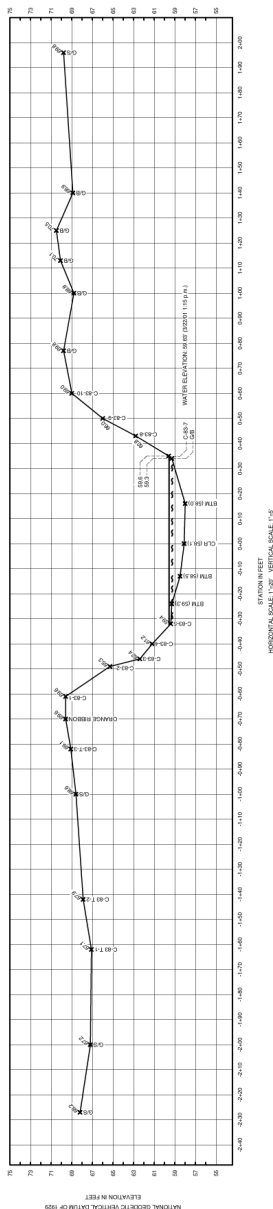




TOWNSHIP 32 SOUTH, RANGE 25 EAST

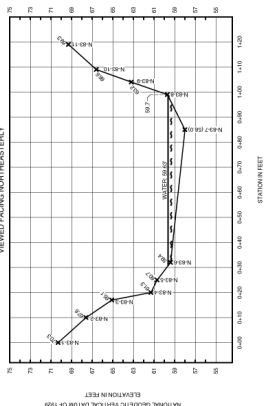
TRANSECT 83

HEADS ON A MAGNETIC BEARING OF S. 50°00' E.
VIEWED FACING NORTHEASTERLY



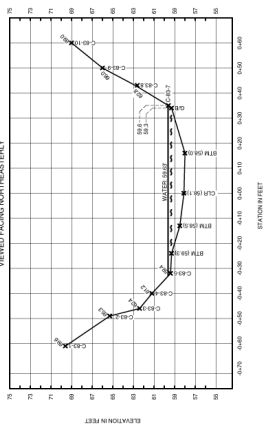
CROSS SECTION N-83

HEADS ON A MAGNETIC BEARING OF SOUTH 55°00' EAST
VIEWED FACING NORTHEASTERLY



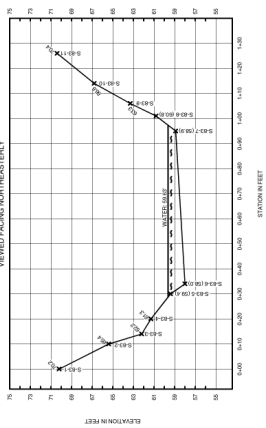
CROSS SECTION C-83

HEADS ON A MAGNETIC BEARING OF SOUTH 50°00' EAST
VIEWED FACING NORTHEASTERLY



CROSS SECTION S-83

HEADS ON A MAGNETIC BEARING OF SOUTH 53°00' EAST
VIEWED FACING NORTHEASTERLY



PLAN VIEW
(NOT TO SCALE)

BENCHMARK:
TBM 22-32-35-3: RAILROAD SPK IN ROOT OF 36" OAK TREE
ELEVATION: 66.00'

LIMITED TOPOGRAPHIC SURVEY

[illegible]SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

EAGE RIVER BASIN

MINIMUM FLOWS AND LEVELS UPPER PEACE RIVER

TRANSECTS AND CROSS SECTIONS (LINE #83)

SECTION 22, TOWNSHIP 32 SOUTH, RANGE 25 EAST
POLK COUNTY, FLORIDA

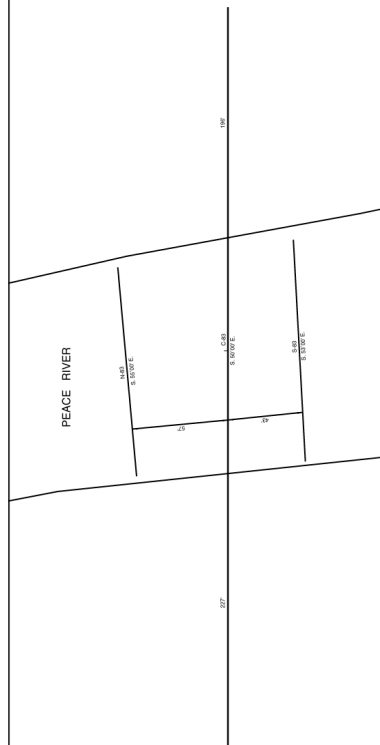
IN BY	CHECKED	APPROVED

CRW / JJ	SCALE	SHEET	OF
CRAWN			

9/10/01	AS SHOWN	0	10
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DWG. NO. 20-000-633

THIS DRAWING CONSISTS OF 19 SHEETS
 EACH IS INCOMPLETE WITHOUT THE OTHERS.

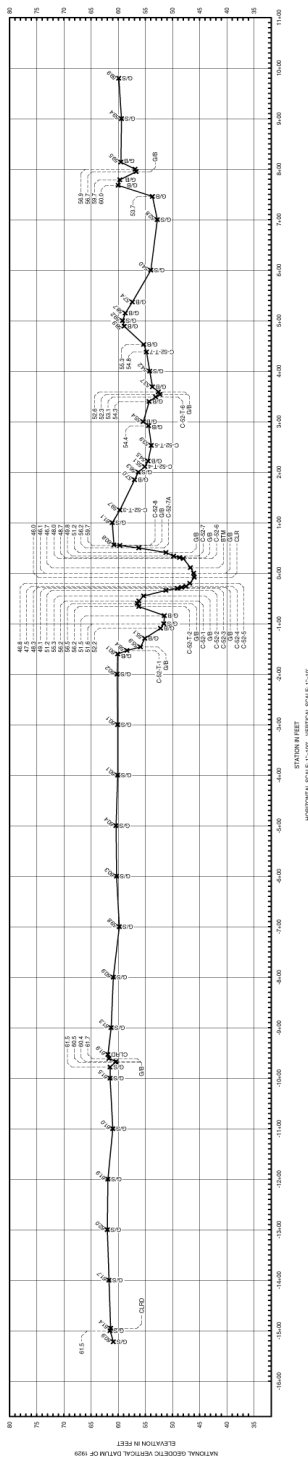


I.O. #01129
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 LOGO FILE: 20000603.DWG [LDO]
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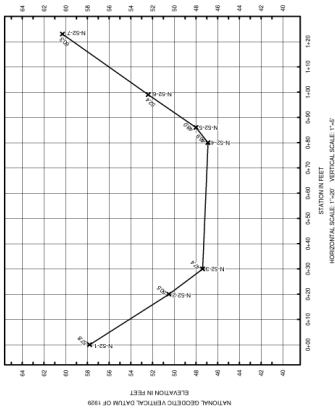


TOWNSHIP 33 SOUTH, RANGE 25 EAST

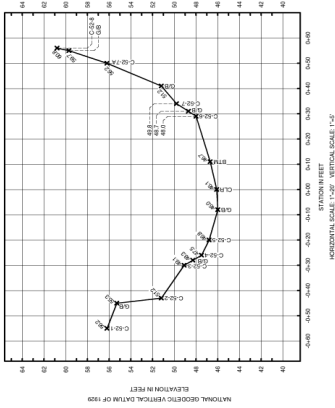
TRANSECT 52
HEADS ON A MAGNETIC BEARING OF N. 86°00' E.
VIEWED FACING NORTHERLY



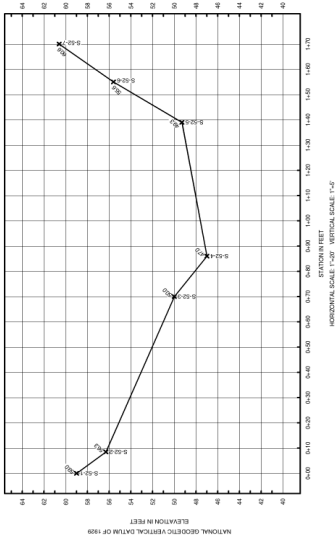
CROSS SECTION N-52
HEADS ON A MAGNETIC BEARING OF NORTH 86°00' EAST
VIEWED FACING NORTHERLY



CROSS SECTION C-52
HEADS ON A MAGNETIC BEARING OF NORTH 86°00' EAST
VIEWED FACING NORTHERLY



CROSS SECTION S-52
HEADS ON A MAGNETIC BEARING OF NORTH 86°00' EAST
VIEWED FACING NORTHERLY



PLAN VIEW
(NOT TO SCALE)

BENCHMARK:
TBM 10-30-25-4: BRIDGE SPIKE AND DISK IN 12" OAK TREE
ELEVATION 81.82'

LIMITED TOPOGRAPHIC SURVEY

[illegible]

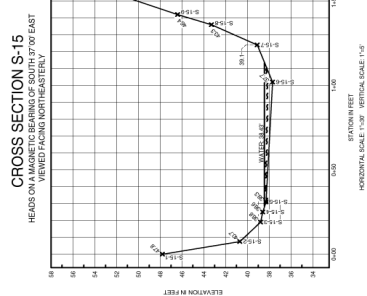
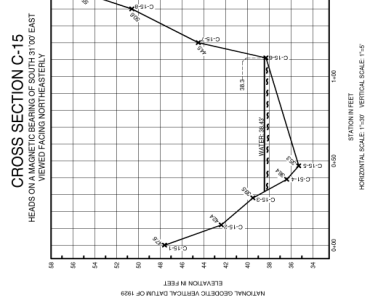
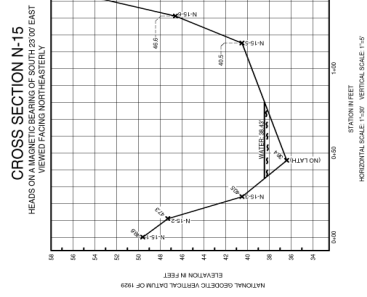
THIS DRAWING CONSISTS OF 19 SHEETS
EACH IS INCOMPLETE WITHOUT THE OTHERS.

W.O. #01129
AUTOCAD FILE: 20000633.DWG
COSO FILE: 20000633.DWG [LDO]
REFER TO F.R. 20-232, PAGE(S) 5 & 65-62

DWG. NO. 20-000-633

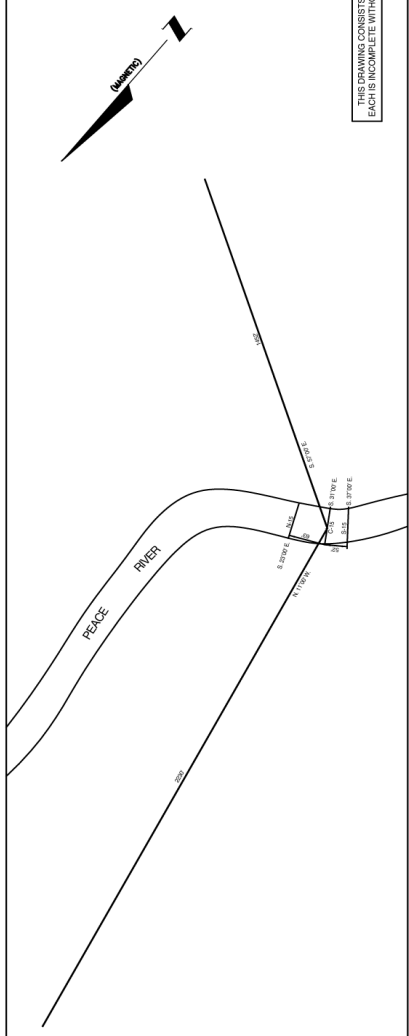
TOWNSHIP 34 SOUTH, RANGE 25 EAST
SECTIONS 10 & 11

LEGEND	
BSTM	BOTTOM OF R
CLUR	CENTERLINE C
CLUP	CENTERLINE C
GB	GRADE BREAK
GS	GROUND SHO
FS	TOP OF FANK



PLAN VIEW
(NOT TO SCALE)

BENCHMARK:
TEBM 11-04-25-0: FOUN
ELEVATION: 56.53'

[illegible]

THIS DRAWING CONSISTS OF 19 SHEETS
EACH IS INCOMPLETE WITHOUT THE OTHERS.

W.O. #01129
AUTOCAD FILE: 20000633.DWG
PLOT FILE: 20000633.DWG [LDO]
REFER TO F.B. 20-232, PAGES 1 & 19-34

List of plant species encountered within the channel boundaries of the Upper Peace River. General instream location and vegetation type classification was also noted. Data from PBS&J (2002).

Herbaceous Layer				
Species Name	Banktop	Channel	Riverbank	Shoreline
<i>Ageratina jucunda</i>	X		X	
<i>Alternanthera philoxeroides</i>		X	X	X
<i>Amaranthus australis</i>		X	X	X
<i>Ambrosia artemisiifolia</i>	X	X	X	X
<i>Ampelopsis arborea</i>		X	X	
<i>Asclepias perennis</i>		X		
<i>Aster carolinianus</i>		X	X	
<i>Aster dumosus</i>			X	
<i>Axonopus fissifolius</i>			X	
<i>Baccharis glomeruliflora</i>		X		
<i>Bacopa monnieri</i>				X
<i>Bidens alba</i>			X	X
<i>Bidens mitis</i>		X	X	X
<i>Boehmeria cylindrica</i>		X	X	X
<i>Campsis radicans</i>			X	X
<i>Carex longii</i>		X		X
<i>Carex lupuliformis</i>		X		
<i>Centella asiatica</i>		X		
<i>Cephalanthus occidentalis</i>			X	
<i>Cicuta maculata</i>		X	X	
<i>Cirsium nuttallii</i>				X
<i>Colocasia esculenta</i>			X	X
<i>Commelina diffusa</i>		X	X	X
<i>Conoclinium coelestinum</i>		X		X
<i>Conyza canadensis</i>		X	X	X
<i>Crinum americanum</i>			X	
<i>Cynodon dactylon</i>				X
<i>Cyperus polystachyos</i>				X
<i>Cyperus virens</i>		X		
<i>Dichondra caroliniensis</i>	X			
<i>Digitaria ciliaris</i>		X	X	
<i>Drymaria cordata</i>			X	
<i>Dyschoriste oblongifolia</i>	X			X
<i>Echinochloa walteri</i>		X		X
<i>Eichhornia crassipes</i>		X		
<i>Elephantopus elatus</i>	X			
<i>Emilia sonchifolia</i>			X	

Species Name	Banktop	Channel	Riverbank	Shoreline
<i>Erechtites hieracifolia</i>				X
<i>Erigeron quercifolius</i>		X		X
<i>Eryngium baldwinii</i>	X	X	X	X
<i>Eupatorium capillifolium</i>		X	X	X
<i>Fraxinus caroliniana</i>			X	
<i>Galactia volubilis</i>	X		X	
<i>Galium pilosum</i>	X			
<i>Gelsemium sempervirens</i>	X			
<i>Gnaphalium falcatum</i>		X	X	X
<i>Habenaria floribunda</i>			X	
<i>Heliotropium Amplexicaule</i>		X		
<i>Hydrocotyle ranunculoides</i>		X		
<i>Hydrocotyle species</i>		X		
<i>Hydrocotyle umbellata</i>		X		
<i>Hydrocotyle verticillatus</i>		X		
<i>Hygrophila costata</i>		X		X
<i>Hypoxis curtissii</i>			X	X
<i>Hyptis verticillata</i>			X	
<i>Ipomoea alba</i>			X	
<i>Ipomoea species</i>	X			
<i>Juncus effusus</i>		X	X	X
<i>Juncus marginatus</i>				X
<i>Lobelia glandulosa</i>		X		
<i>Ludwigia peruviana</i>			X	
<i>Lycopus rubellus</i>			X	
<i>Lygodium japonicum</i>				X
<i>Mikania scandens</i>			X	
<i>Myriophyllum aquaticum</i>		X		
<i>Nuphar lutea</i>		X		X
<i>Oplismenus hirtellus</i>	X			
<i>Oxalis corniculata</i>	X	X	X	X
<i>Panicum anceps</i>			X	
<i>Panicum commutatum</i>	X	X	X	X
<i>Panicum laxiflorum</i>			X	
<i>Panicum rigidulum</i>			X	
<i>Parietaria floridana</i>		X	X	X
<i>Parthenocissus quinquefolia</i>			X	
<i>Paspalum acuminatum</i>				X
<i>Paspalum conjugatum</i>		X	X	X
<i>Paspalum notatum</i>	X		X	
<i>Paspalum repens</i>		X	X	
<i>Paspalum setaceum</i>	X			X

Species Name	Banktop	Channel	Riverbank	Shoreline
<i>Phanopyrum gymnocarpon</i>				X
<i>Phyla nodiflora</i>		X		X
<i>Pistia stratiotes</i>		X		
<i>Pluchea odorata</i>		X		
<i>Polygala grandiflora</i>			X	
<i>Polygonum hydropiperoides</i>		X		
<i>Polygonum punctatum</i>		X	X	X
<i>Psychotria nervosa</i>	X		X	
<i>Ptilimnium capillaceum</i>		X	X	X
<i>Richardia brasiliensis</i>			X	
<i>Rubus trivialis</i>			X	
<i>Rumex verticillatus</i>		X	X	X
<i>Sabatia grandiflora</i>		X		
<i>Salix caroliniana</i>			X	X
<i>Salvia lyrata</i>			X	
<i>Salvinia minima</i>		X		
<i>Samolus valerandi</i>		X		X
<i>Scirpus tabernaemontani</i>		X		
<i>Senecio glabellus</i>		X	X	X
<i>Sida rhombifolia</i>			X	
<i>Smilax auriculata</i>	X			
<i>Smilax bona-nox</i>	X		X	X
<i>Smilax glauca</i>	X			
<i>Smilax laurifolia</i>			X	
<i>Solanum americanum</i>		X	X	
<i>Sporobolus indicus</i>			X	
<i>Stenotaphrum secundatum</i>			X	
<i>Thalia geniculata</i>		X		
<i>Thelypteris dentata</i>			X	
<i>Toxicodendron radicans</i>		X	X	
<i>Typha domingensis</i>		X		
<i>Urena lobata</i>			X	X
<i>Urochloa mutica</i>		X	X	
<i>Vicia floridana</i>		X	X	X
<i>Vitis aestivalis</i>		X		
<i>Vitis rotundifolia</i>	X		X	
<i>Youngia japonica</i>			X	X
Shrub Layer				
Species Name	Channel	Riverbank		
<i>Baccharis glomeruliflora</i>	X	X		
<i>Callicarpa americana</i>		X		
<i>Cephalanthus occidentalis</i>		X		

Species Name	Banktop	Channel	Riverbank	Shoreline
<i>Hypericum hypericoides</i>		X		
<i>Hypericum mutilum</i>	X			
<i>Ilex vomitoria</i>		X		
<i>Ludwigia peruviana</i>	X	X		
<i>Psychotria nervosa</i>		X		
<i>Sambucus canadensis</i>		X		
<i>Serenoa repens</i>		X		
<i>Sideroxylon reclinatum</i>		X		
Tree Layer				
Species Name	Banktop	Channel	Riverbank	
<i>Acer rubrum</i>		X	X	
<i>Aesculus pavia</i>	X			
<i>Carpinus caroliniana</i>			X	
<i>Carya aquatica</i>			X	
<i>Carya glabra</i>	X			
<i>Celtis laevigata</i>	X	X	X	
<i>Cinnamomum camphora</i>		X		
<i>Commelina diffusa</i>			X	
<i>Cornus foemina</i>			X	
<i>Crataegus marshallii</i>	X			
<i>Fraxinus caroliniana</i>		X	X	
<i>Liquidambar styraciflua</i>	X	X	X	
<i>Pontederia cordata</i>		X		
<i>Quercus laurifolia</i>		X	X	
<i>Quercus virginiana</i>	X		X	
<i>Sabal palmetto</i>	X			
<i>Ulmus americana</i>		X		
<i>Ximenia americana</i>	X			

Macroinvertebrates collected from the Upper Peace River. Collections were made by Lanquist (1953) whose data is shown in the first 5 columns. Last column data was obtained from Farrell and Billetts (1987) Only data from collection sites near SWFWMD instream habitat sites were chosen and reported. Station assignment by Lanquist and Farrell and Billets and corresponding SWFWMD sites are as follows: Site 13 = near Bartow, SWFWMD sites 181 and 178; Site 11 = near Homeland, SWFWMD sites 146 and 143; Site 9 = near Ft. Meade, SWFWMD site 119; Site 7 = near Bowling Green, SWFWMD Site 52; Site 5 = near Zolfo Springs, SWFWMD Site 15; Site 664 = near Bowling Green, SWFWMD Site 52.

Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
Porifera						
<i>Spongilla ingloviformis</i>			X		X	
<i>Spongilla lecustris</i>					X	
Coelenterata						
<i>Hydra</i> sp.	X					
Turbellaria						
<i>Microdalyellia</i> sp.		X				
<i>Dugesia</i> sp.	X	X	X	X	X	
<i>Planarian</i> sp. 1						X
Nemertea						
<i>Prostoma rubrum</i>		X	X	X	X	
Nematomorpha						
<i>Paragordius varius</i>					X	
Oligochaeta						
<i>Aelosoma</i> sp.	X	X		X	X	
Naididae	X	X	X	X	X	
<i>Stylaria lacustris</i>	X	X				
<i>Dero</i> sp.	X					
<i>Aulophorus</i> sp.	X	X				
Tubificid spp.	X	X	X	X	X	X
Lumbriculidae	X	X	X	X	X	
"Earthworm" sp. 1						X
<i>Limnodrilus hoffmeisteri</i>						X
<i>Nais pardalis</i>						X
<i>Pristina longisoma</i>						X
Hirudinea						
<i>Helobdella elongata</i>						X
<i>Helobdella stagnalis</i>	X	X				X
<i>Helobdella trisericalis</i>						X
<i>Placobdella parasitica</i>		X				X
<i>Placobdella papillifera</i>						X

Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>Placobdella multilineata</i>	X	X				
<i>Placobdella</i> sp. A		X	X			
<i>Placobdella</i> sp. B			X	X	X	
<i>Batrachobdella phalera</i>	X					X
Unidentified Glossiphonidae	X	X	X	X	X	
<i>Philobdella floridana</i>					X	
<i>Dina</i> sp. A	X	X	X	X	X	
Crustacea						
Asellidae, unid.	X	X		X		
<i>Hyalella azteca</i>	X	X	X		X	
<i>Palaemonetes paludosa</i>	X	X	X	X	X	
<i>Procambarus alleni</i>	X	X	X		X	
<i>P. fallax</i>	X	X	X	X	X	
<i>P.</i> sp.	X	X	X	X	X	
<i>Callinectes sapidus</i>			X		X	
Amphipoda						
<i>Hyalella azteca</i>						X
Isopoda						
<i>Asellus racovitzai</i>						X
<i>Asellus</i> sp. 1						X
Decapoda						
<i>Astachid</i> sp. 1						X
<i>Palaemonetes paludosus</i>						X
<i>P. fallax</i>						X
Hydracarina						
<i>Hydrachna</i> sp.					X	
<i>Eylais</i> sp.					X	
<i>Hydrodroma</i> sp.					X	
<i>Atractides</i> sp.				X		
<i>Limnesia</i> sp.	X					
<i>Tyrellia</i> sp.	X					
<i>Hygrobates</i> sp.	X					
<i>Neumania</i> sp.		X			X	
<i>Mideopsis</i> sp.	X	X		X		
Unid. <i>Hydracarina</i>	X	X	X	X	X	
Collembola						
<i>Podura</i> sp.				X		
Ephemeroptera						
<i>Stenonema exiguum</i>	X	X	X	X	X	X
<i>S. proximum</i>	X		X			
<i>Tricorythodes albilineatus</i>			X	X	X	X
<i>Caenis diminuta</i>	X	X	X	X	X	X
<i>Callibaetis floridanus</i>	X	X	X	X		X
<i>C. pretiosus</i>				X		

Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>Baetis ehippiatus</i>						X
<i>Baetis spinosus</i>	X	X	X	X	X	
<i>B. intercalaris</i>			X	X	X	X
<i>B. propinguus</i>						X
<i>Centroptilum hobbsi</i>			X	X	X	X
<i>C. viridocularis</i>						X
<i>Pseudocloeon alachua</i>			X	X		X
<i>Stenacron interpunctatum</i>						X
<i>Brachymesia macultus</i>						X
Anisoptera						
<i>Aphylla williamsonii</i>	X	X	X	X	X	X
<i>Hagenius brevistylus</i>			X	X		X
<i>Dromogomphus spinosus</i>			X	X	X	X
<i>Gomphus dilatatus</i>		X	X	X	X	X
<i>Gomphus minutus</i>	X		X	X	X	X
<i>G. pallidus</i>	X	X				
<i>G. plagiatus</i>	X	X	X	X	X	X
<i>Boyeria vinosa</i>		X	X	X		X
<i>Nasiseschna penthacantha</i>	X	X	X		X	
<i>Anax junius</i>				X		
<i>Macromia georgina</i>						X
<i>M. taeniolata</i>						X
<i>M. sp.</i>	X	X	X	X	X	
<i>Epicordulia regina</i>		X	X	X	X	
<i>Tetragoneuria spp.</i>				X	X	X
<i>Libellula vibrans</i>	X	X		X		
<i>L. spp.</i>						X
<i>Orthemis ferruginea</i>	X		X			
<i>Perithemis seminole</i>	X		X		X	
<i>Pachydiplax longipennis</i>	X	X			X	
<i>Cannacria gravida</i>	X					
<i>Miathyria marcella</i>	X					
Zygoptera						
<i>Hetaerina titia</i>		X	X	X	X	X
<i>Argia fumipennis</i>		X			X	
<i>A. moesta</i>			X	X		X
<i>A. sedula</i>	X	X	X	X	X	X
<i>Ischnura posita</i>	X	X				X
<i>I. Ramburii</i>	X			X	X	X
<i>Enallagma cardinium</i>	X	X	X	X	X	X
<i>E. pollutum</i>						X
<i>E. sp.</i>	X	X		X	X	
Hemiptera						
<i>Mesovelis mulsanti</i>	X	X	X	X	X	

Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>M. amoena</i>	X	X	X			
<i>Hydrometra myrae</i>	X	X	X	X	X	
<i>Microvelia borealis</i>	X	X				
<i>M. hinei</i>	X		X	X		
<i>Rhagovelia choreutes</i>			X	X	X	
<i>Velia brachialis</i>	X		X	X	X	
<i>Gerris capaliculatus</i>			X	X	X	
<i>Gerris</i> sp. 1						X
<i>Limnogonus hesione</i>	X		X	X	X	
<i>Metrobates a. anomalus</i>				X	X	
<i>Rheumatobates tenuipes</i>					X	
<i>Pelocoris femoratus</i>	X	X	X	X	X	
<i>Pelocoris</i> sp. 1						X
<i>P.</i> sp. A	X		X		X	
<i>Ranatra nigra</i>	X	X	X	X	X	
<i>Ranatra</i> sp. 1						X
<i>R. buenoi</i>			X		X	
<i>R. drakei</i>			X	X	X	
<i>R. australis</i>	X	X	X	X	X	
<i>Benacus griseus</i>		X	X	X		
<i>B. testaceum</i>	X	X	X			
<i>Belostoma</i>	X					
<i>Plea striola</i>	X					
<i>Sigera bradleyi</i>	X	X	X	X	X	
<i>Palmaeorixa buenoi</i>		X			X	
<i>Trichocoriza louisianae</i>	X	X	X	X	X	
<i>T. minima</i>			X	X	X	
<i>T. naias</i>			X	X	X	
Megaloptera						
<i>Corydalis cornutus</i>						X
Neuroptera						
<i>Corydalis cornutus</i>	X		X	X	X	
<i>Chauliodes</i> sp.	X					
Trichoptera						
<i>Chimarra perigus</i>			X	X	X	
<i>Neureclipsis</i> sp.	X	X	X	X	X	
<i>Polycentropus cinereus</i>						X
<i>Polycentropus</i> sp.	X	X				
<i>Cyrnellus fraternus</i>						X
<i>Cyrnellus marginalis</i>		X	X	X	X	
<i>Nyctiophylax</i> sp. 1						X
<i>Ochrotrichia</i> sp. 1						X
Psychomyiid Genus A.	X	X			X	
<i>Triaenodes</i> sp. 1						X

Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>Hydropsyche incommoda</i>			X	X	X	
<i>Hydropsyche</i> sp. 1						X
<i>Cheumatopsyche</i> spp.	X	X	X	X	X	X
<i>Nectopsyche exquisita</i>						X
<i>N. pavida</i>						X
<i>Oxyethira</i> spp.		X				X
<i>Orthotrichia</i> sp.	X				X	
<i>Hydroptila bernerii</i>			X	X		
<i>H.</i> sp. 1						X
<i>Neotrichia ranea</i>		X	X	X	X	
<i>Leptocella candida</i>	X		X	X	X	
<i>L. exquisita</i>			X	X	X	
<i>L.</i> sp. A					X	
<i>Oecetis cinerescens</i>			X			
<i>O. cinerescens</i> form B	X					
<i>O. inconspicua</i>	X		X	X	X	X
<i>O.</i> sp. 1						X
<i>O.</i> sp. 2						X
<i>O.</i> sp. 3						X
<i>O.</i> sp. C	X			X	X	
Lepidoptera						
<i>Elophila</i> sp.		X				
<i>Paraponyx</i> sp. 1						X
Coleoptera						
<i>Colpius inflatus</i>	X				X	
<i>Pronoterus semipunctatus</i>	X					
<i>P. addendus</i>	X					
<i>Hydrocanthus oblongus</i>	X	X	X	X	X	
<i>H. similator</i>	X	X			X	
<i>H.</i> sp., larva		X				
<i>Suphisellus puncticollis</i>				X	X	
<i>S. gibbulus</i>	X	X	X	X	X	
<i>S.</i> sp. A	X	X			X	
<i>Laccophilus proximus</i>	X	X	X	X	X	
<i>L. gentilis</i>	X	X	X		X	
<i>L.</i> sp., larva		X				
<i>Hydrovatus compressus</i>	X	X	X		X	
<i>Desmopachria grana</i>					X	
<i>Brachyvatus seminulum</i>	X	X	X	X		
<i>Bidessus pullus floridanus</i>					X	
<i>Anodochilus exiguus</i>				X	X	
<i>Bidessonotus longivalis</i>					X	
<i>B. pulicarius</i>			X		X	
<i>Hygrotus acaroides marginipennis</i>			X		X	

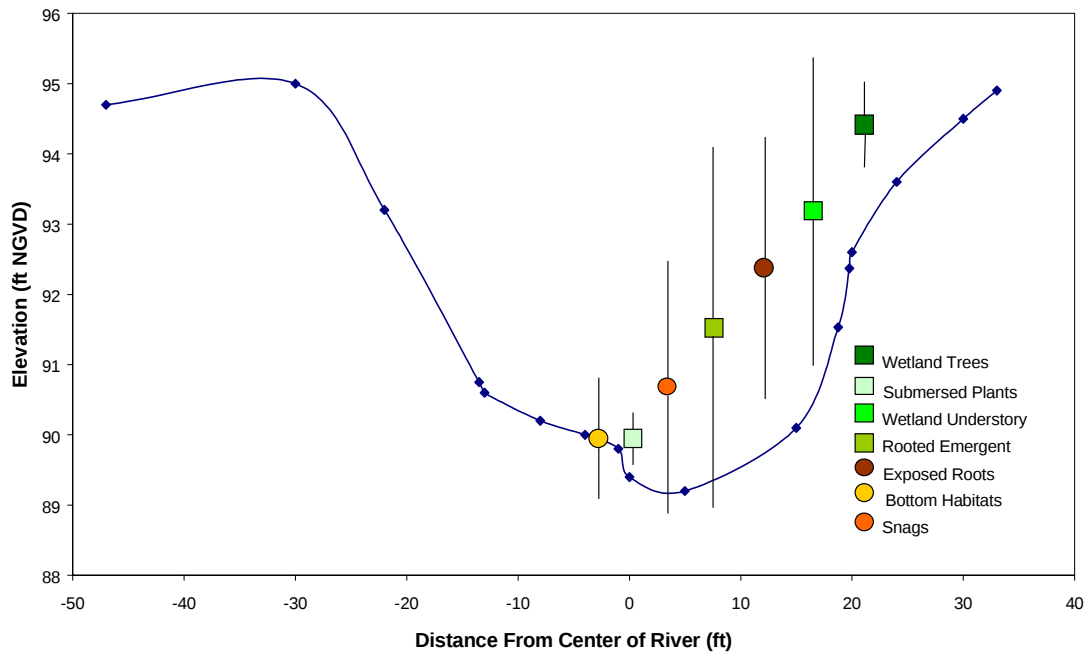
Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>Hydroporus</i> of. <i>vittatipennis</i>			X	X	X	
<i>H. lynceus</i> complex	X		X		X	
<i>Celina angustata</i>			X			
<i>C. slossoni</i>				X		
<i>Copelatus caelatipennis</i>		X			X	
<i>C. chevrolati</i>	X	X				
<i>Coptotomas interrogatus obscurus</i>	X	X	X	X	X	
<i>Hydaticus bimarginatus</i>			X			
<i>Thermonectes basilaris</i>	X		X			
<i>Cybister fimbriolatus</i>			X			
<i>C. fimbriolatus</i> , larva	X	X				
<i>Peltodytes floridensis</i>	X		X	X	X	
<i>P. oppositus</i>			X	X	X	
<i>P. sexmaculatus</i>			X	X	X	
<i>P. sp. A</i>	X	X	X	X	X	
<i>P. sp.</i> , larva		X				
<i>P. sp. 1</i>						X
<i>Scirtes</i> sp. 1						X
<i>Haliphus confluentus</i>			X		X	
<i>H. annulatus</i>					X	
<i>H. punctatus</i>			X		X	
<i>H. sp.</i> , larva					X	
<i>Dineutes carolinus</i>	X	X	X	X	X	
<i>D. serrulatus</i>	X	X	X	X	X	
<i>D. sp.</i> , larva	X	X	X		X	
<i>D. sp. 1</i>						X
<i>Gyrinus rockinghamensis</i>	X			X	X	
<i>G. elevatus</i>	X		X	X	X	
<i>G. pachysomus</i>	X	X	X	X	X	
<i>G. sp.</i> , larva		X	X	X	X	
<i>G. sp. 1</i>						X
<i>Hydraena marginicollis</i>	X	X	X	X	X	
<i>Hydrochus foveatus</i>			X		X	
<i>H. equicarinatus</i>	X	X	X	X	X	
<i>H. rugosus</i>			X		X	
<i>H. sp. 1</i>						X
<i>Paracymus nanus</i>	X	X	X	X	X	
<i>Dubiraphia</i> sp. 1						X
<i>Enochrus nebulosus</i>		X				
<i>E. ochraceus</i>	X	X	X	X	X	
<i>E. sublongus</i>		X	X	X	X	
<i>E. blatchleyi</i>	X	X	X	X	X	
<i>E. consors</i>		X	X	X		
<i>E. cinctus</i>			X	X	X	

Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>E. sp.</i> , larva	X					
<i>Helobata striata</i>					X	
<i>Tropisternus lateralis</i>	X	X	X	X	X	
<i>T. blatchleyi</i>	X		X			
<i>T. of. Natator</i>	X					
<i>T. striolatus</i>	X	X	X	X	X	
<i>T. sp.</i> , larva	X		X	X	X	
<i>Berosus pugnax</i>	X		X	X	X	
<i>B. exiguus</i>	X	X	X	X	X	
<i>B. infuscatus</i>	X	X	X	X	X	
<i>B. sp.</i> , larva	X					
<i>Pelonomus obscurus gracilipes</i>				X	X	
<i>Stenelmis fuscata</i>	X	X	X	X	X	
<i>S. sp.</i> , larva	X	X	X	X	X	
<i>S. sp. 1</i>						X
<i>Microcylloepus pusillus</i>			X			X
<i>Simsonia quadrinotata</i>		X	X	X	X	
<i>S. sp.</i> , larva	X	X		X	X	
Chironomidae						
<i>Ablabesmyia mallochi</i>						X
<i>A. parajanta</i>						X
<i>A. tarella</i>						X
<i>Chironomini sp. A</i>						X
<i>Cladotanytarsus sp. 1</i>						X
<i>C. sp. 2</i>						X
<i>Clinotanytus sp. 1</i>						X
<i>Corynoneura celeripes</i>						X
<i>C. taris</i>						X
<i>C. sp. 1</i>						X
<i>Cricotopus bicinctus</i>						X
<i>Cricotopus sp. 1</i>						X
<i>Cryptochironomus blarina</i>						X
<i>C. fulvus</i>						X
<i>Cryptochironomus sp. 1</i>						X
<i>Dicrotendipes modestus</i>						X
<i>D. neomodestus</i>						X
<i>L. neopilosella</i>						X
<i>Micropsectra sp. 1</i>						X
<i>M. sp. 2</i>						X
<i>Nanocladius sp. 1</i>						X
<i>Paralauterborniella nigrohalteralis</i>						X
<i>Pentaneura inculta</i>						X
<i>Polypedilum convictum</i>						X
<i>P. halterale</i>						X

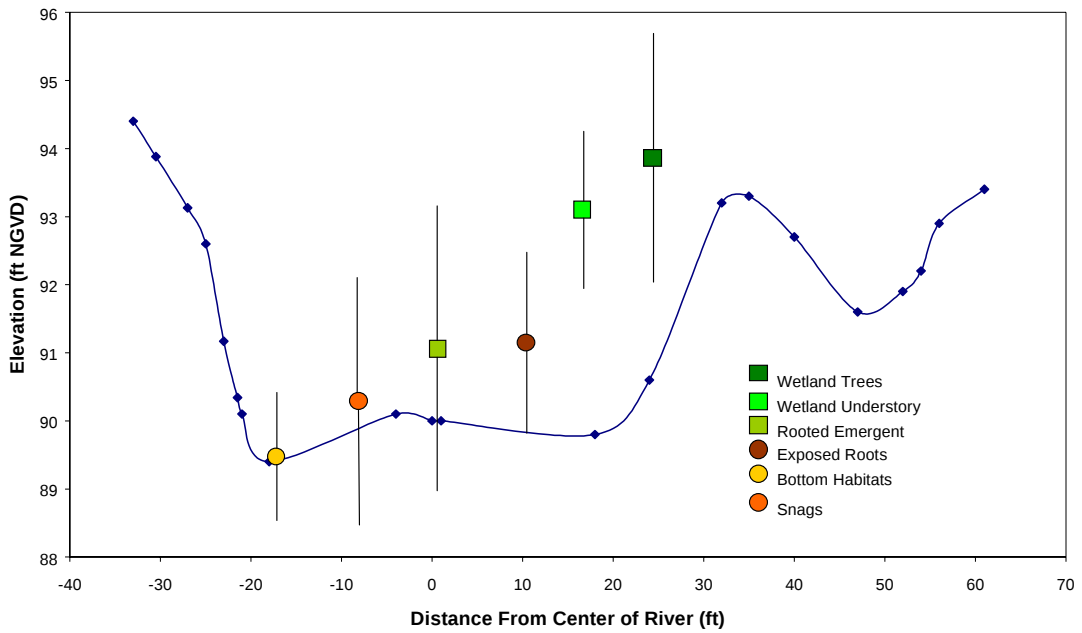
Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>P. illinoense</i>						X
<i>Procladius</i> sp. 1						X
<i>Psectrocladius</i> sp. 1						X
<i>Pseudochironomus fulviventris</i>						X
<i>Rheocricotopus robacki</i>						X
<i>Rheotanytarsus exiguus</i>						X
<i>Stenochironomus hiliaris</i>						X
<i>Tanytarsus</i> sp. 1						X
<i>Thienemanniella</i> cf. <i>Fusca</i>						X
<i>T. xena</i>						X
<i>Tribelos fusicornis</i>						X
Diptera						
<i>T. caloptera</i>			X		X	
<i>Chaoborus punctipennis</i>	X					
<i>Chaoborus</i> sp. 1						X
<i>Anophelos</i> sp.	X					
<i>Culax</i> sp.	X					
<i>Simulium jenningsi</i>		X	X	X	X	
<i>Simulium</i> sp. 1						X
Tendipedidae	X	X	X	X	X	
Pelopiinae	X	X	X	X	X	
Tendipedinae	X	X	X	X	X	
Calopsectrini	X	X	X	X	X	
Ceratopogonid sp. 1						X
C. sp. 3						X
C. sp. 4						X
<i>Tendipes militaris</i>	X	X	X	X	X	
<i>T. decorus</i>	X	X	X	X	X	
<i>Cryptochironomus</i> sp. B				X	X	
<i>Atrichopogon</i> sp. A	X	X	X		X	
<i>Palpomyia</i> group A			X		X	
<i>P.</i> group	X	X	X	X	X	
Empididae sp. 1						X
Heleidae Genus A					X	
<i>Euparyphus</i> sp.	X					
<i>Nemotelus</i> sp.		X				
<i>Odontomyia</i> sp.	X					
<i>Chrysops</i> sp.			X			
<i>Tabanus</i> sp.			X		X	
<i>Roederiodes</i> sp.			X	X	X	
<i>Eristalis</i> sp.	X	X				
Muscoides Genus A			X			
<i>Brachydeutera</i> sp.	X					
Pelecypoda						

Macroinvertebrate Species	Peace River Stations					
	13	11	9	7	5	664
<i>Elliptio buckleyi</i>		X	X	X	X	
<i>Byssanodonta</i> sp.		X	X	X	X	
<i>Sphaerium transversum</i>	X	X	X	X	X	
<i>Pisidium casertanum</i>			X			
<i>P. singlyi</i>		X	X	X	X	
Bivalvia						
<i>Corbicula manilensis</i>						X
<i>Elliptio buckleyi</i>						X
<i>Pisidium</i> sp. 1						X
Gastropoda						
<i>Pomacea paludosa</i>	X	X	X			X
<i>Viviparus georgianus</i>	X		X			X
<i>Amnicola dalli</i>						X
<i>Amnicola</i> sp.				X	X	
<i>Lymnaea columella</i>			X	X	X	
<i>Helisoma duryi</i>	X	X		X	X	
<i>H. trivolvis intertextum</i>	X	X	X	X	X	
<i>Menetus dilatatus</i>		X	X		X	
<i>Ferrissia</i> sp. A	X	X	X	X	X	
<i>F.</i> sp. B				X	X	
<i>Physa pomilis</i>	X	X	X	X	X	
<i>Gyraulus parvus</i>						X
<i>Hebetancylus excentricus</i>						X
<i>Laevapex fuscus</i>						X
<i>Physella</i> sp. 1						X
<i>Planorbella</i> cf. <i>Duryi</i>						X

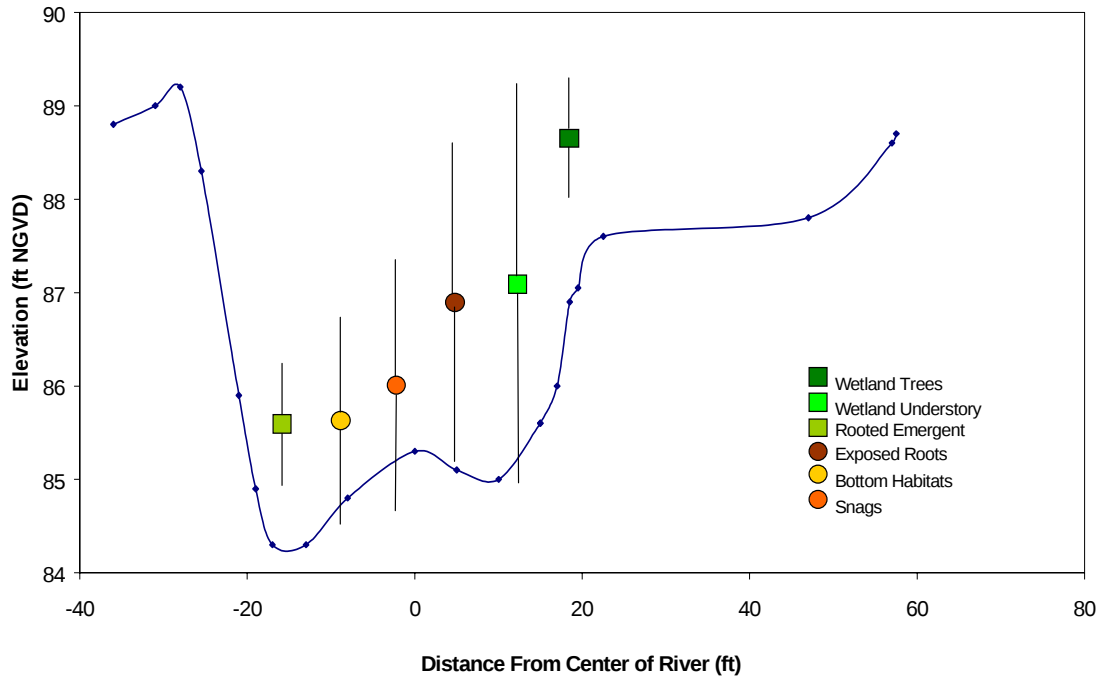
Instream Habitat Distribution - Site 181



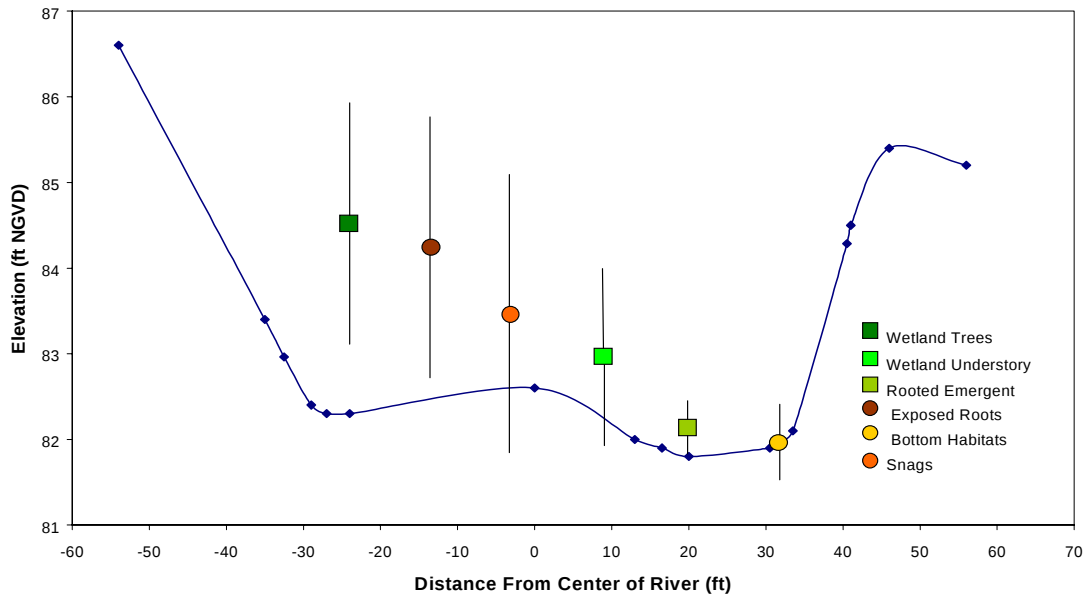
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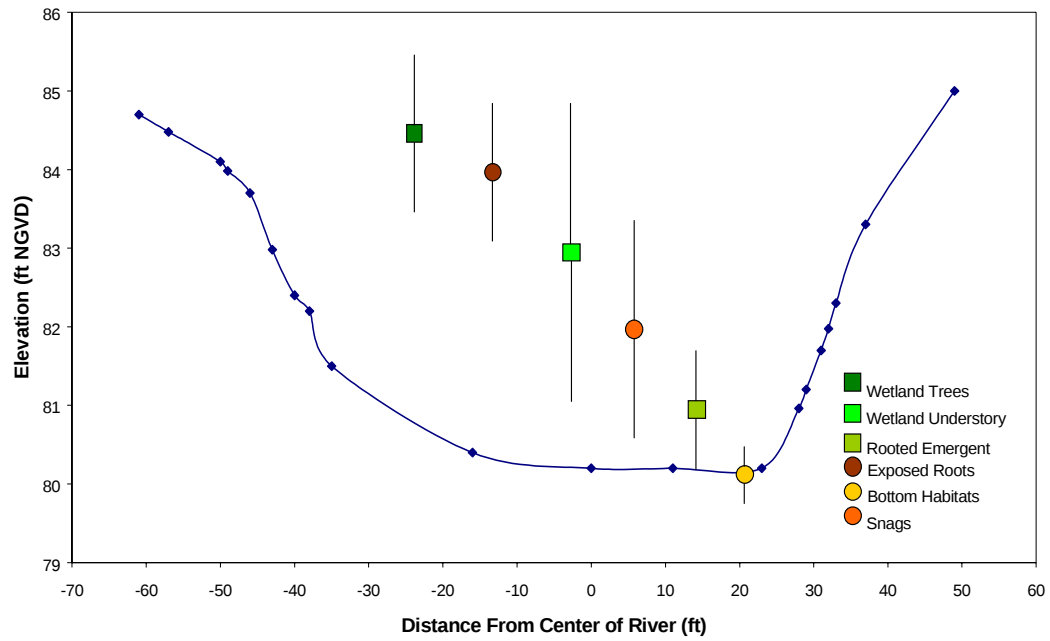
Instream Habitat Distribution - Site 161



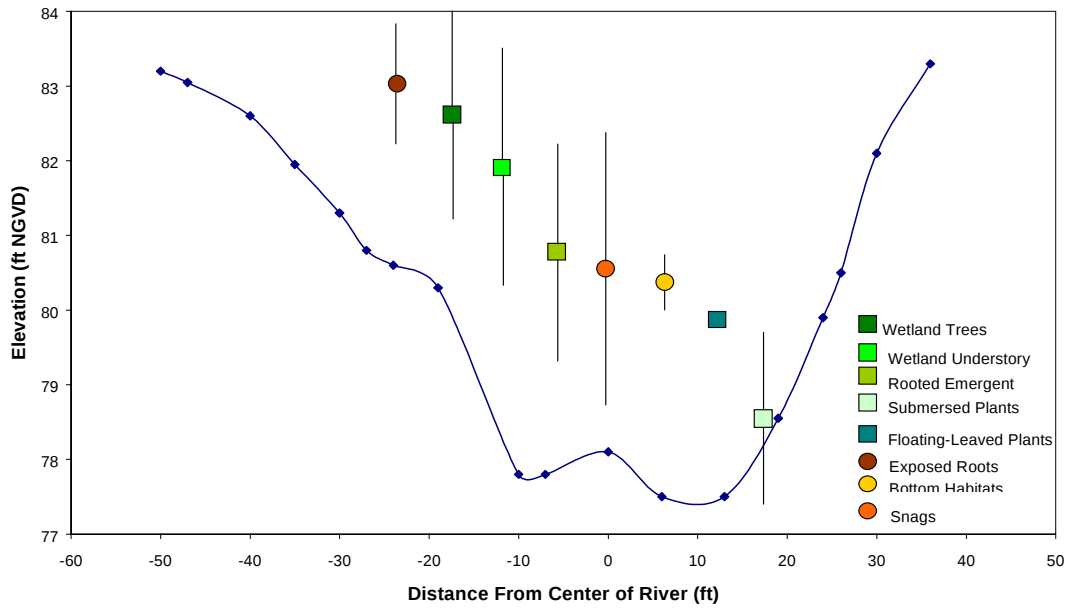
Instream Habitat Distribution - Site 150



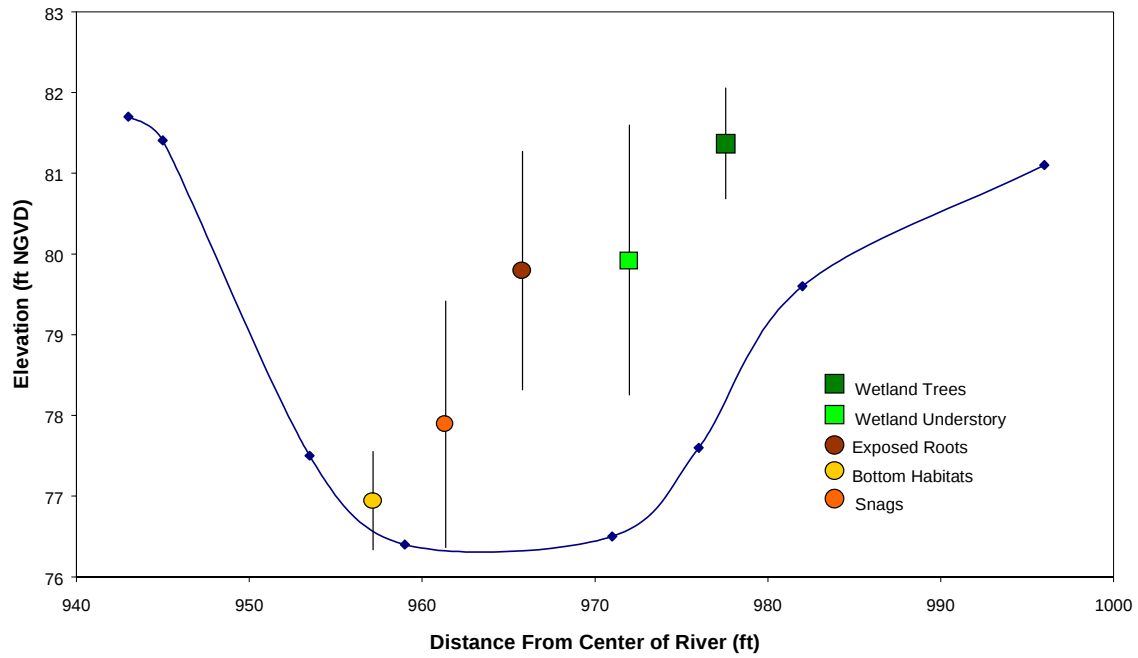
Instream Habitat Distribution - Site 146



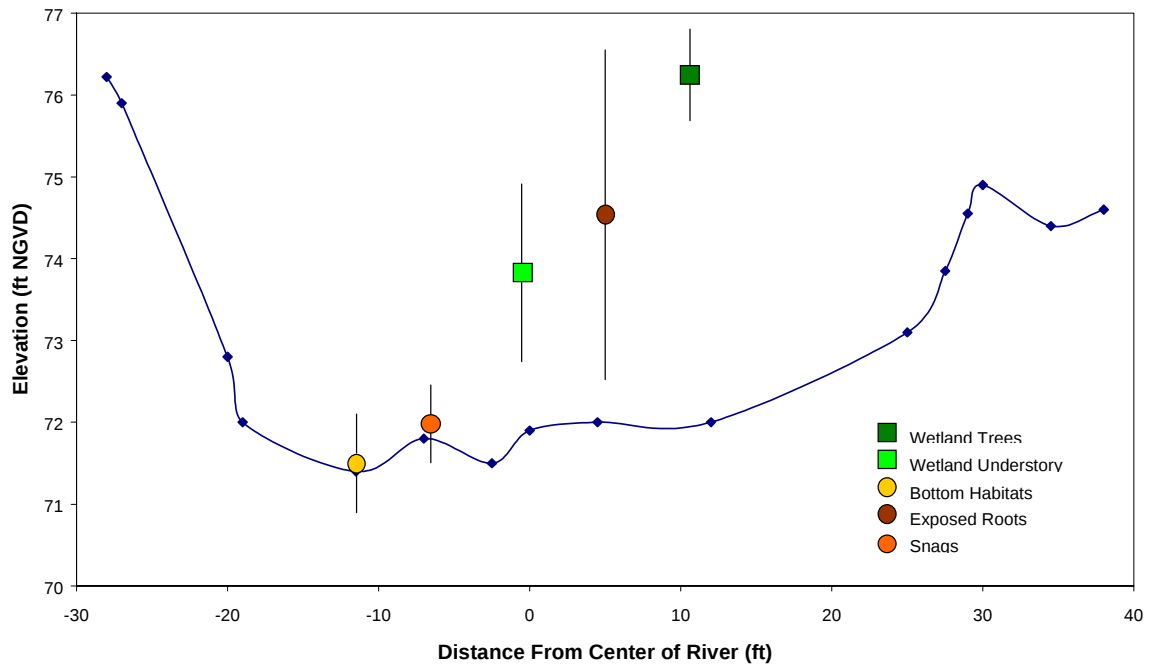
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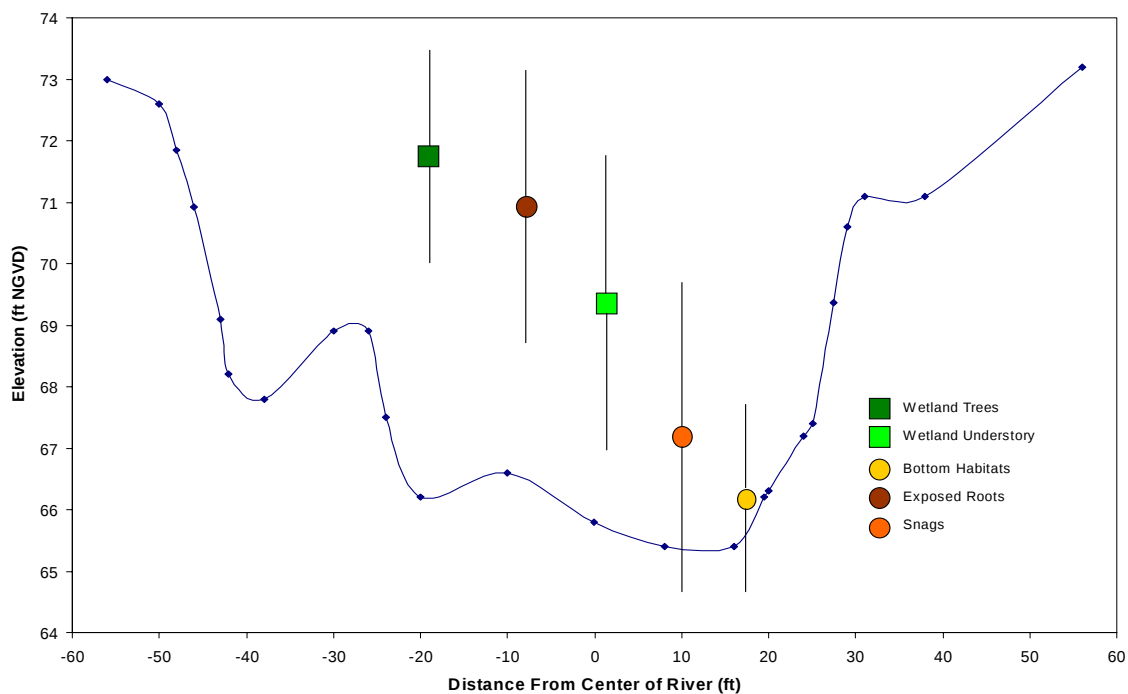
Instream Habitat Distribution - Site 134



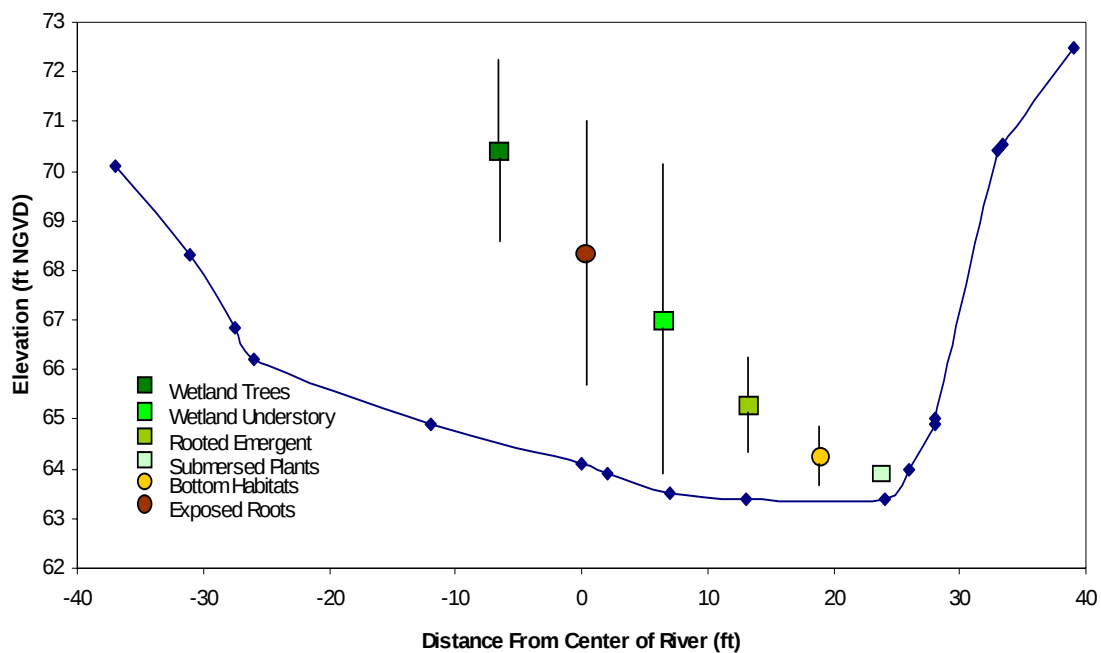
Instream Habitat Distribution - Site 119



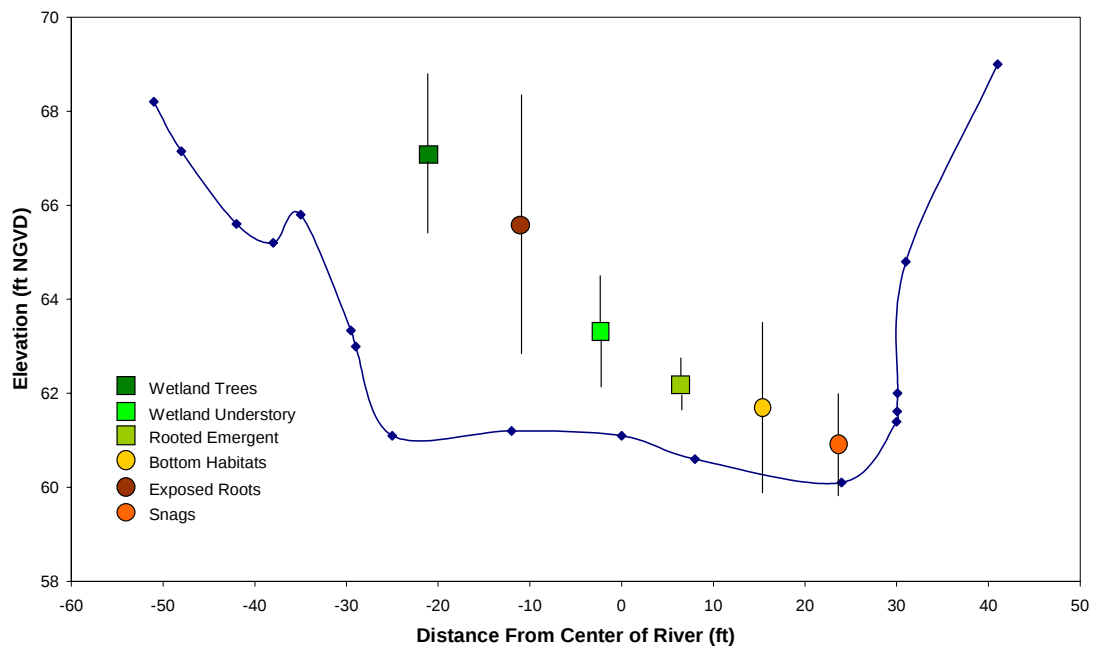
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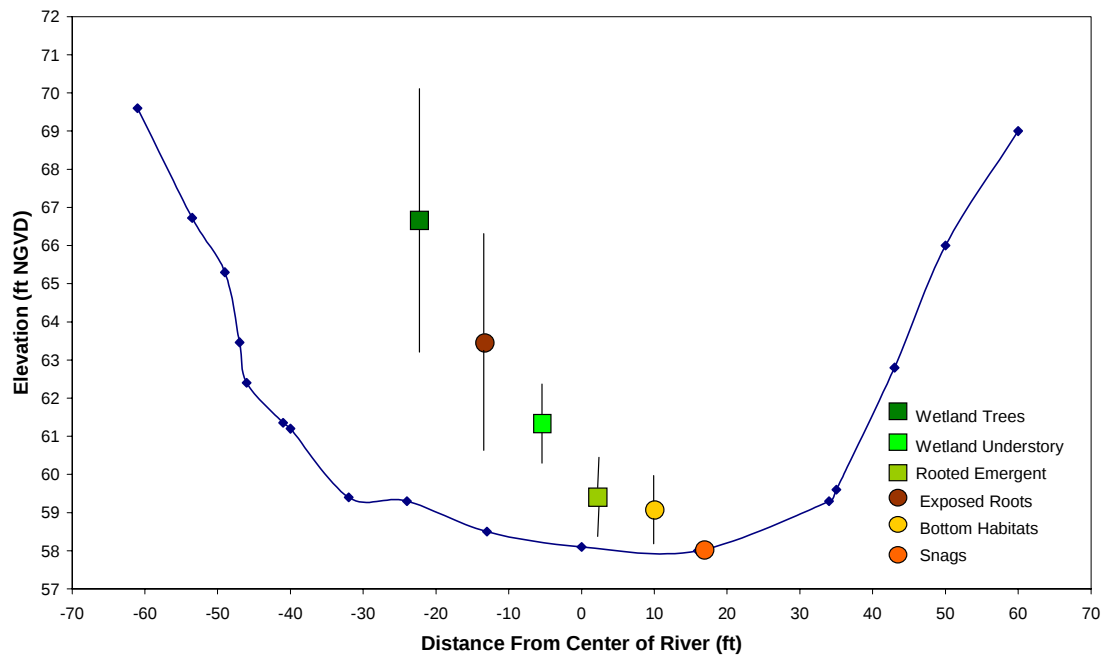
Instream Habitat Distribution - Site 99



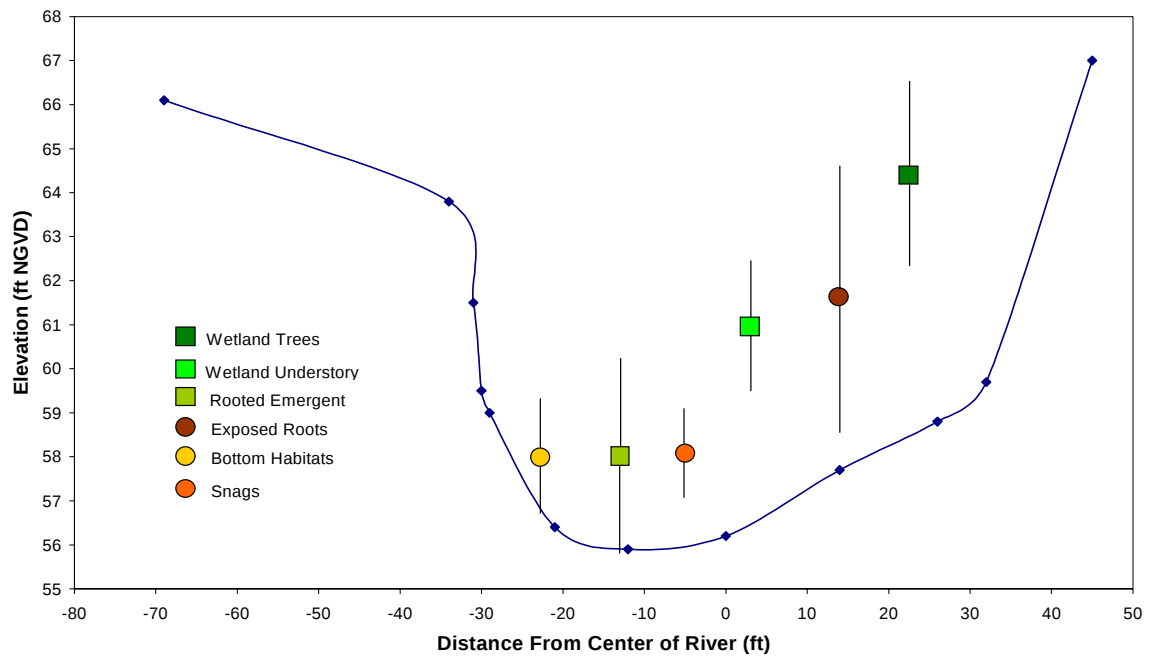
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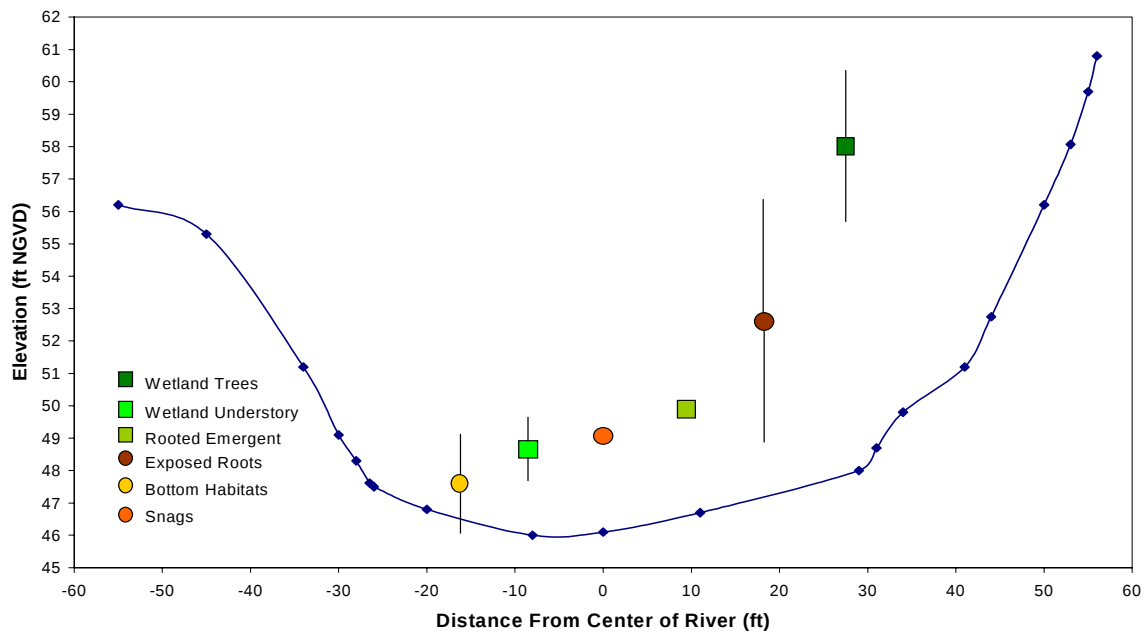
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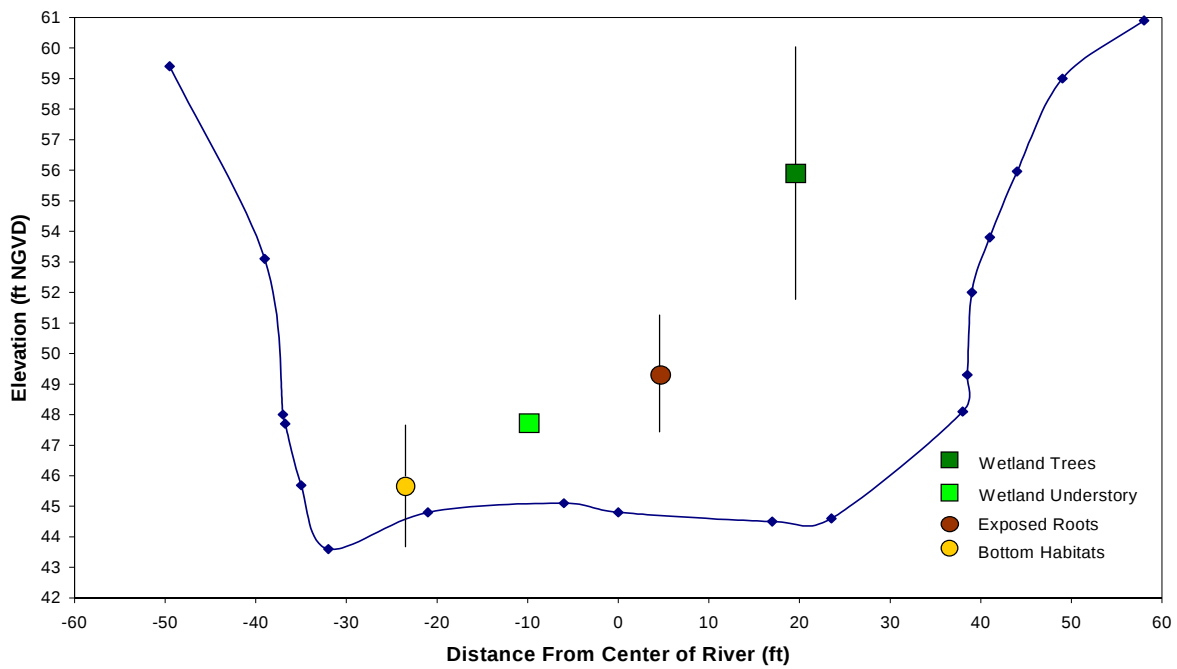
Instream Habitat Distribution - Site 79



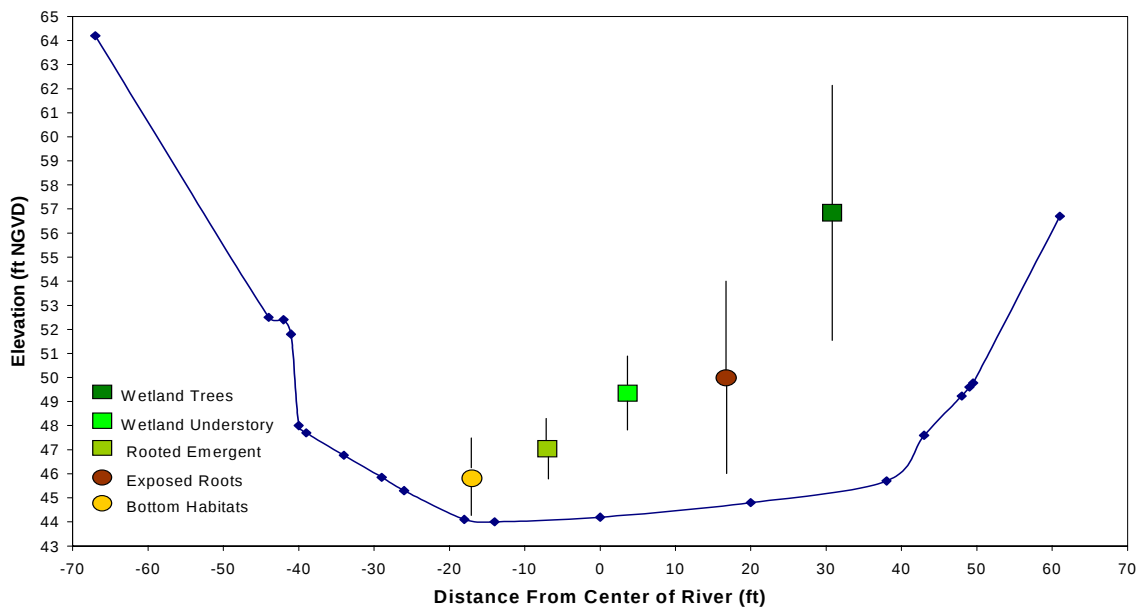
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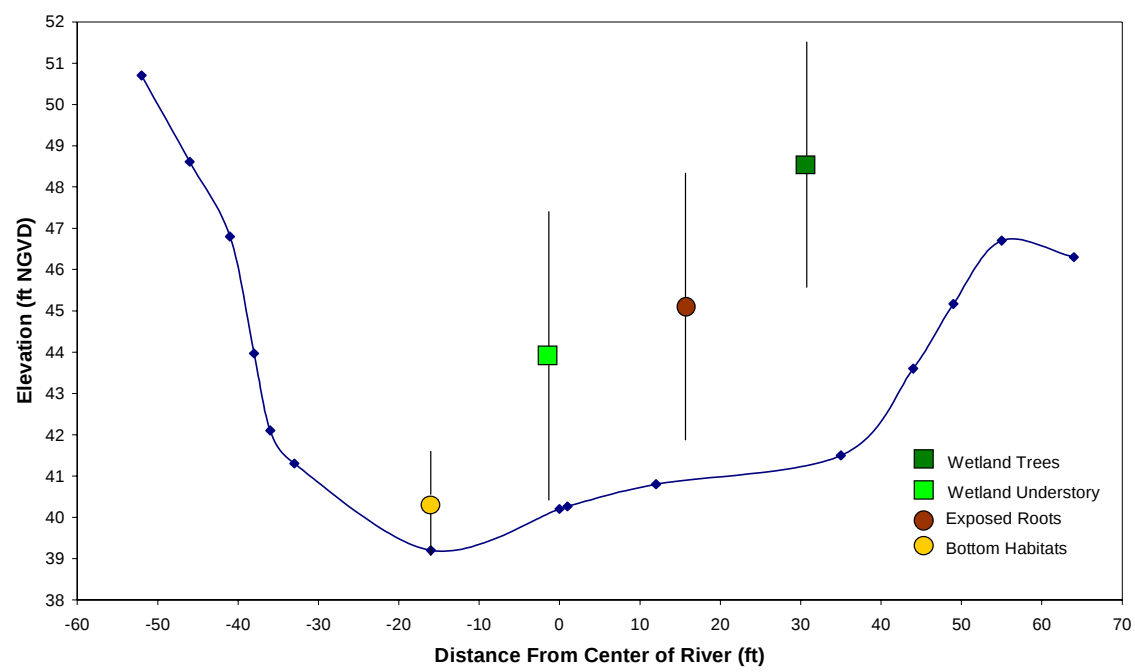
Instream Habitat Distribution - Site 49



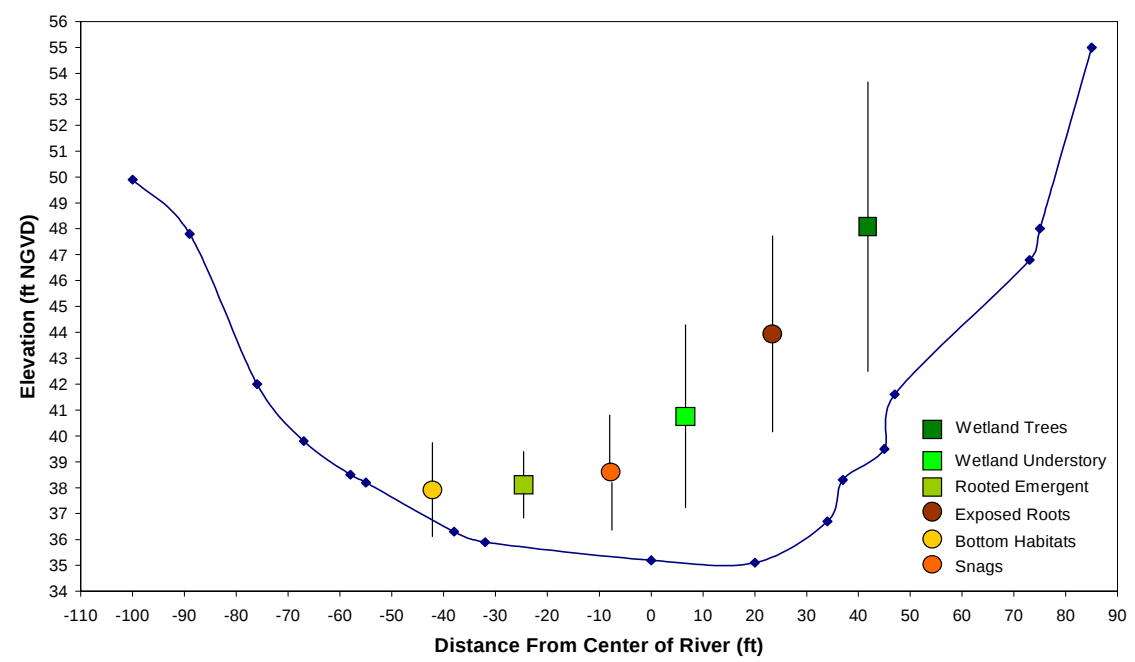
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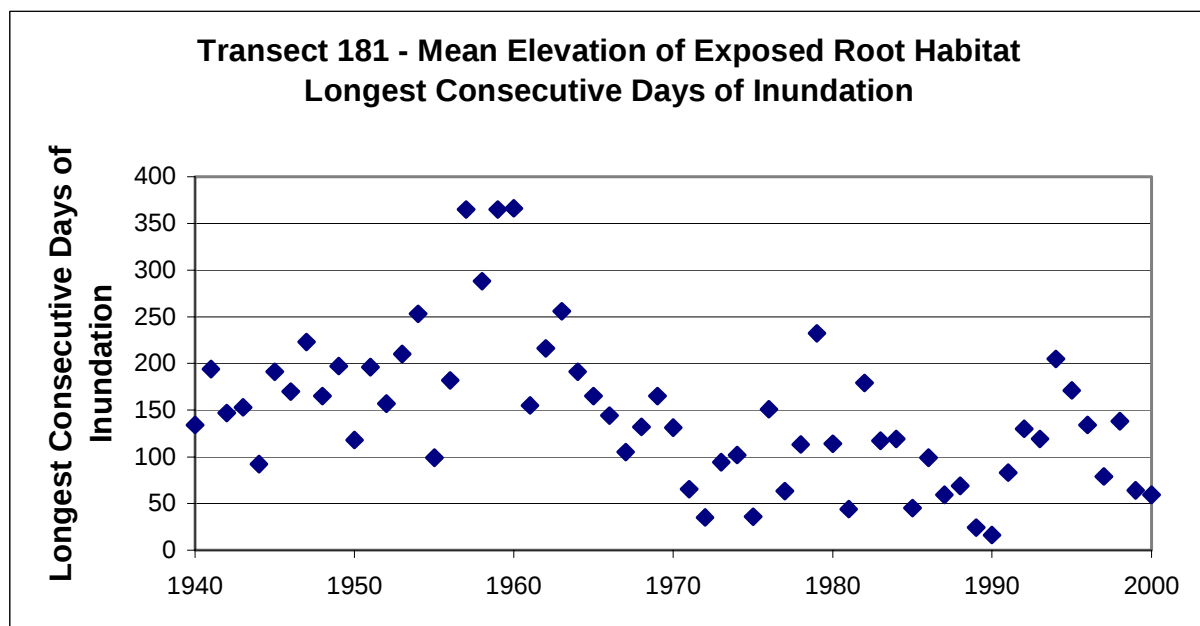
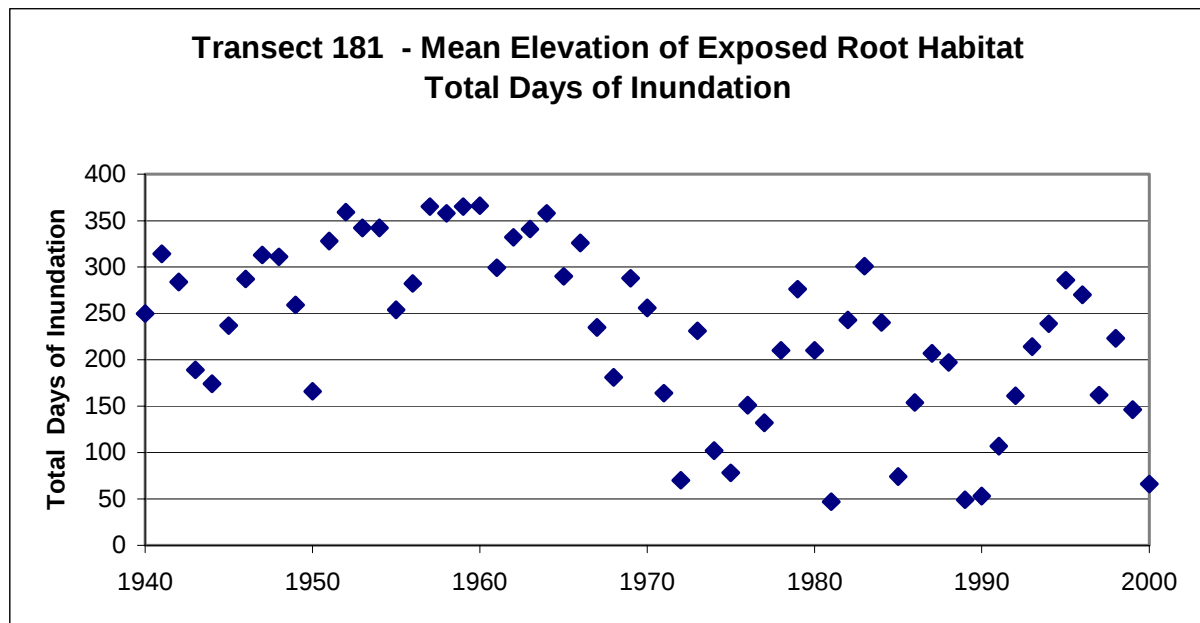


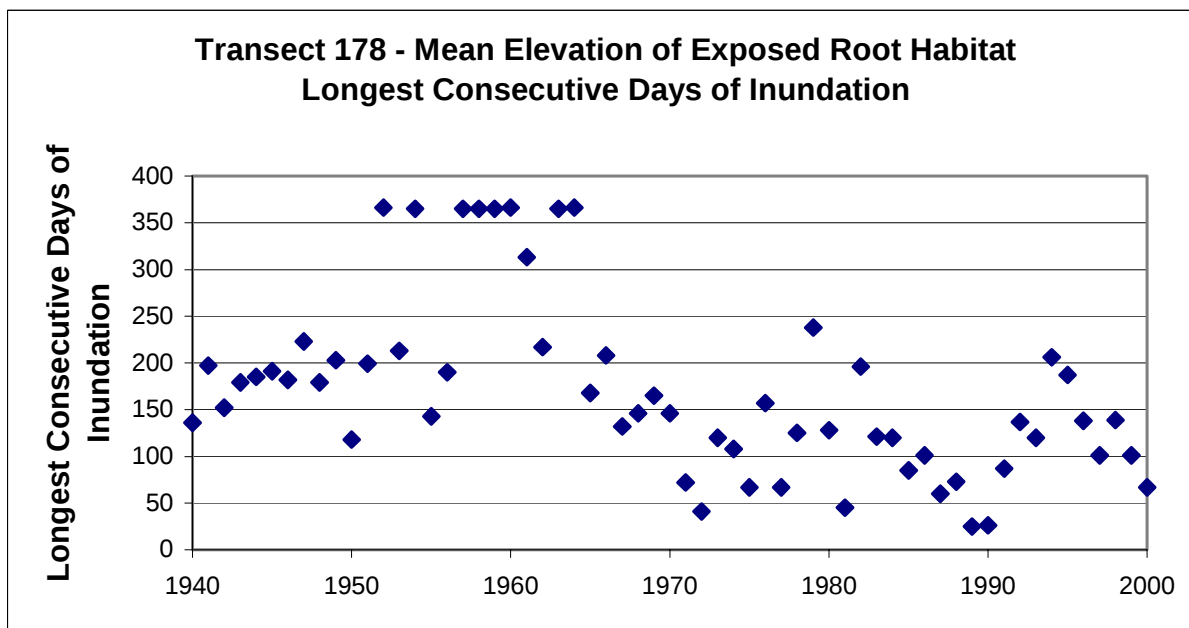
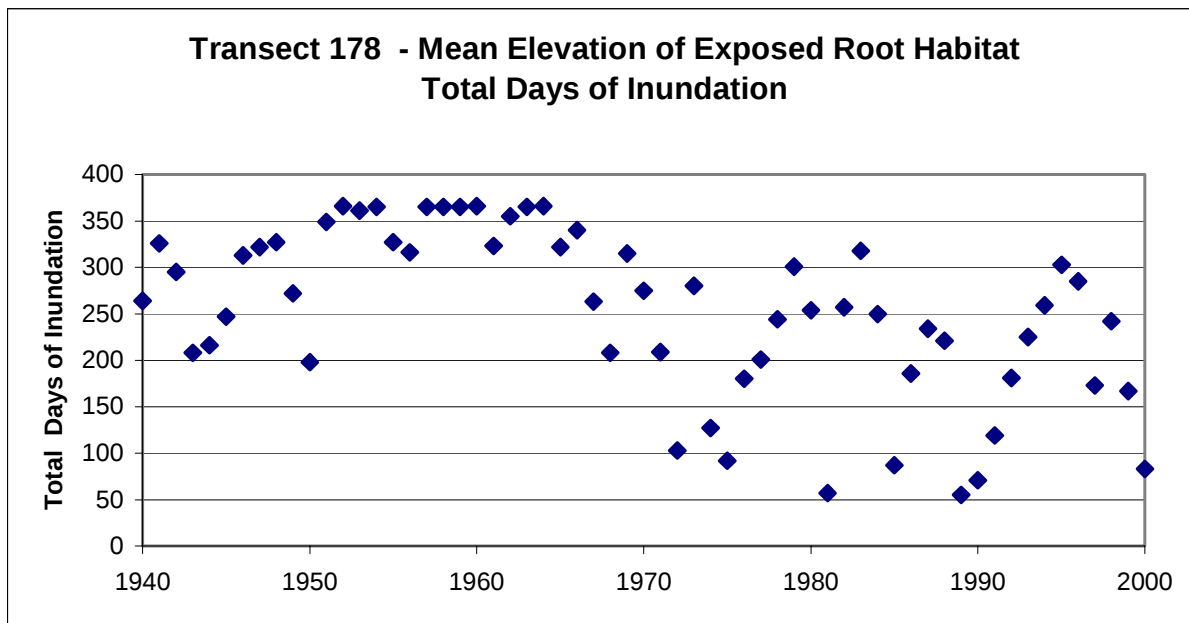
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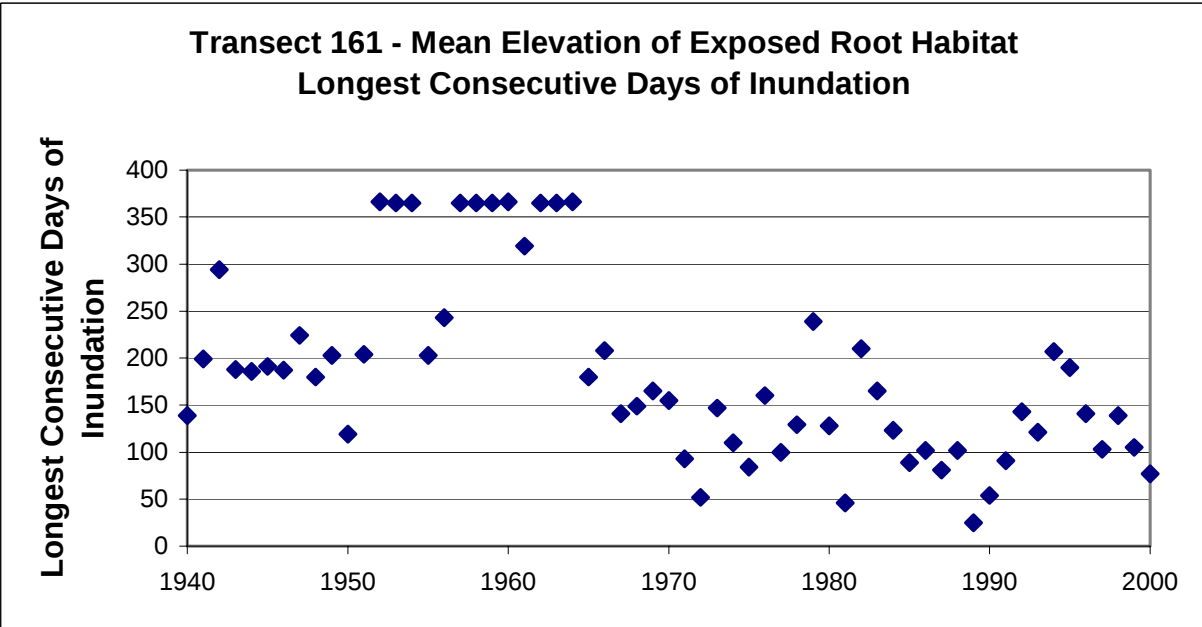
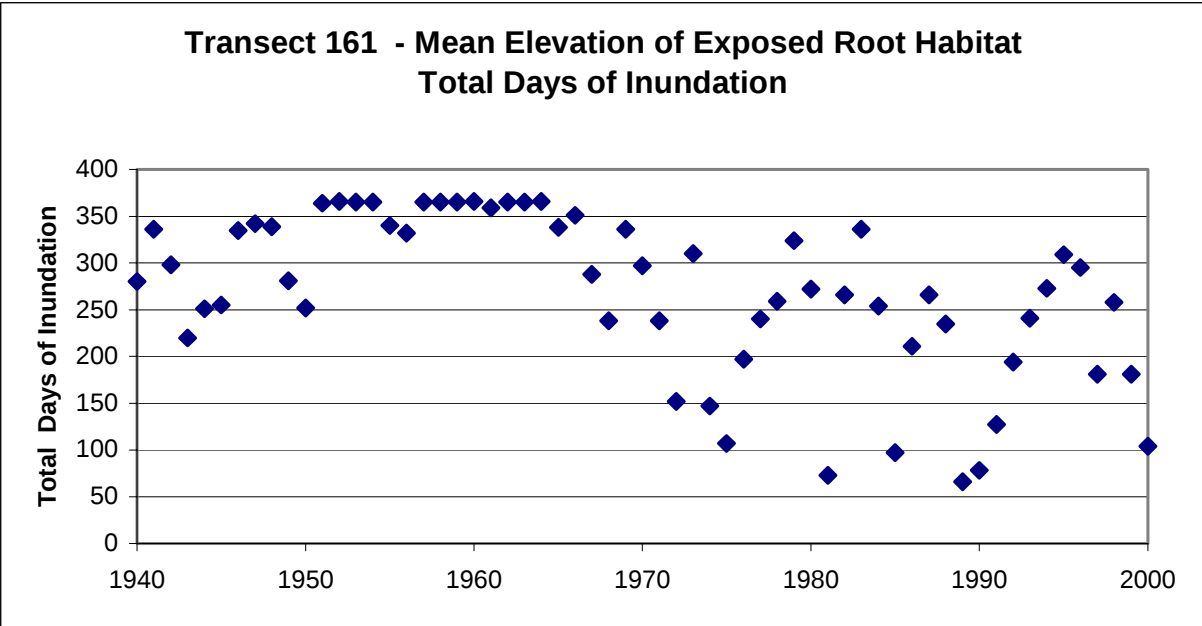


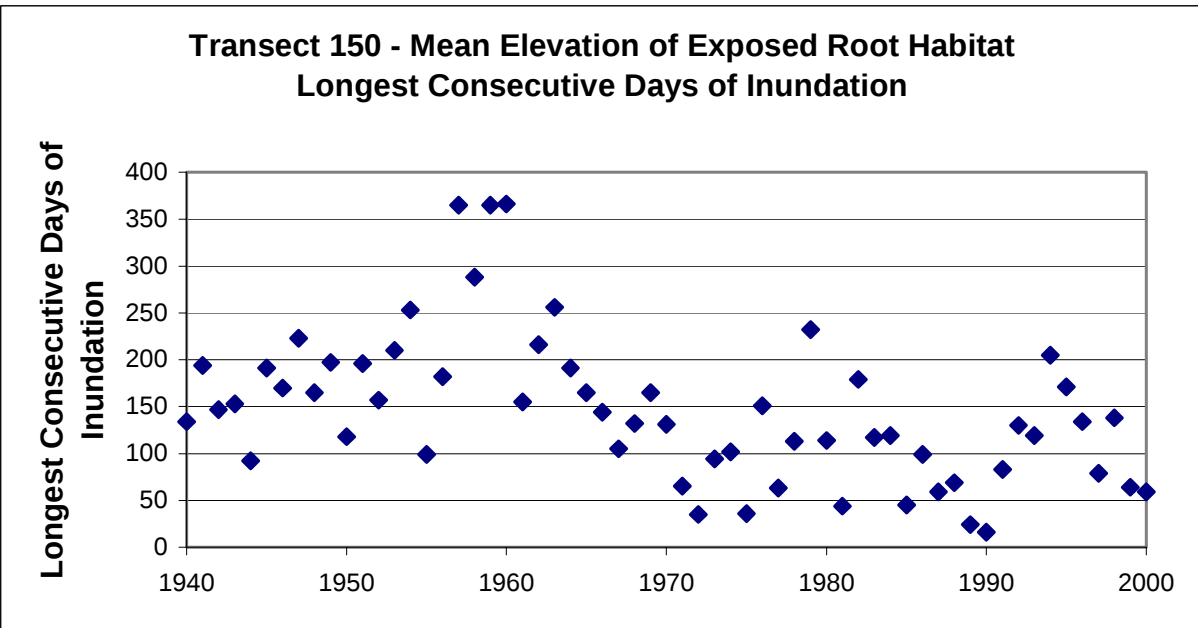
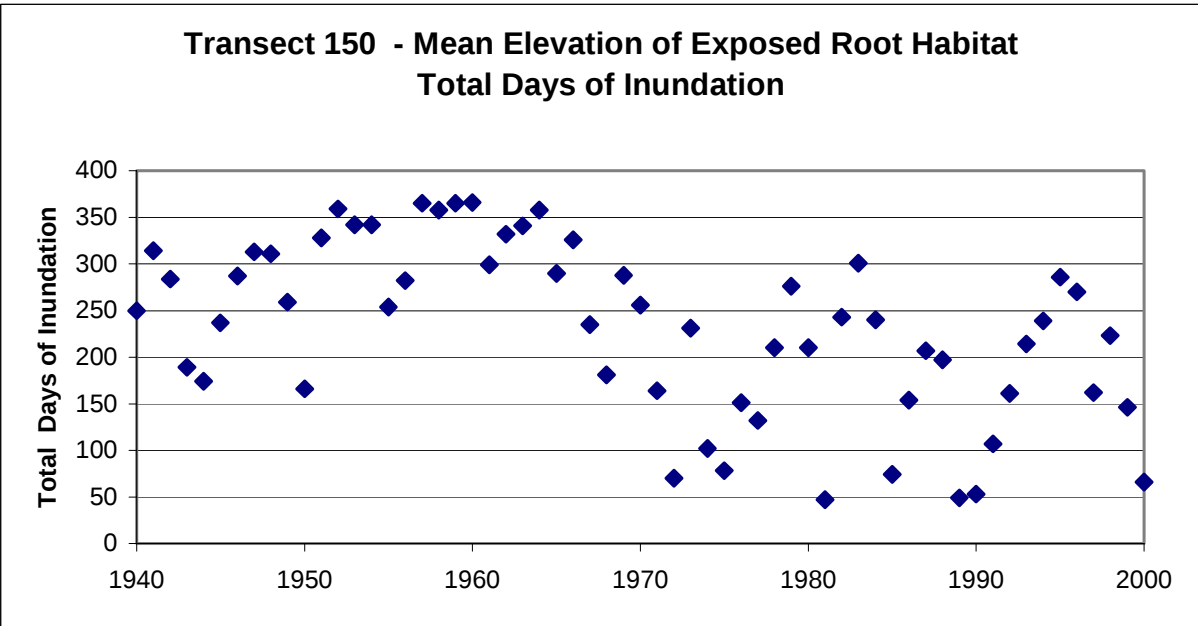
Instream Habitat Distribution - Site 15

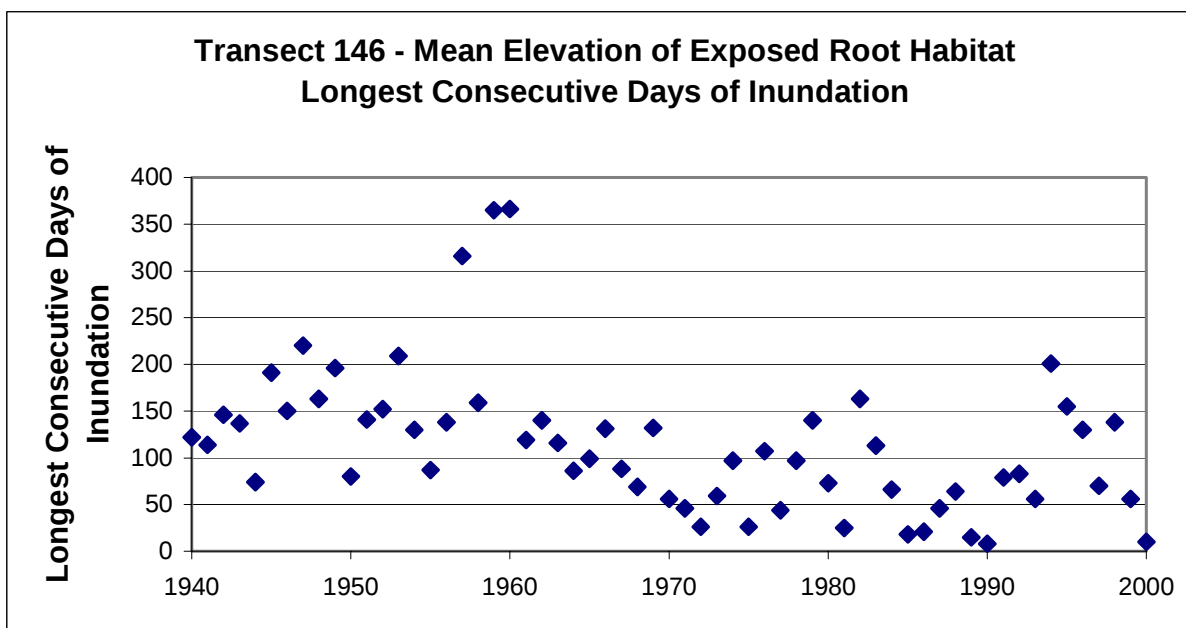
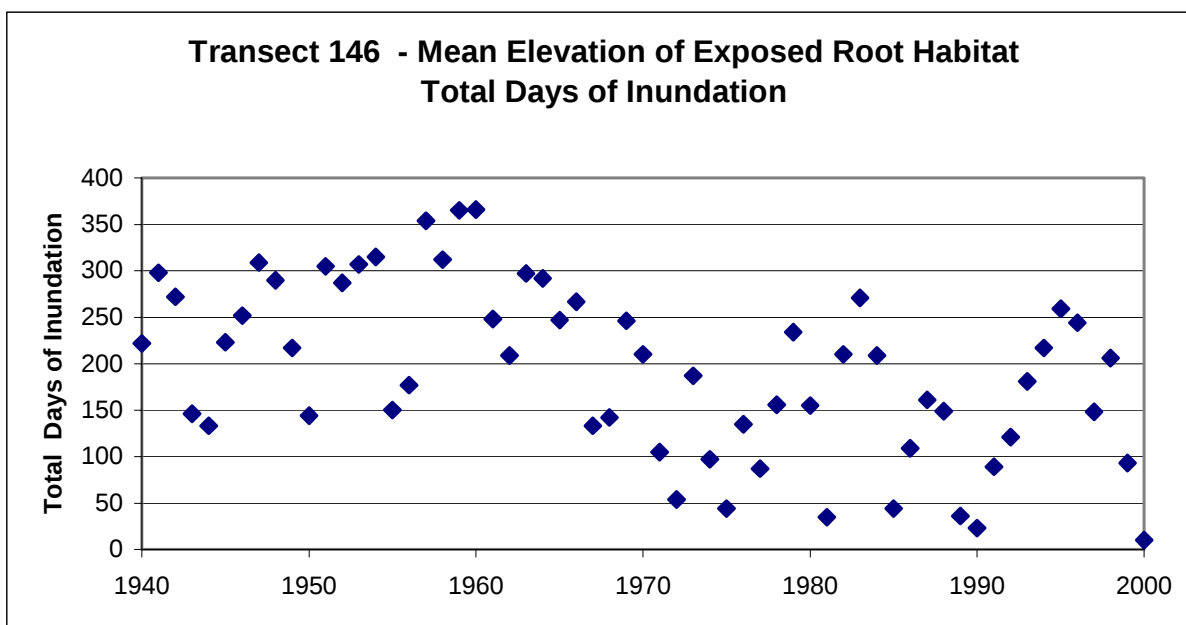


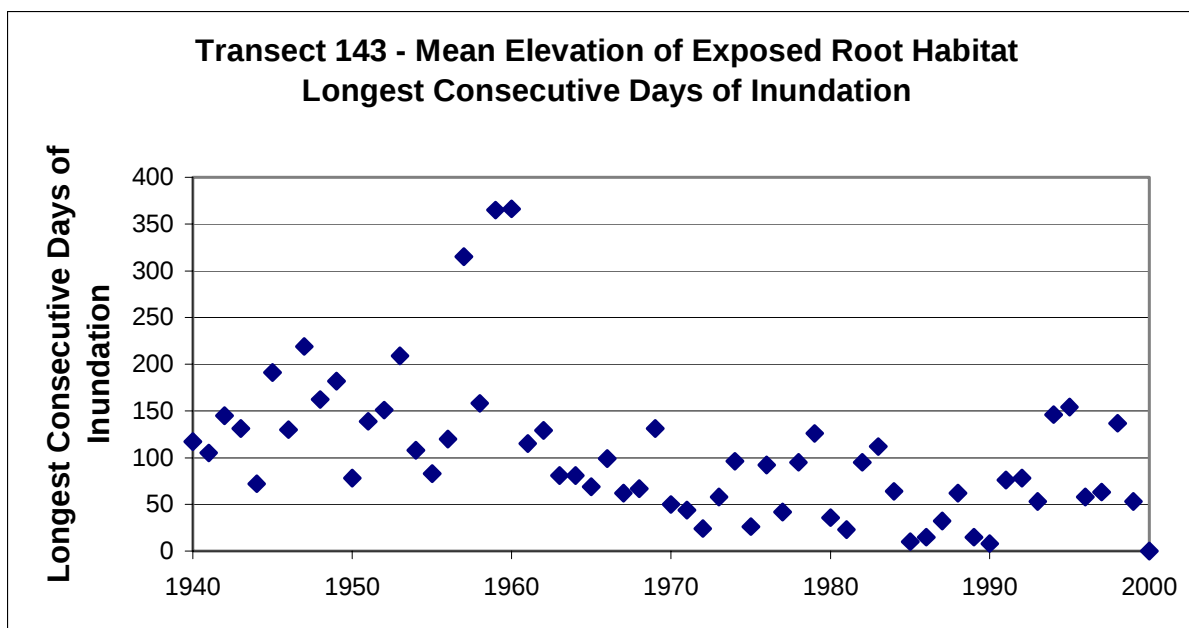
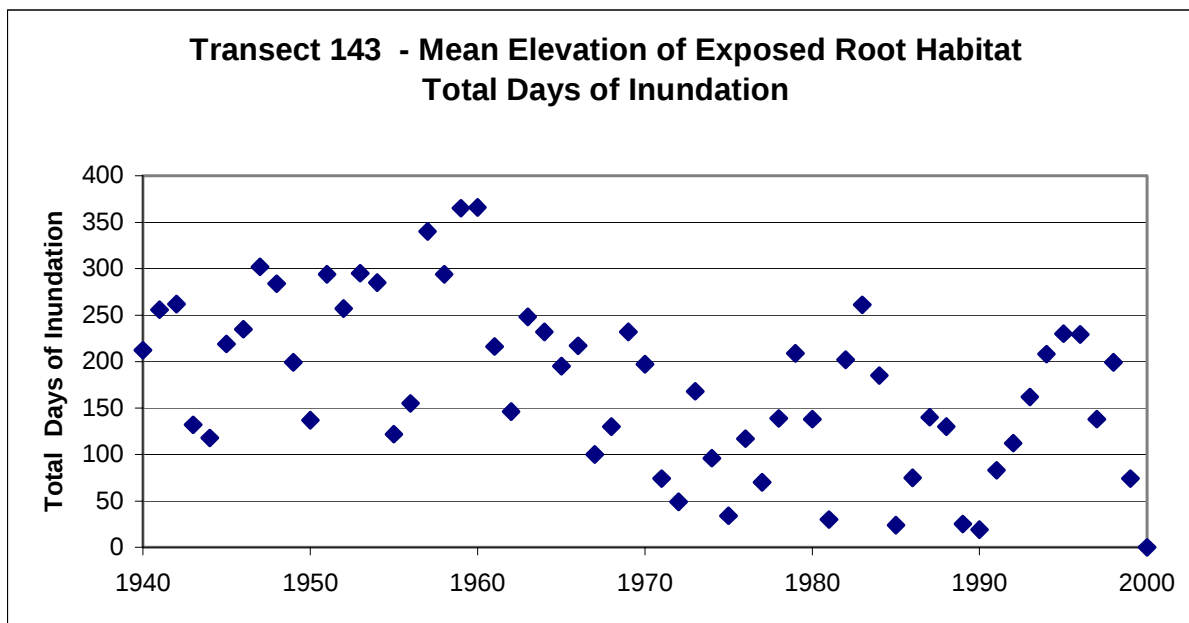


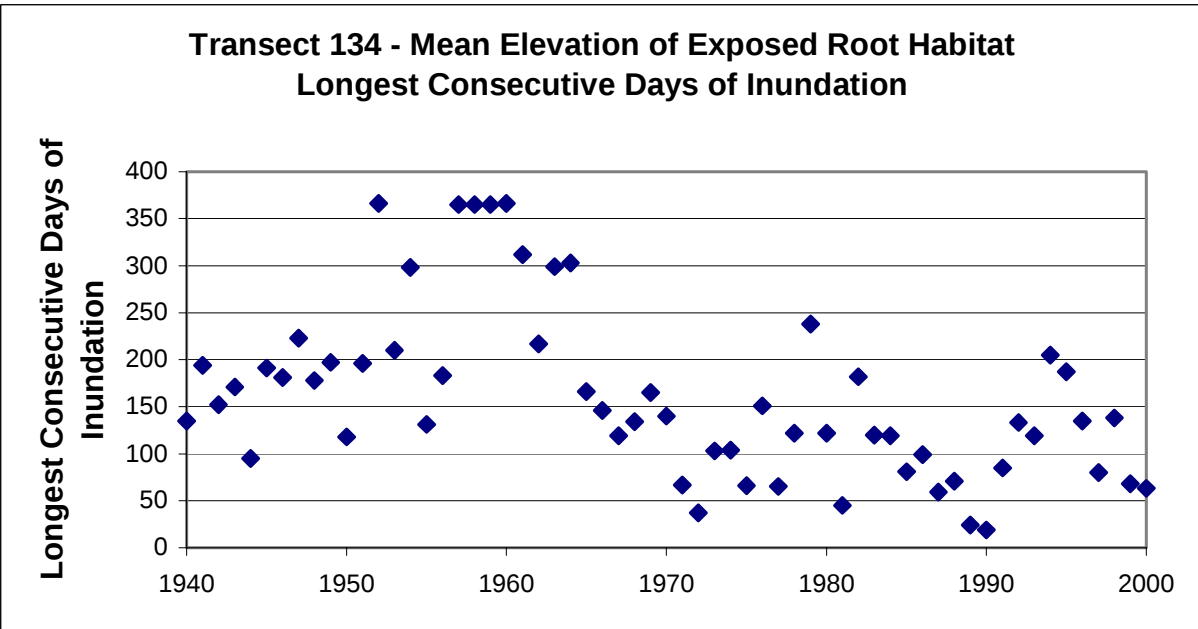
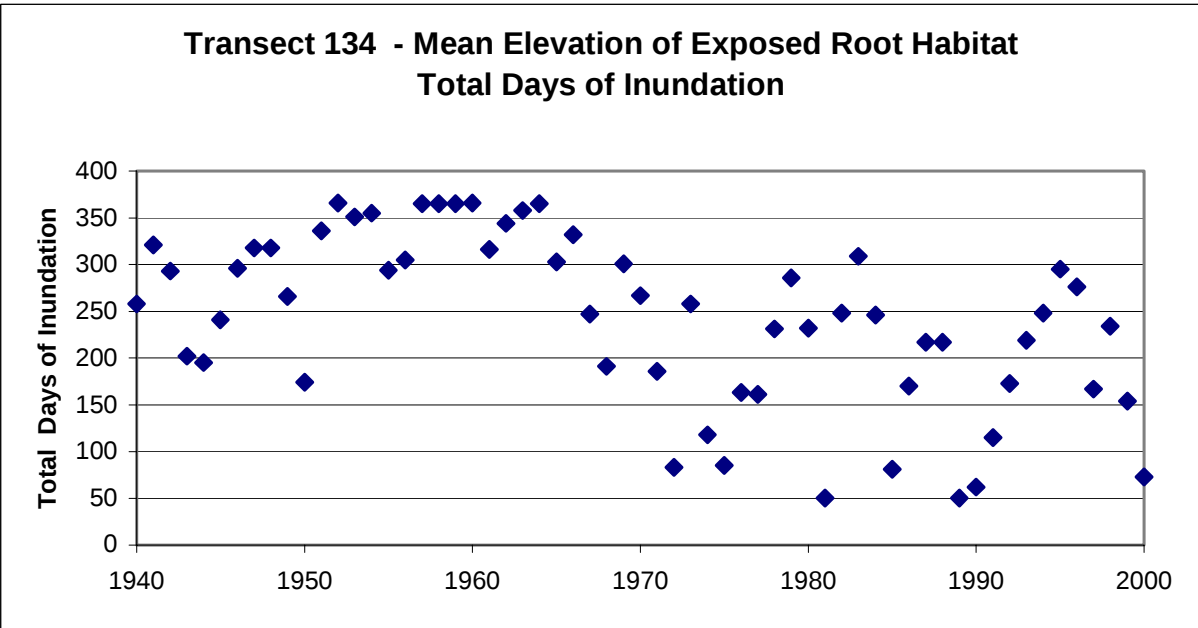


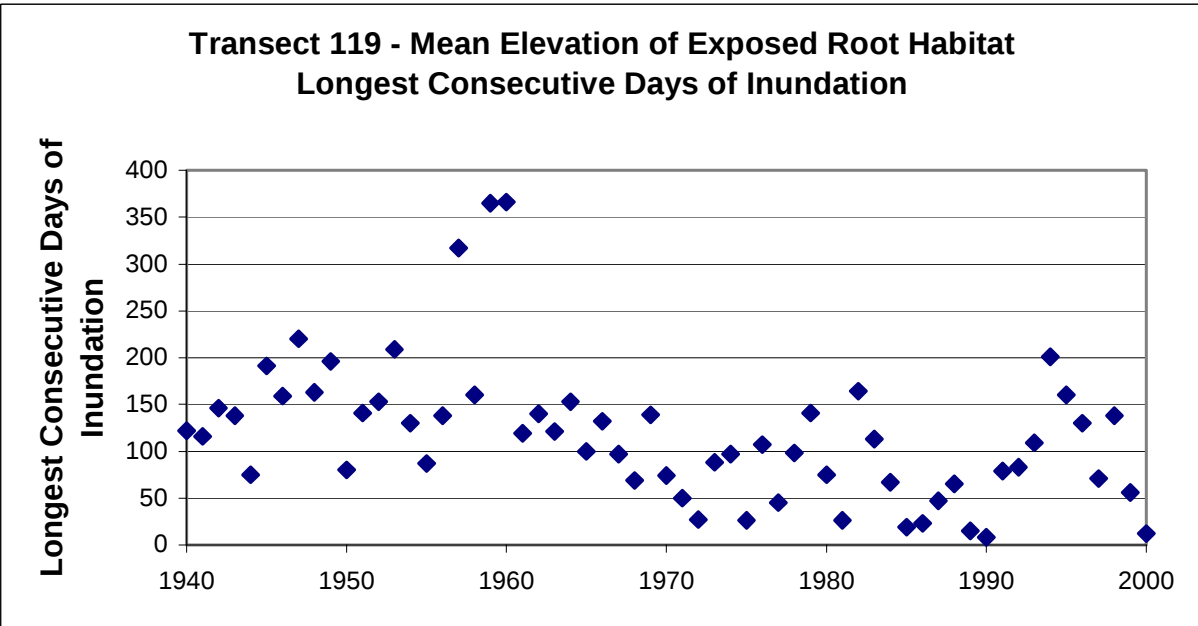
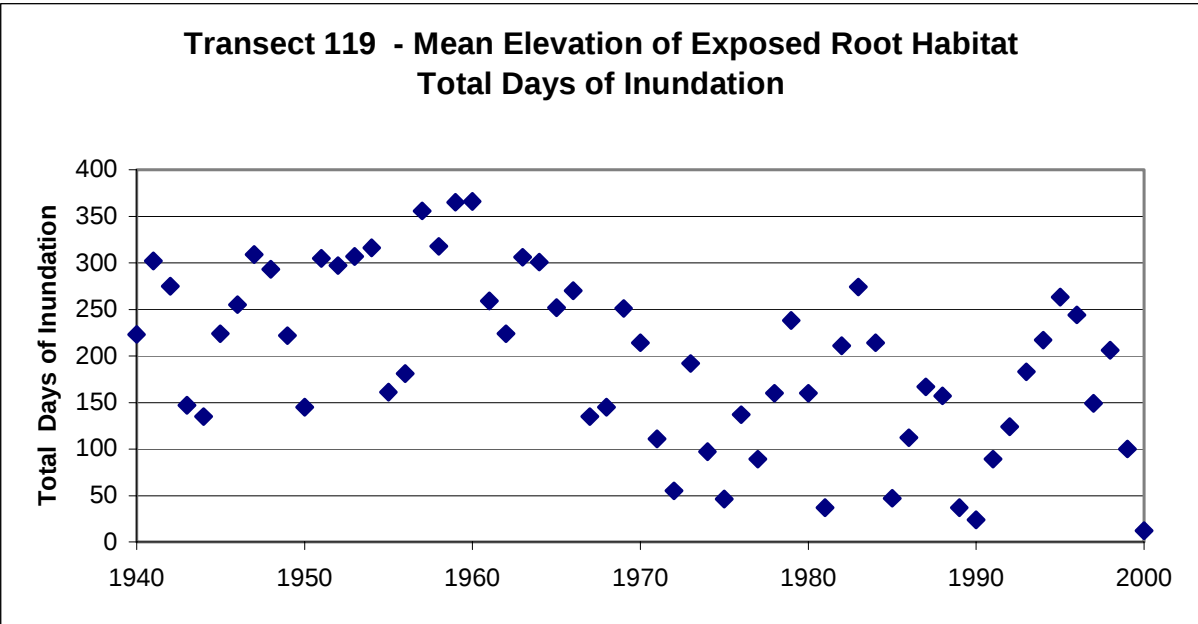


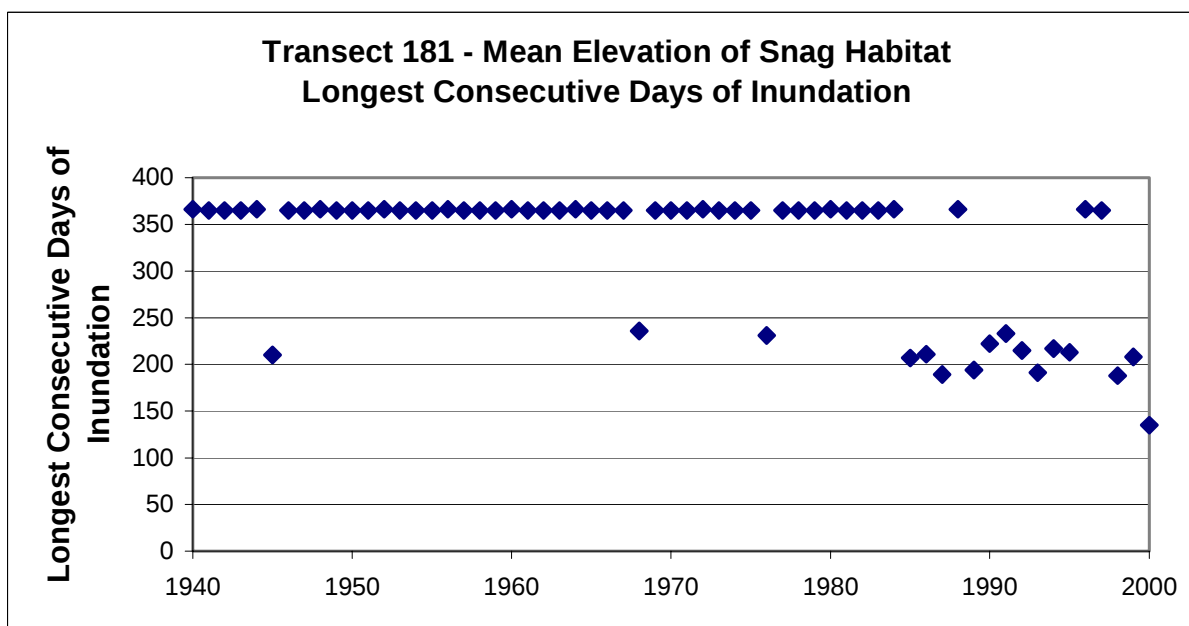
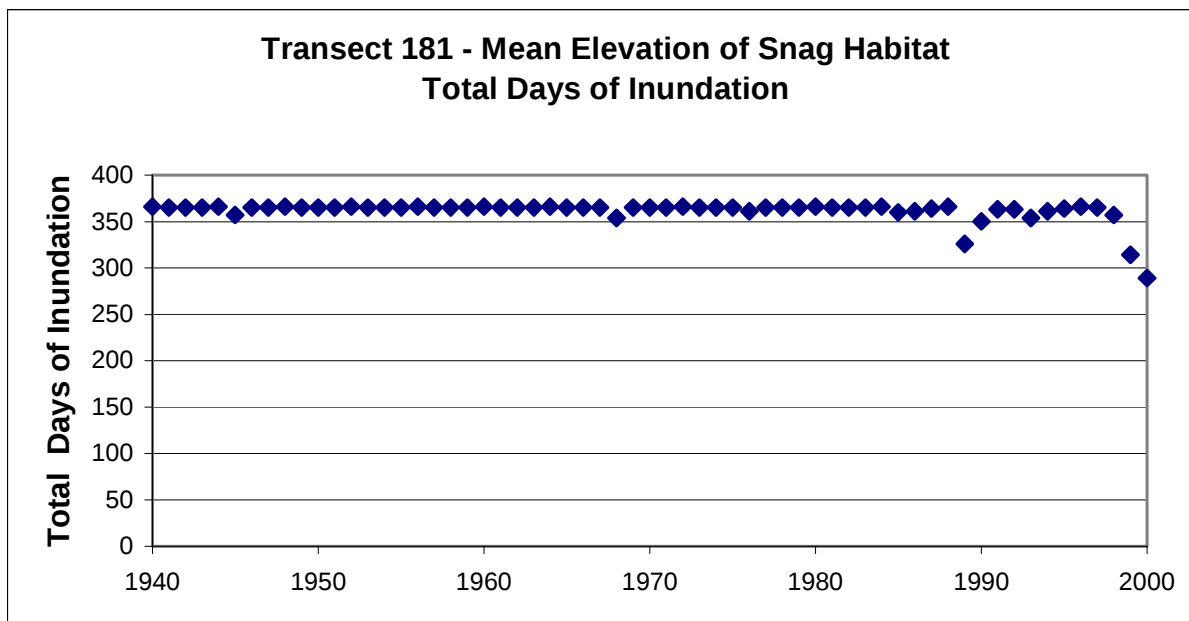


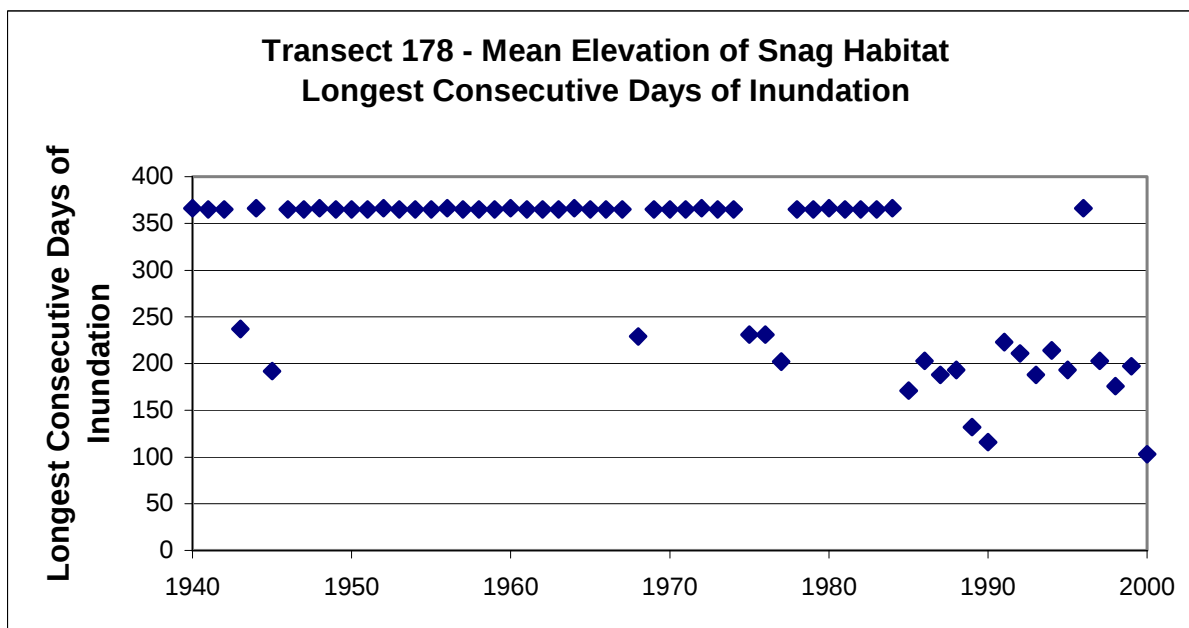
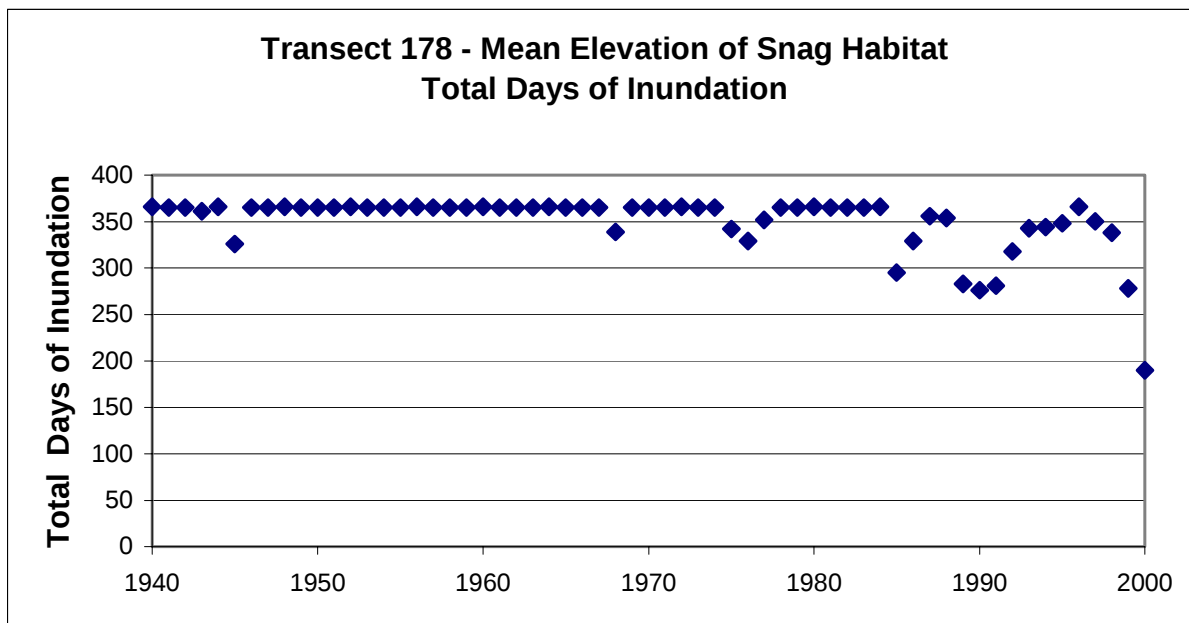


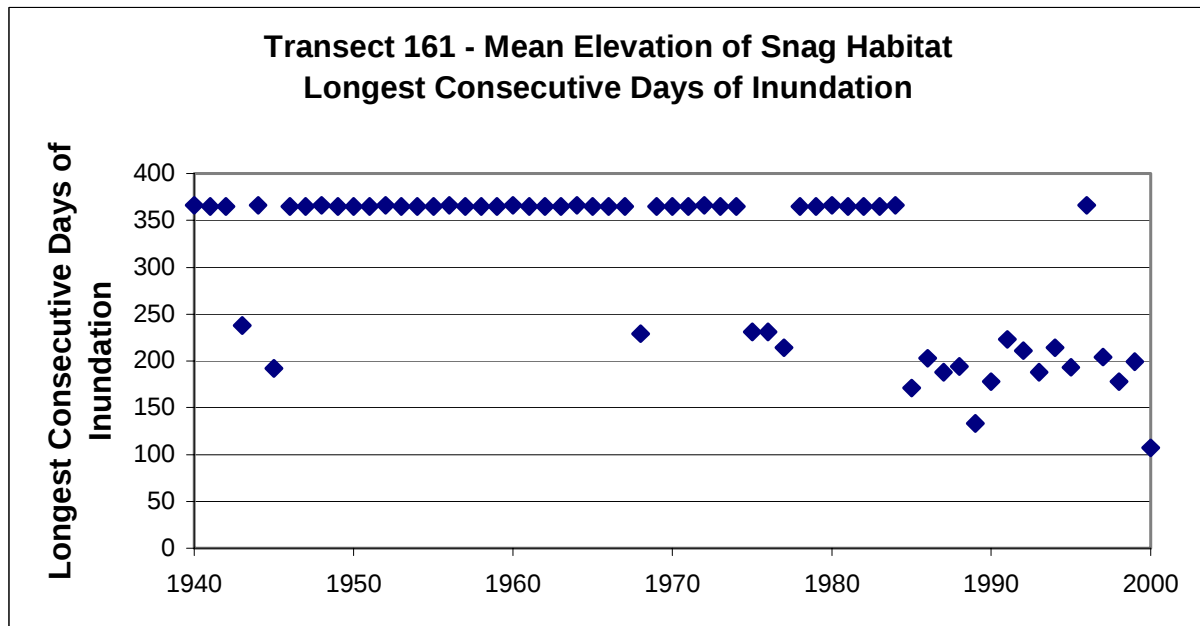
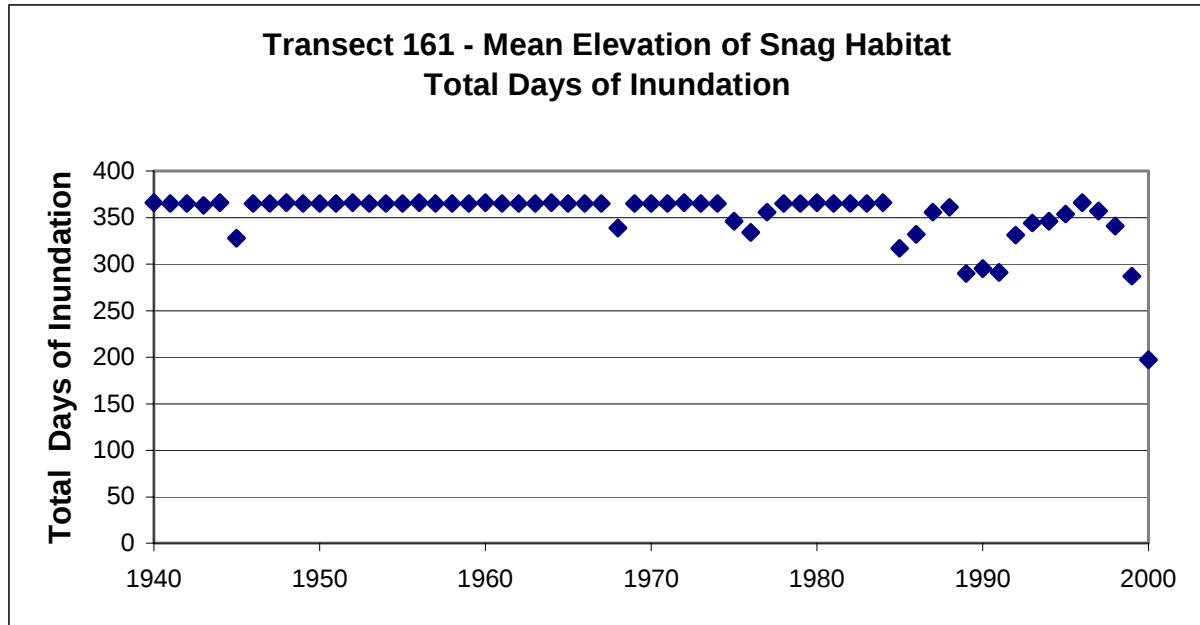


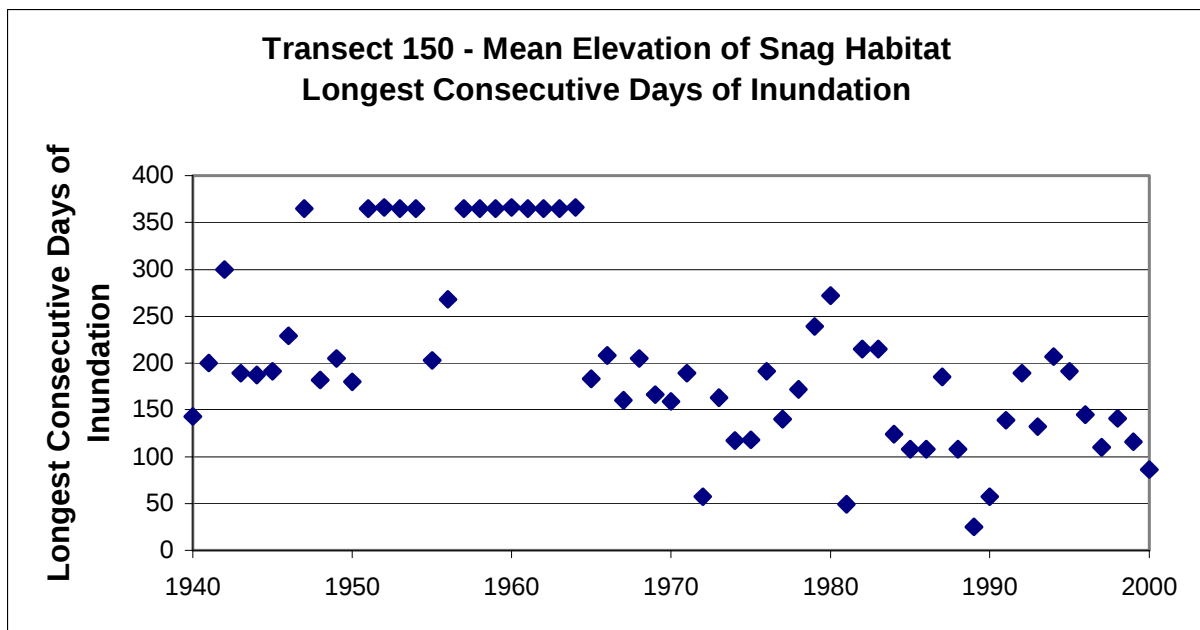
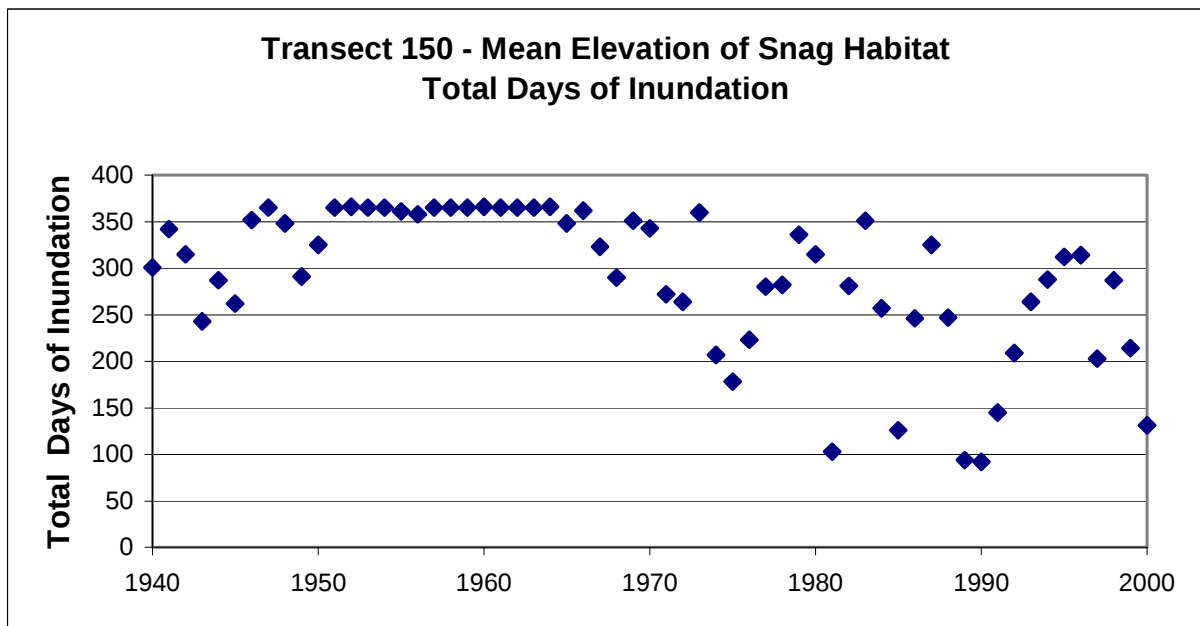


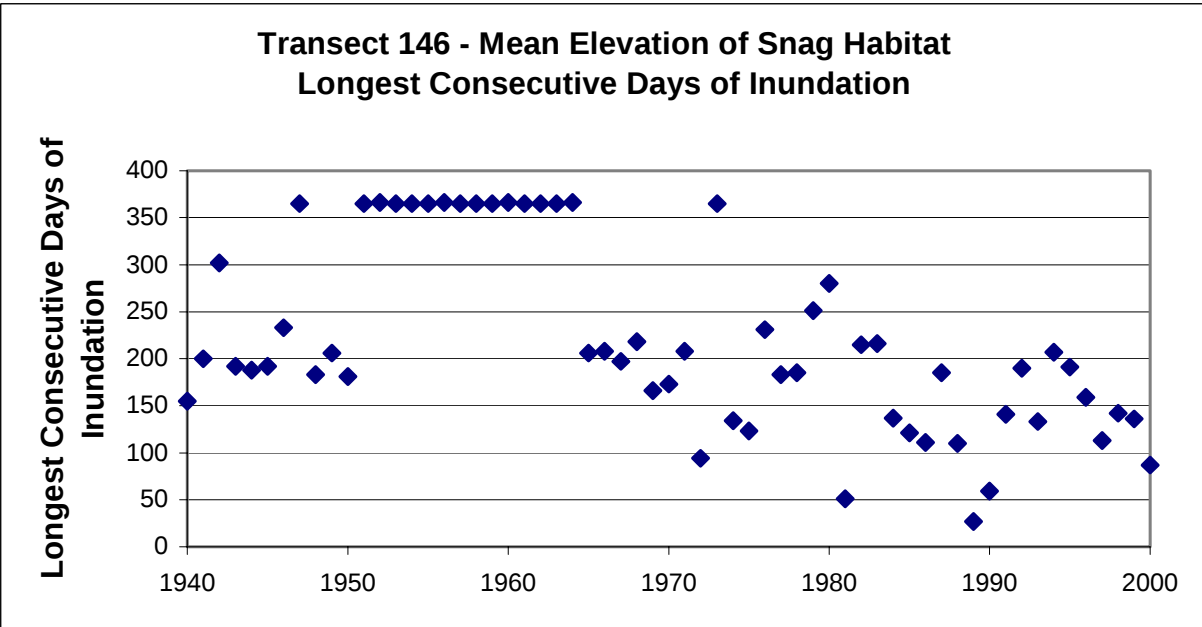
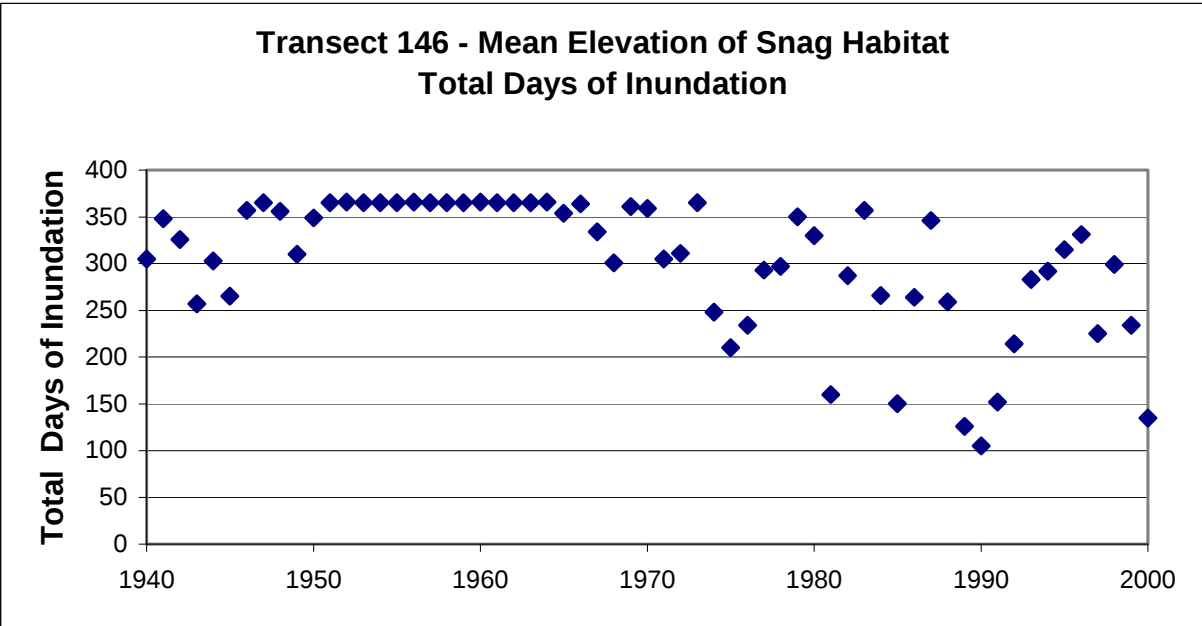


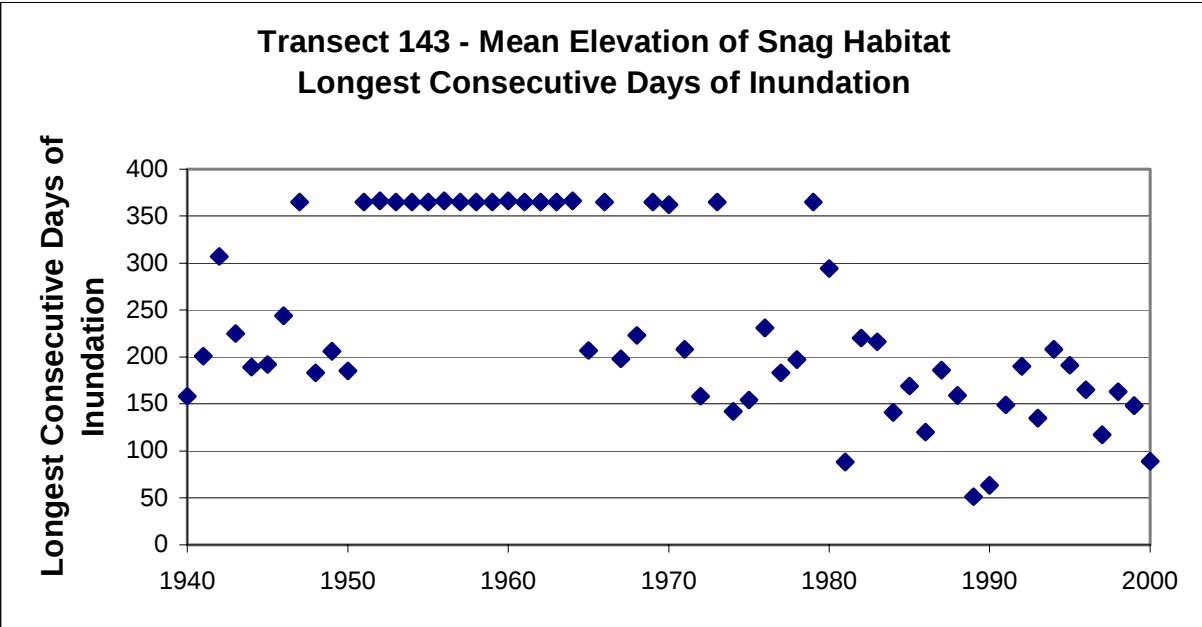
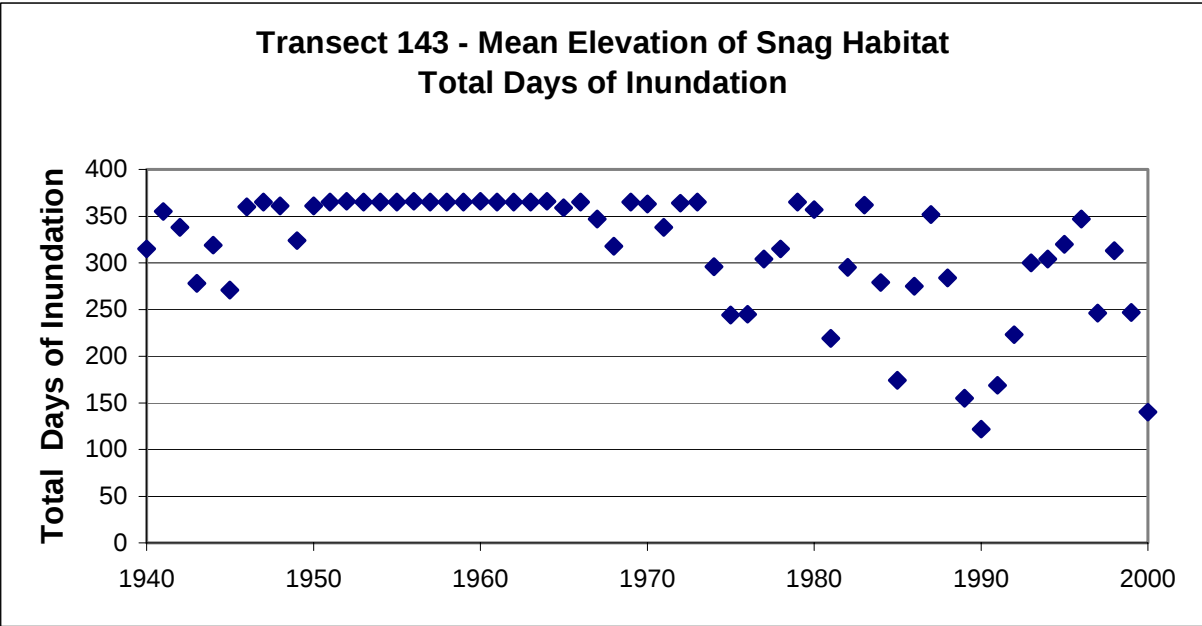


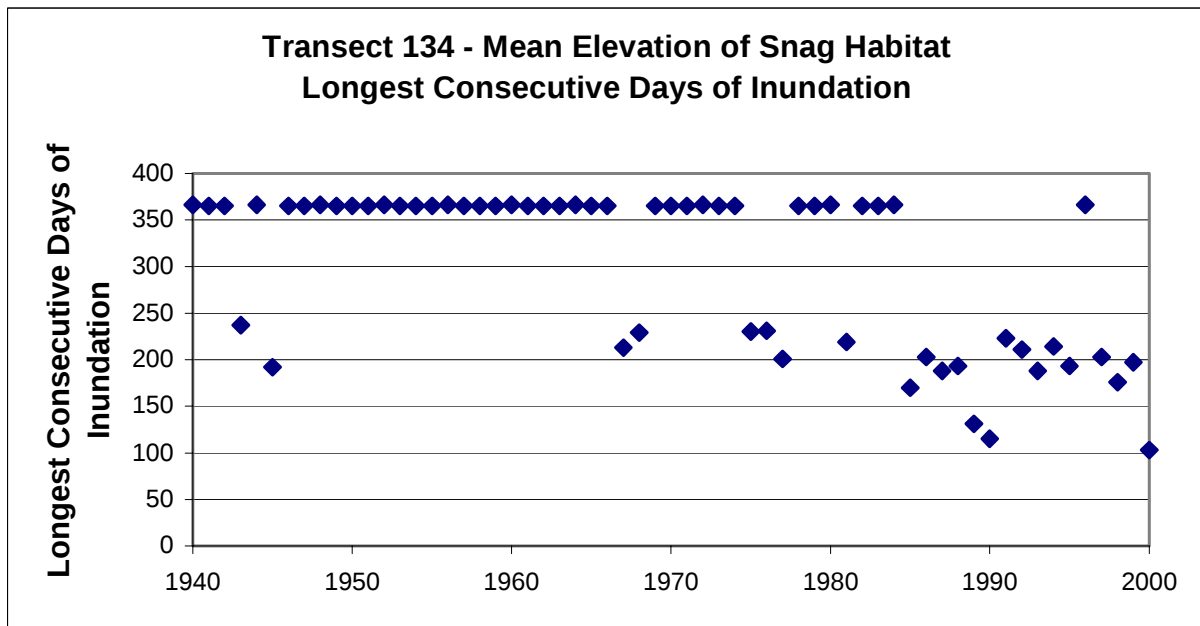
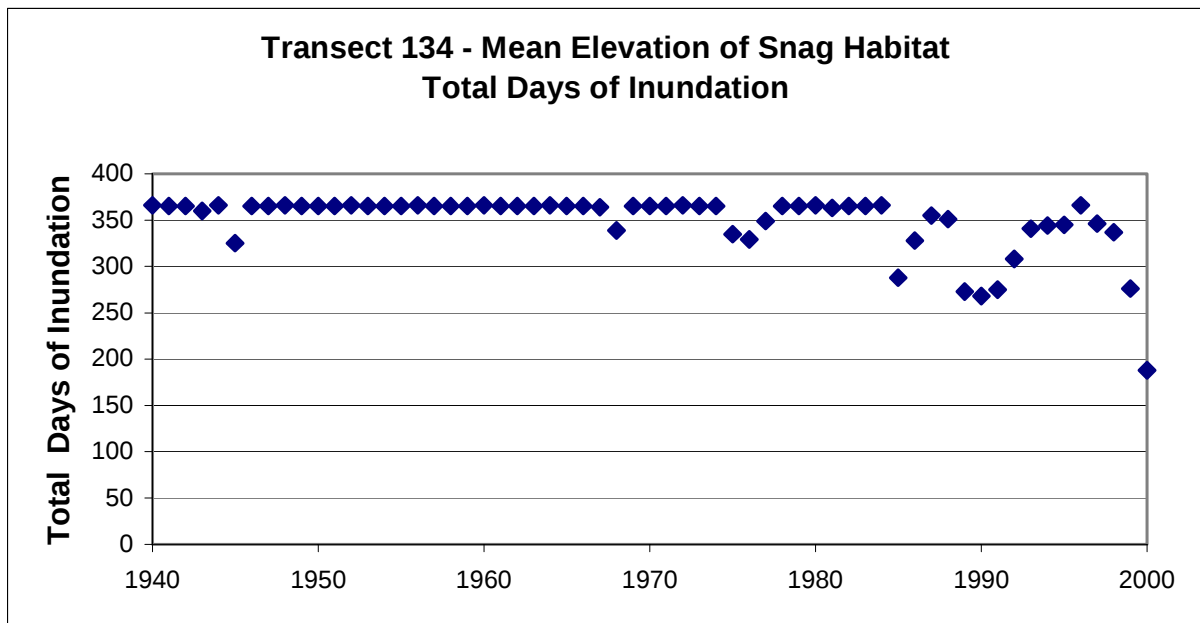


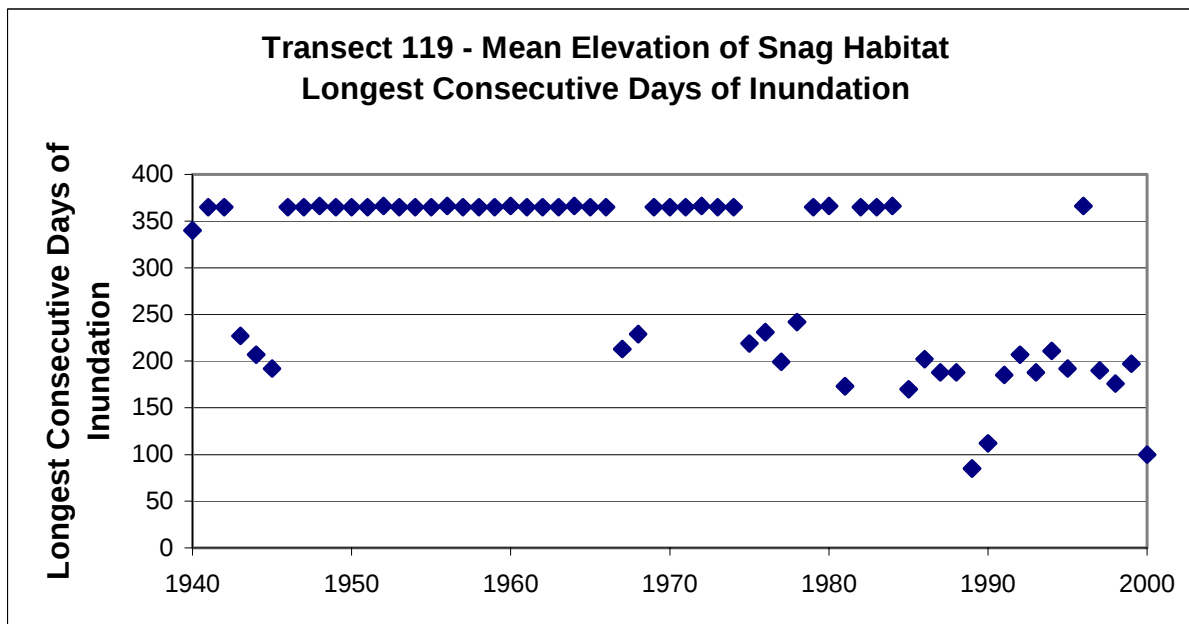
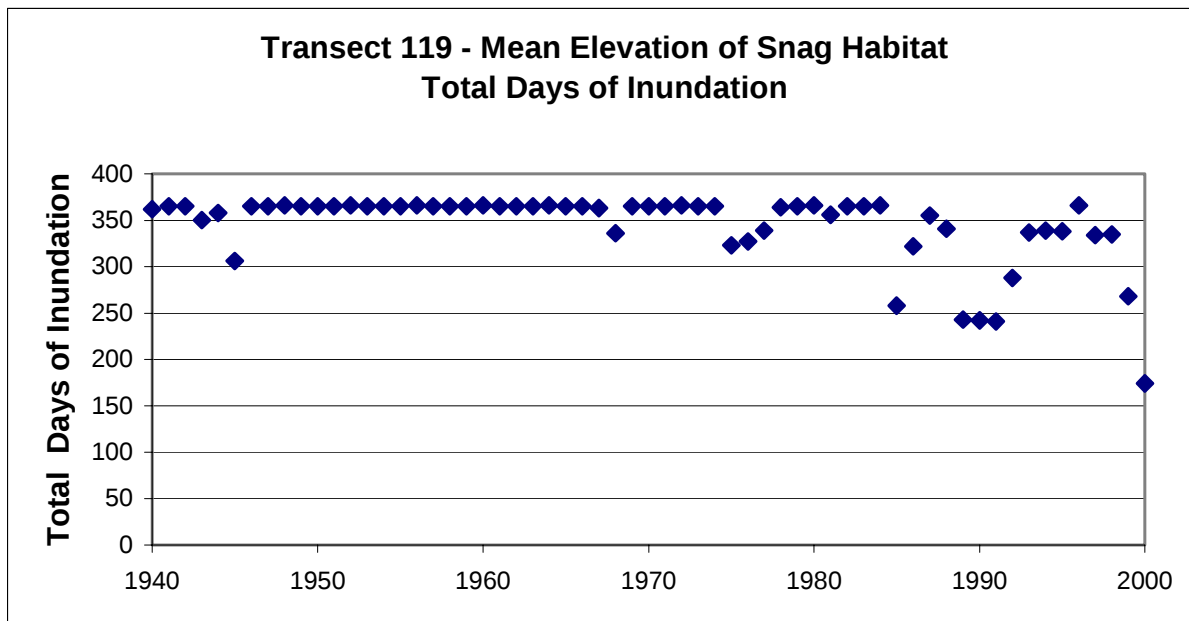


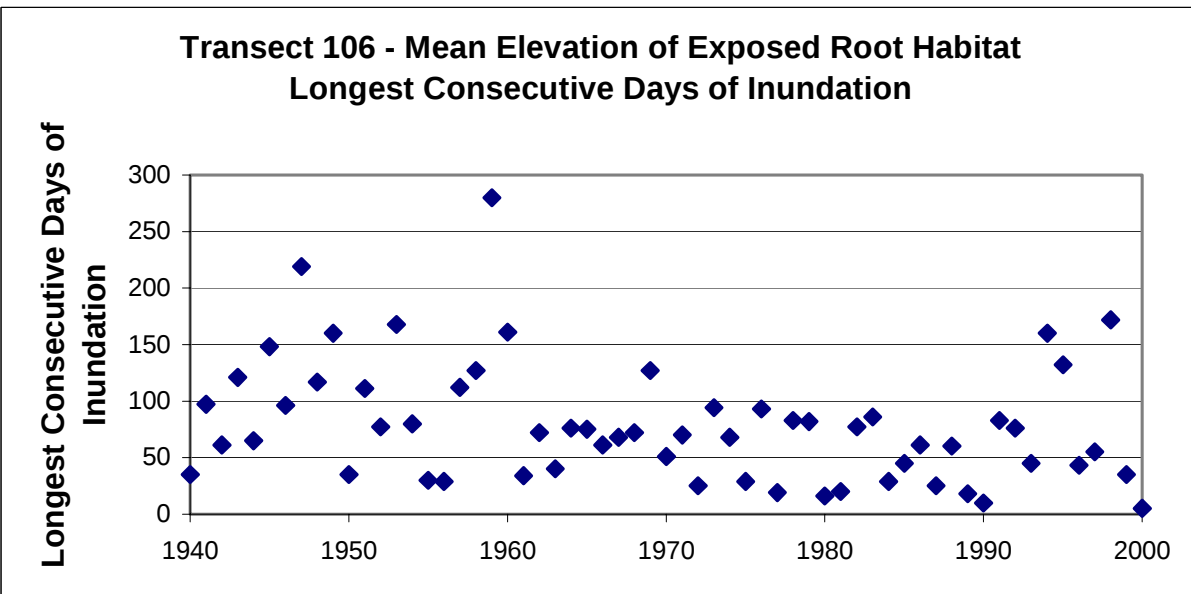
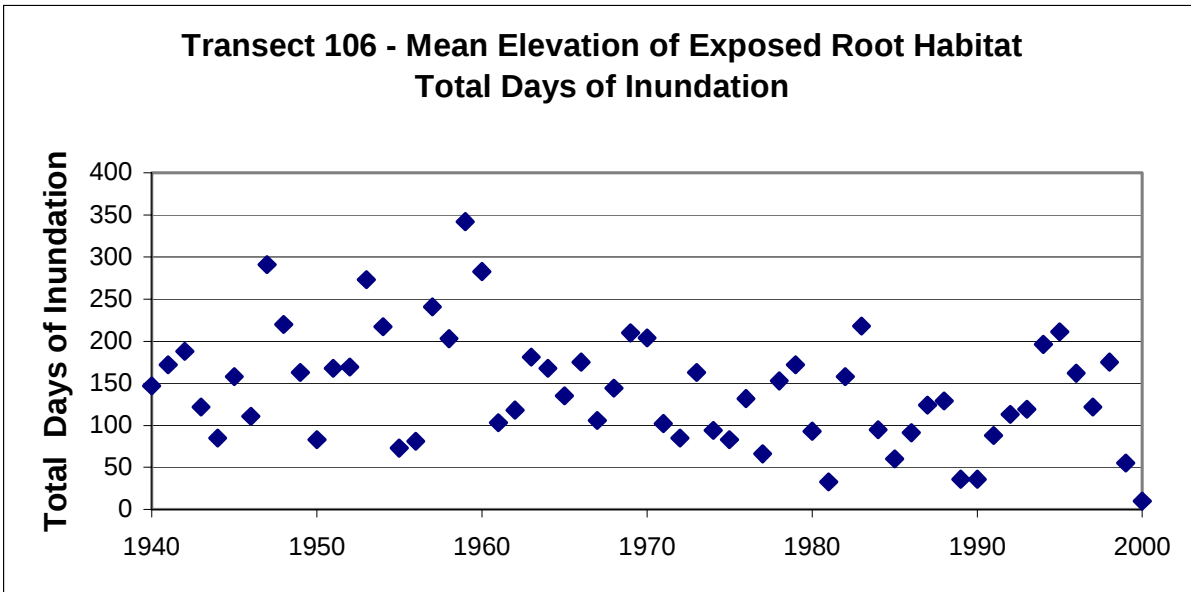


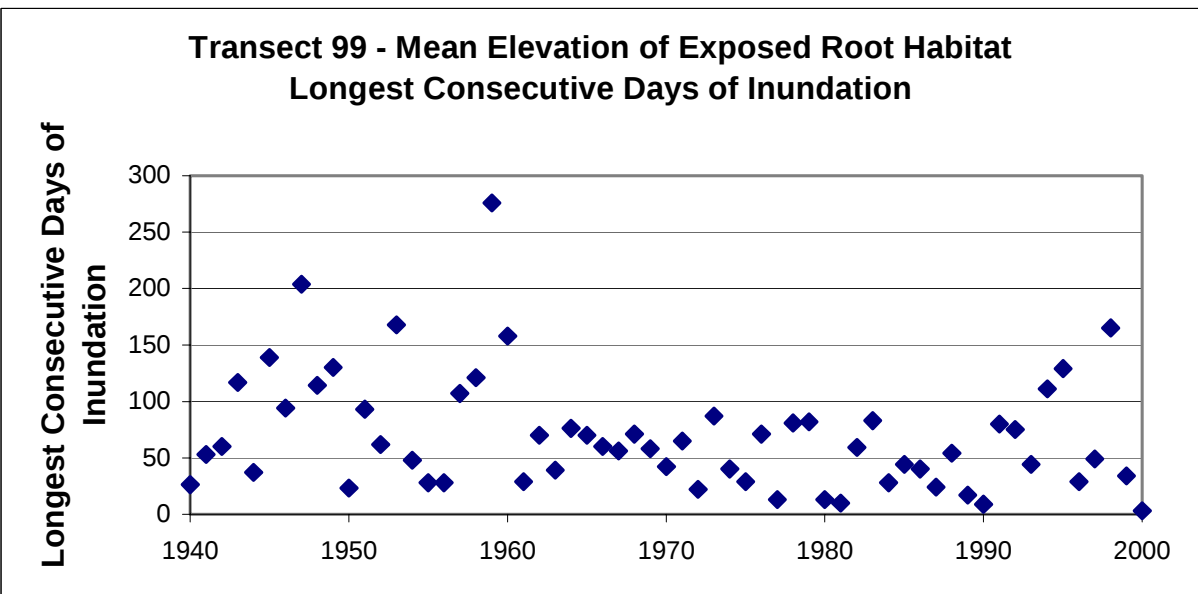
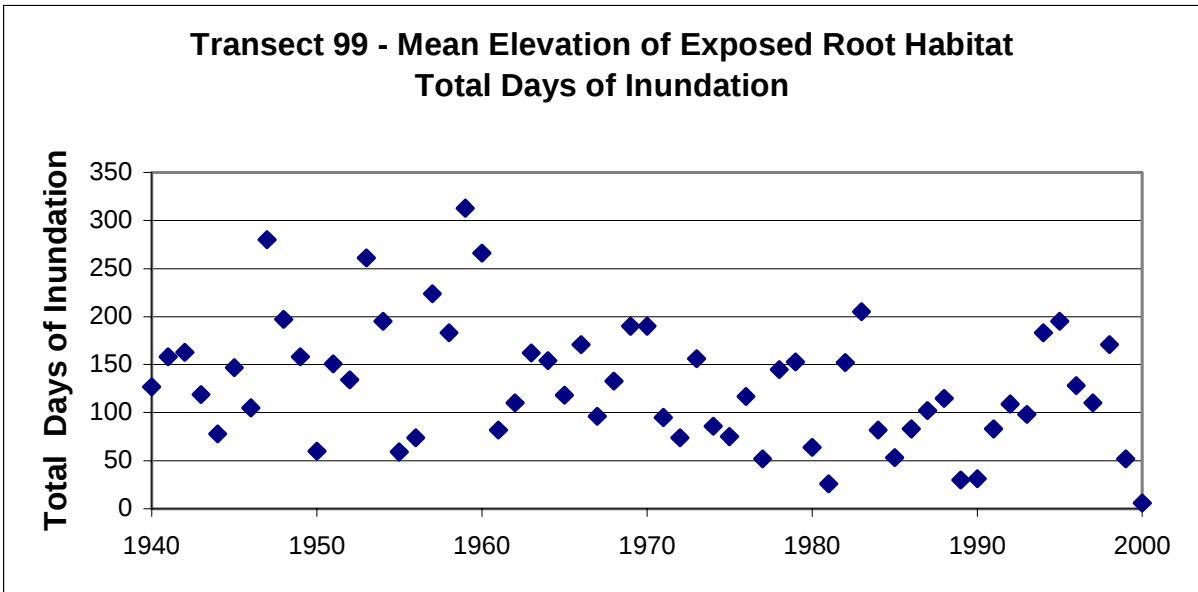


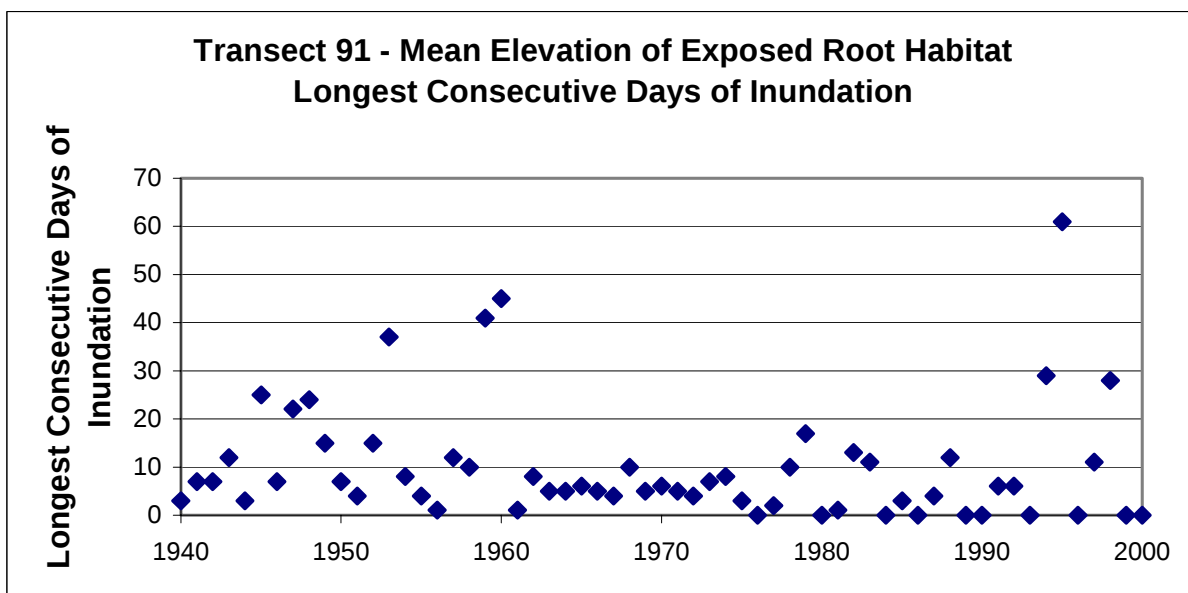
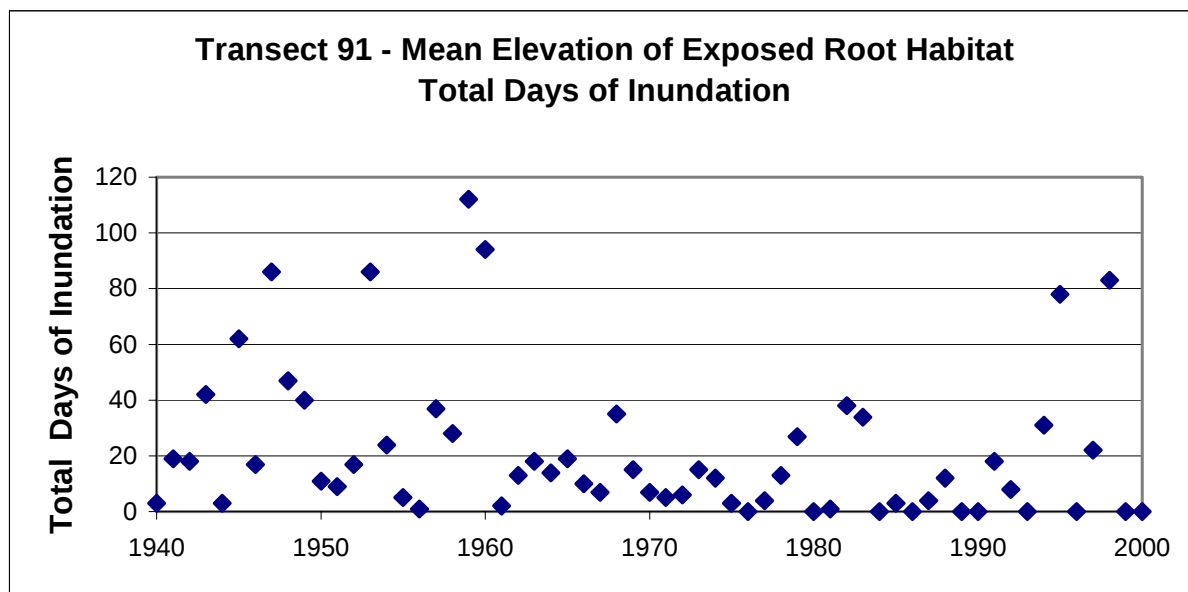


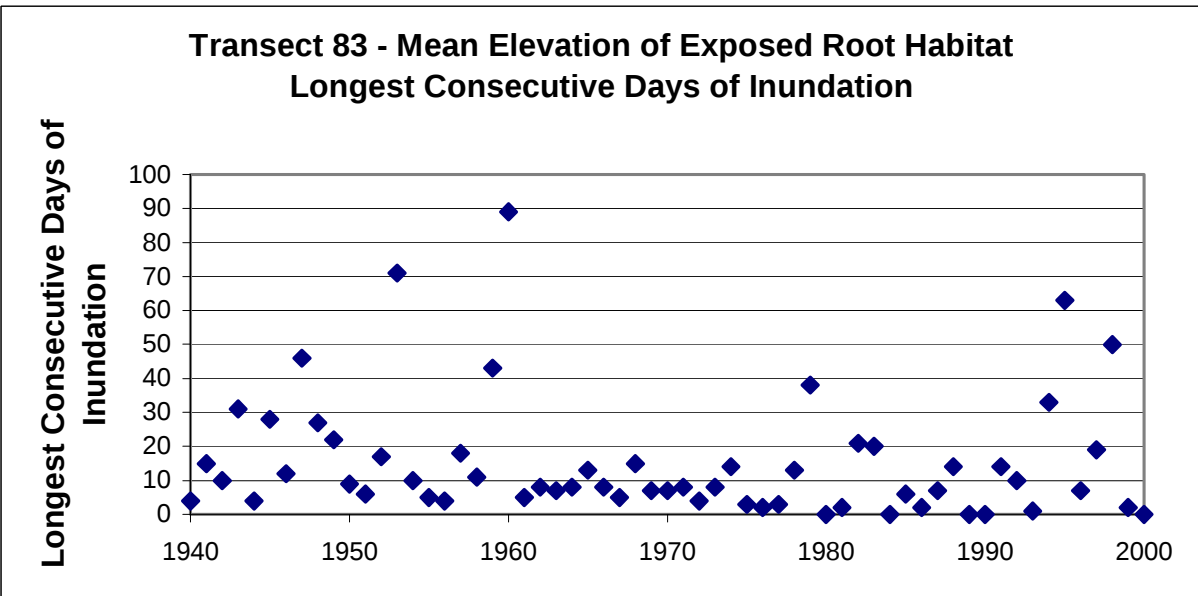
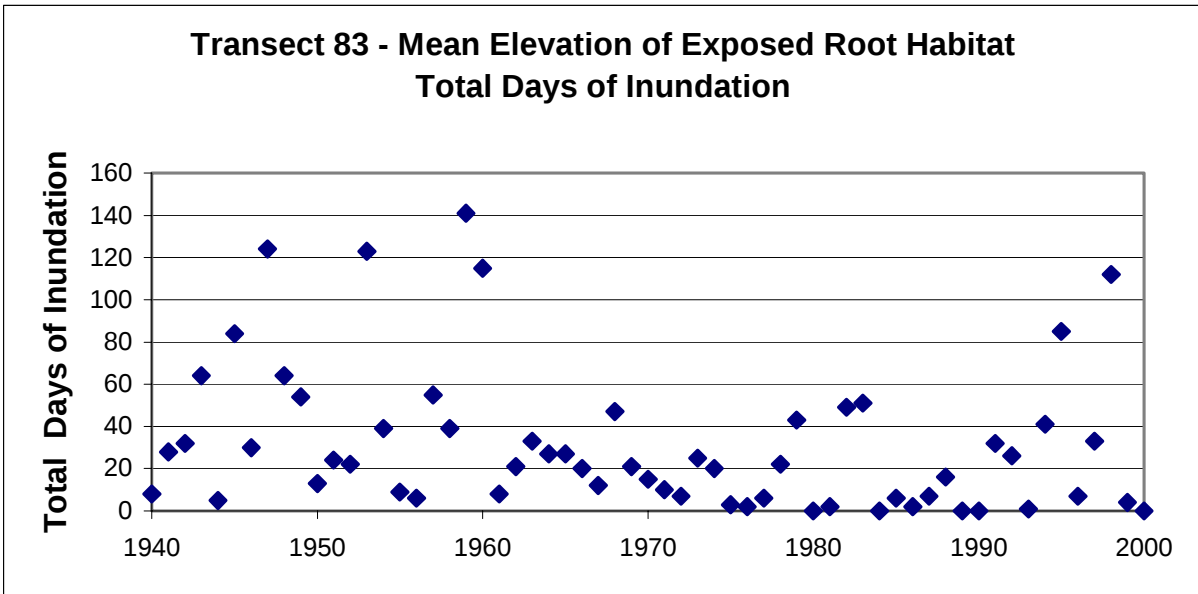


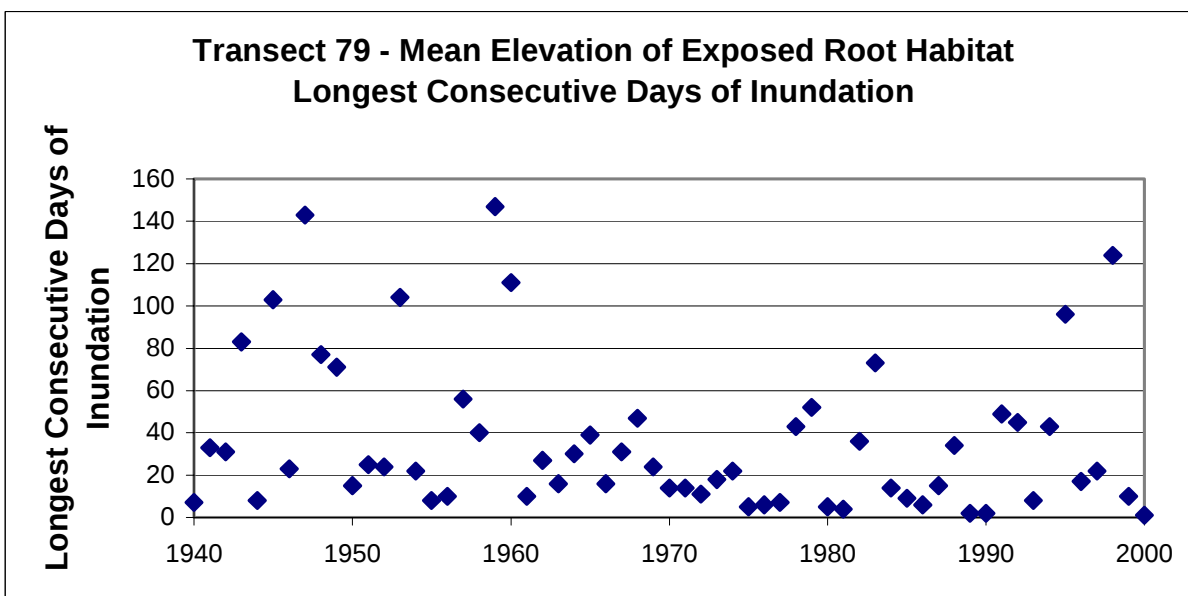
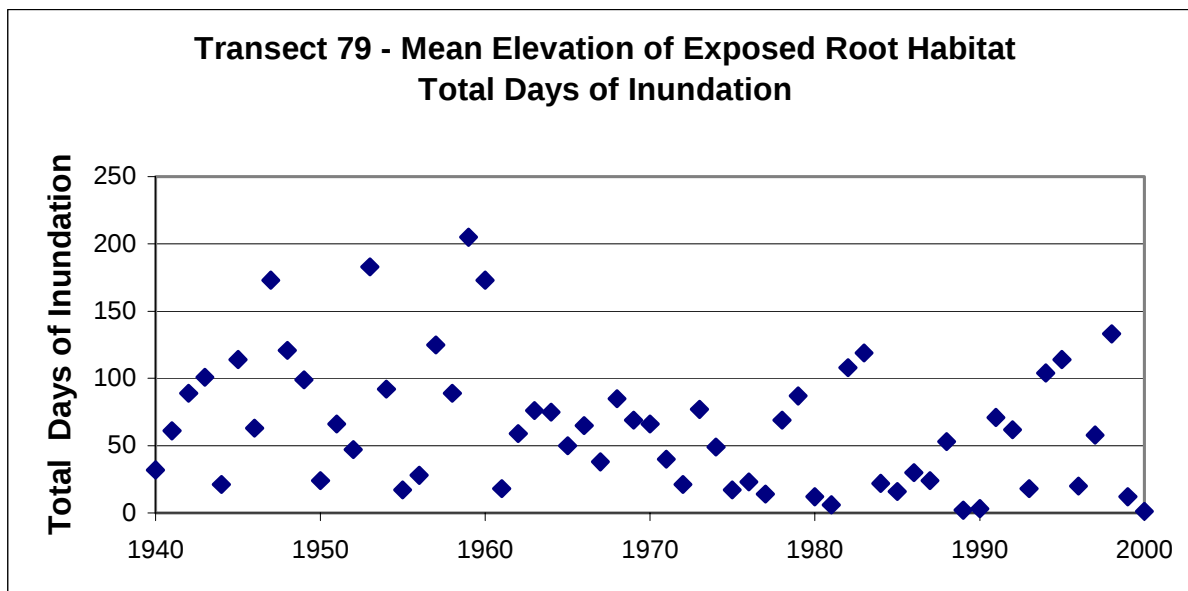


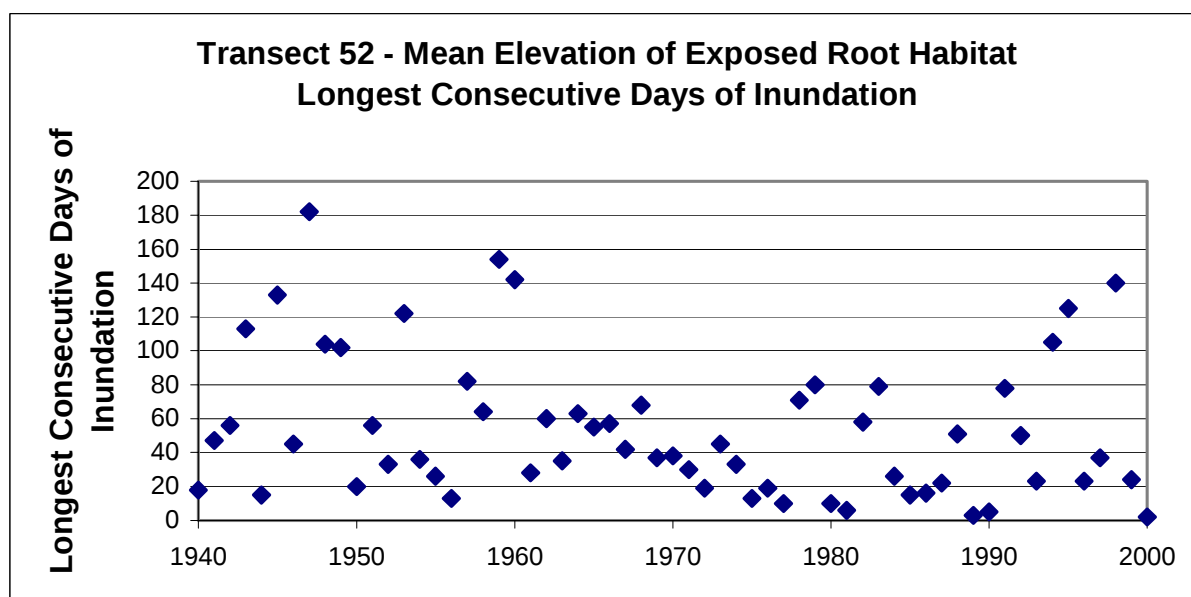
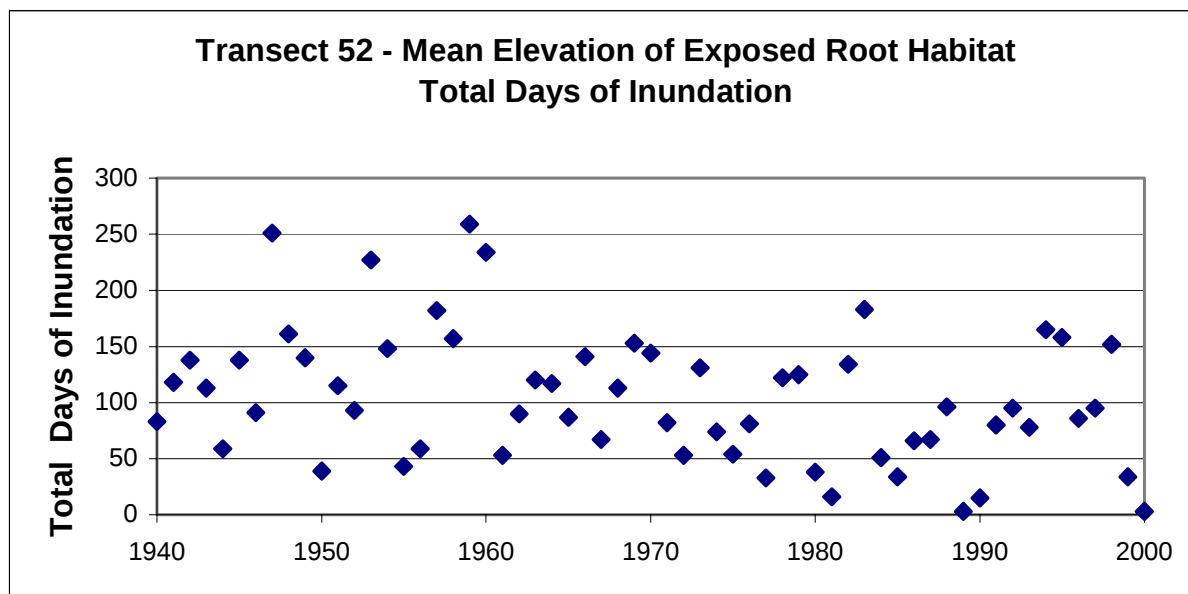


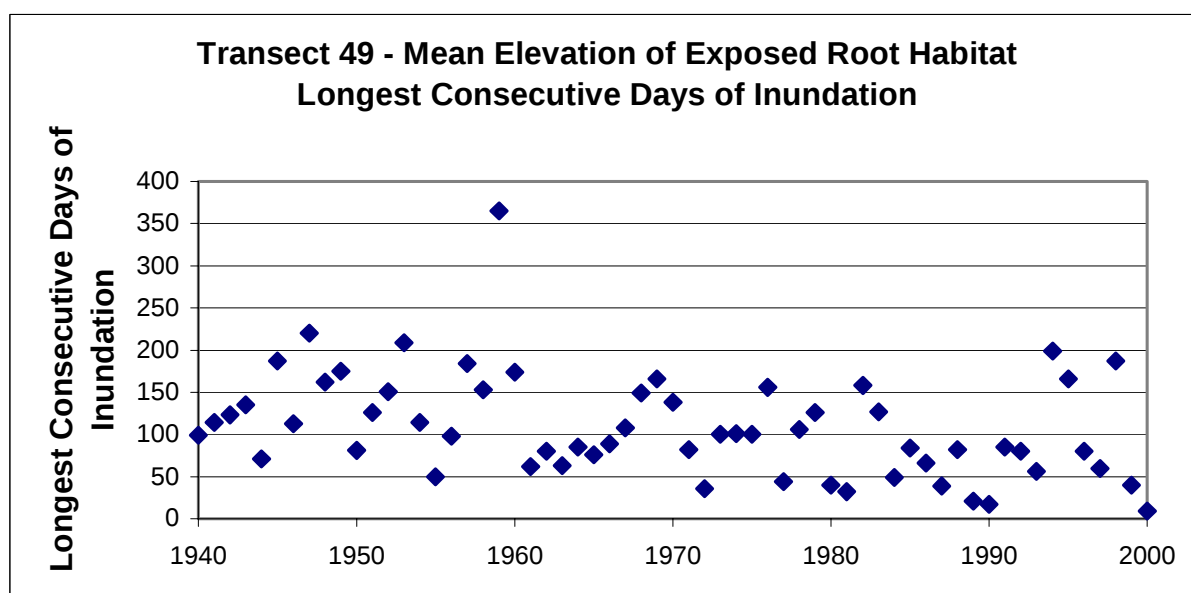
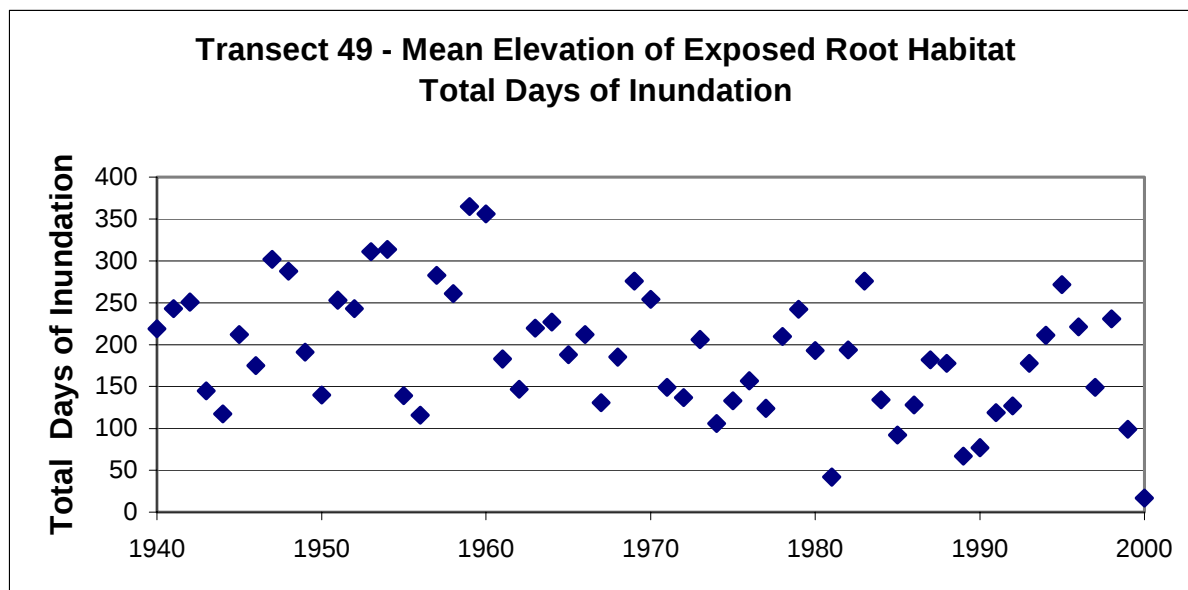


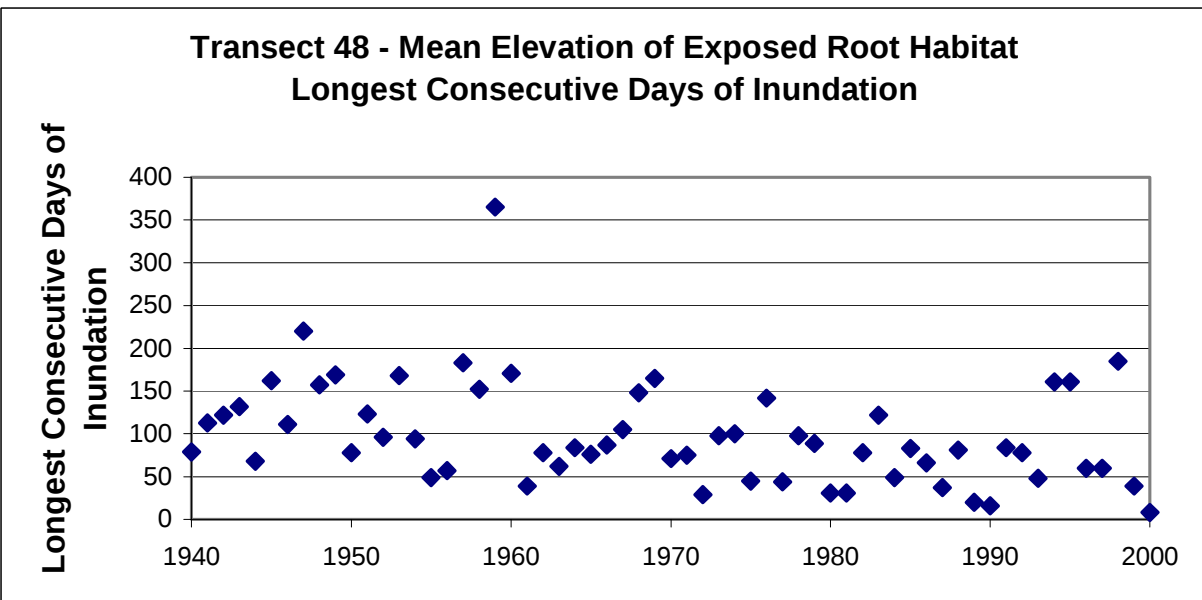
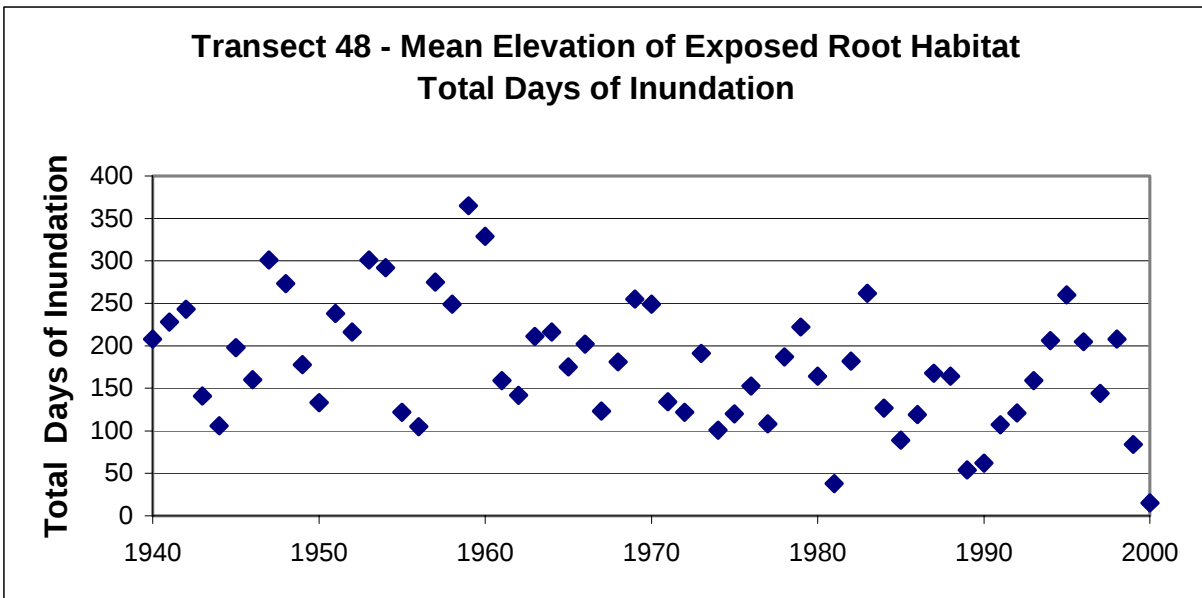


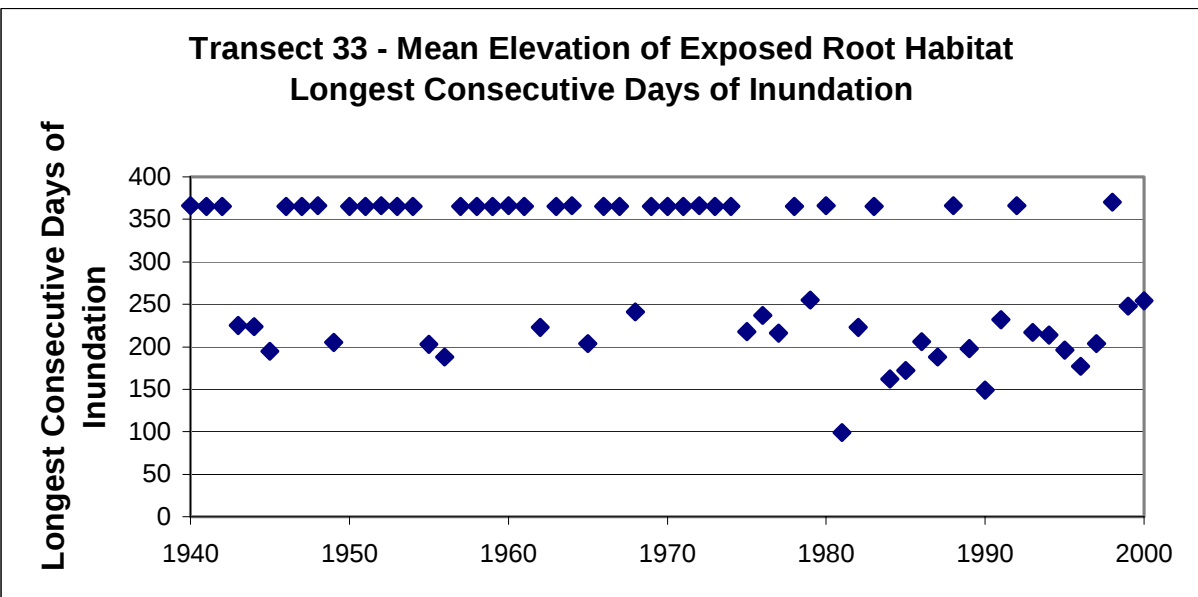
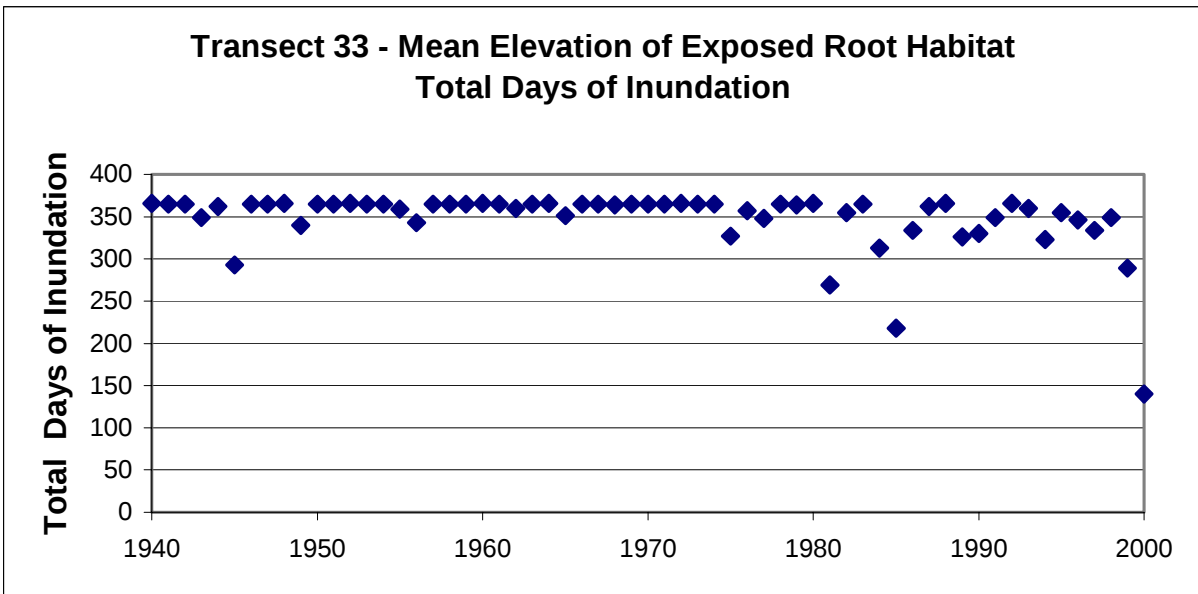


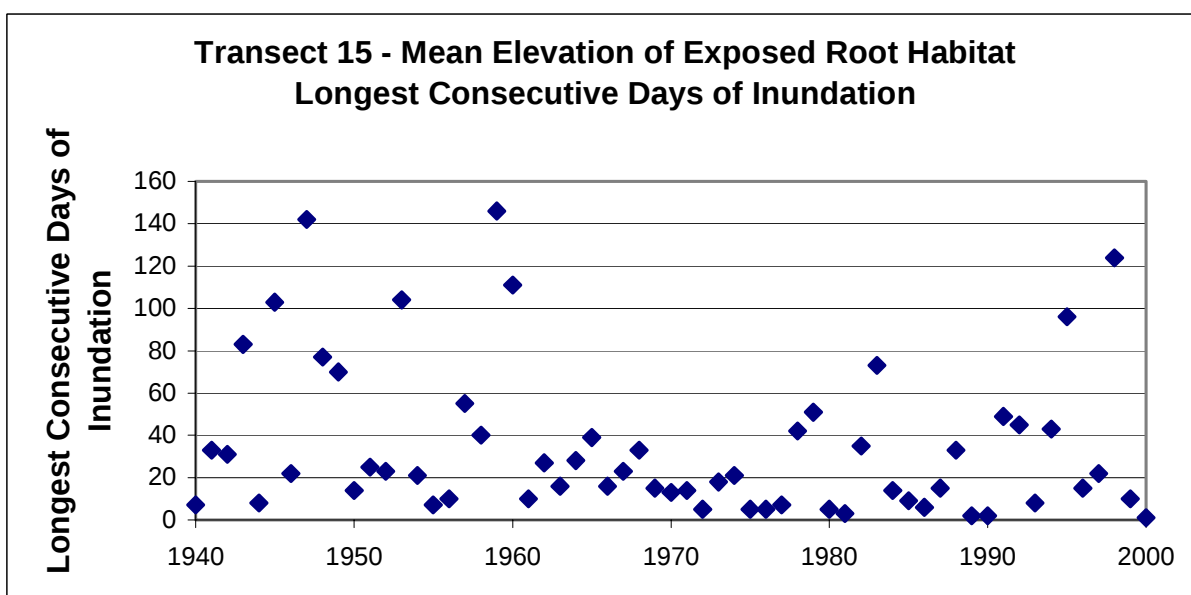
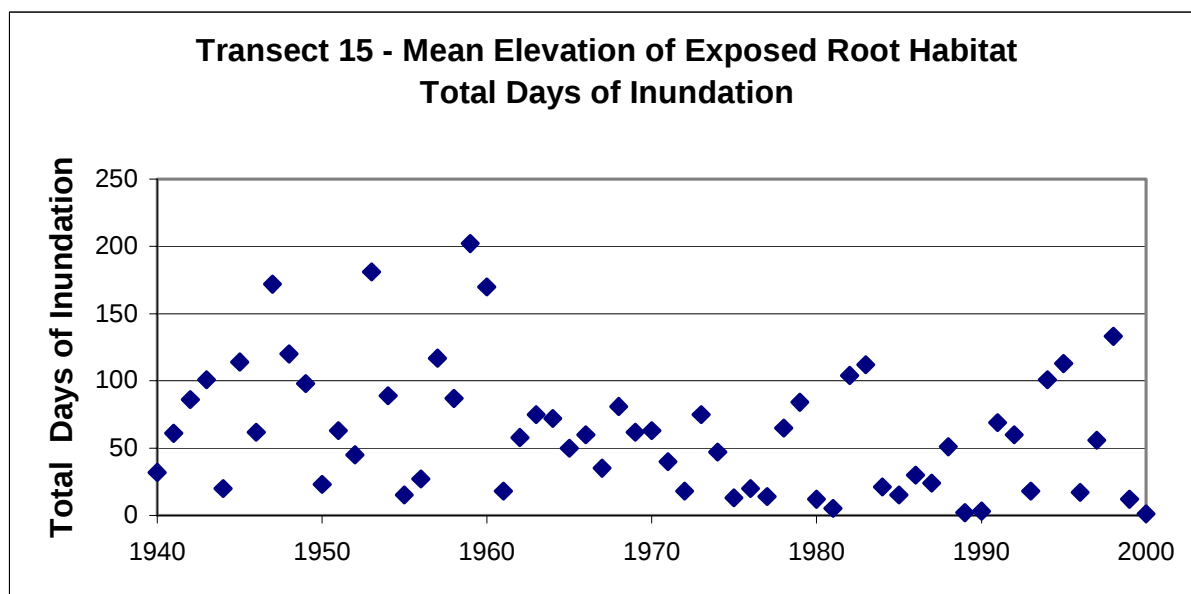


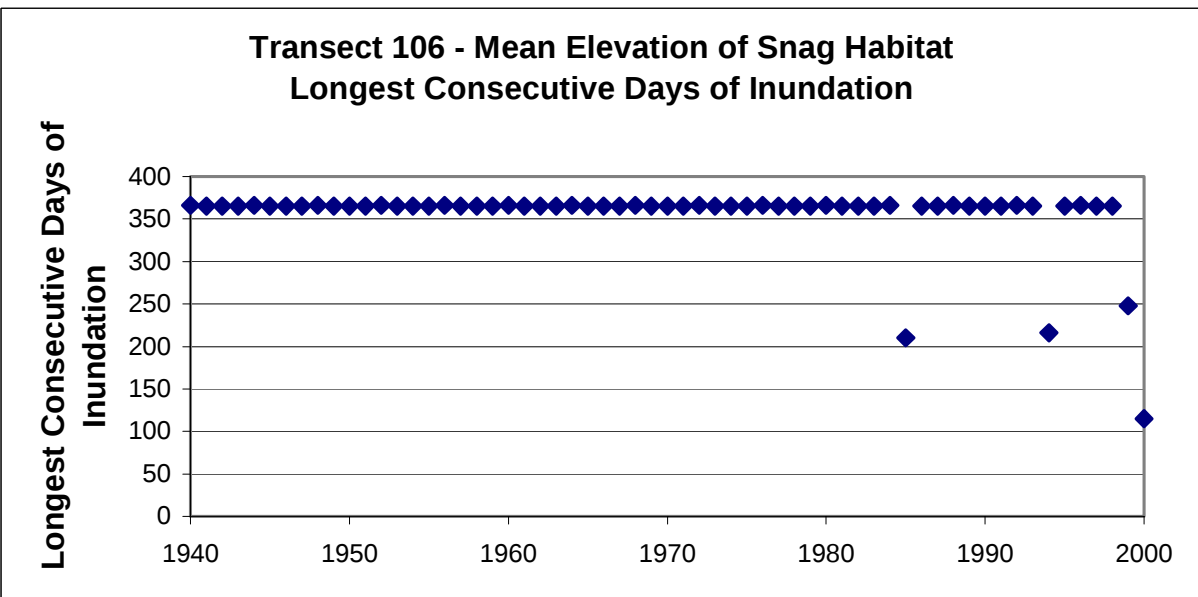
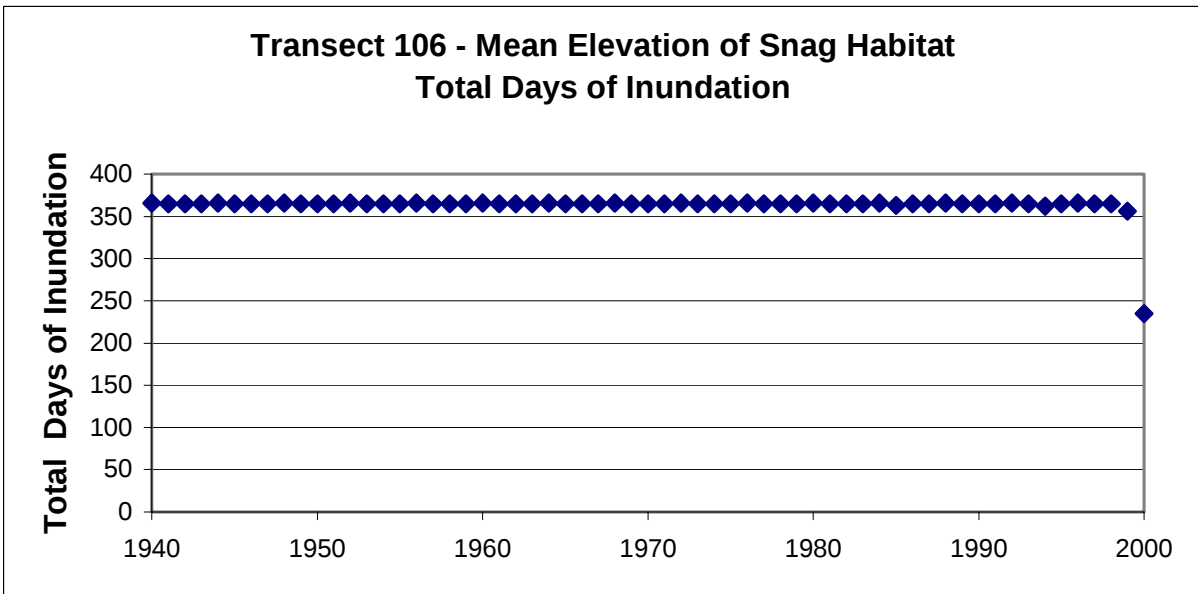


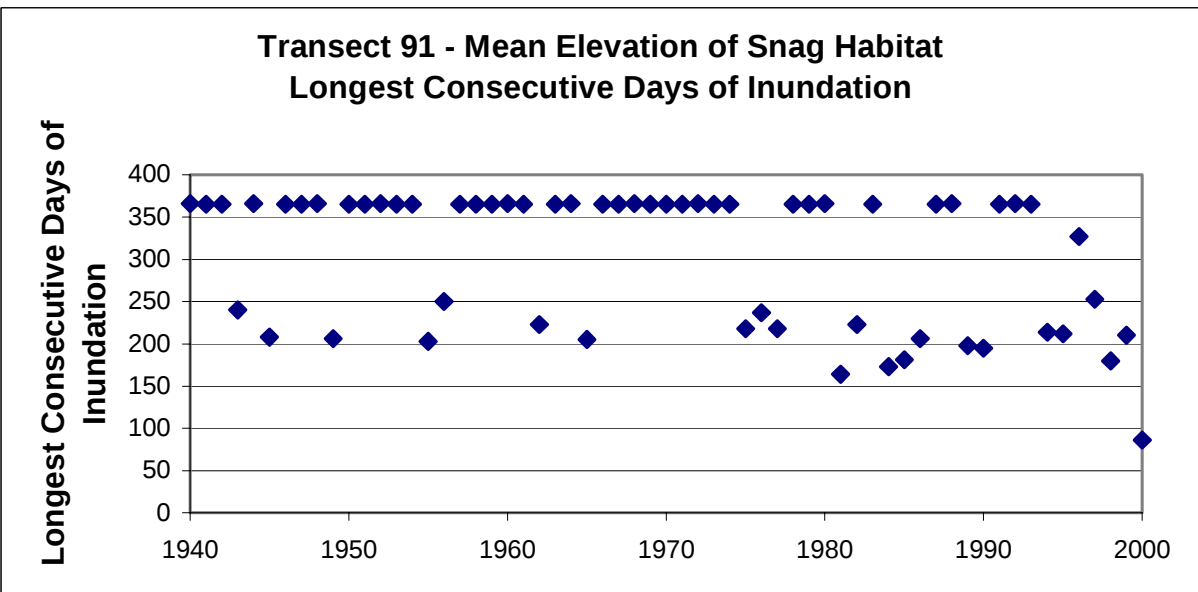
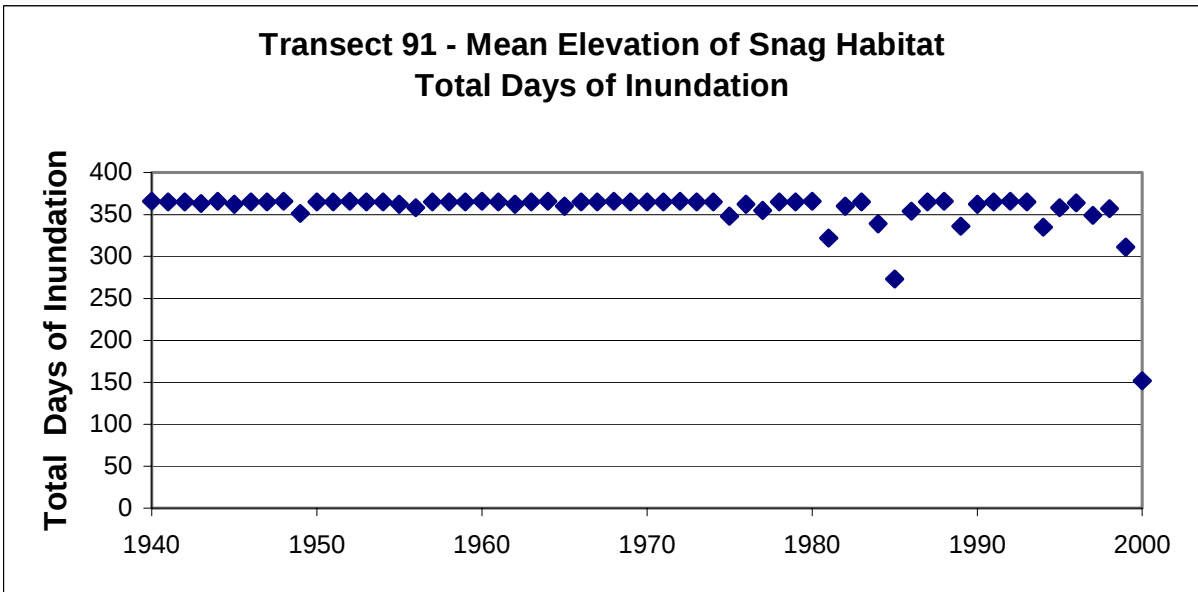


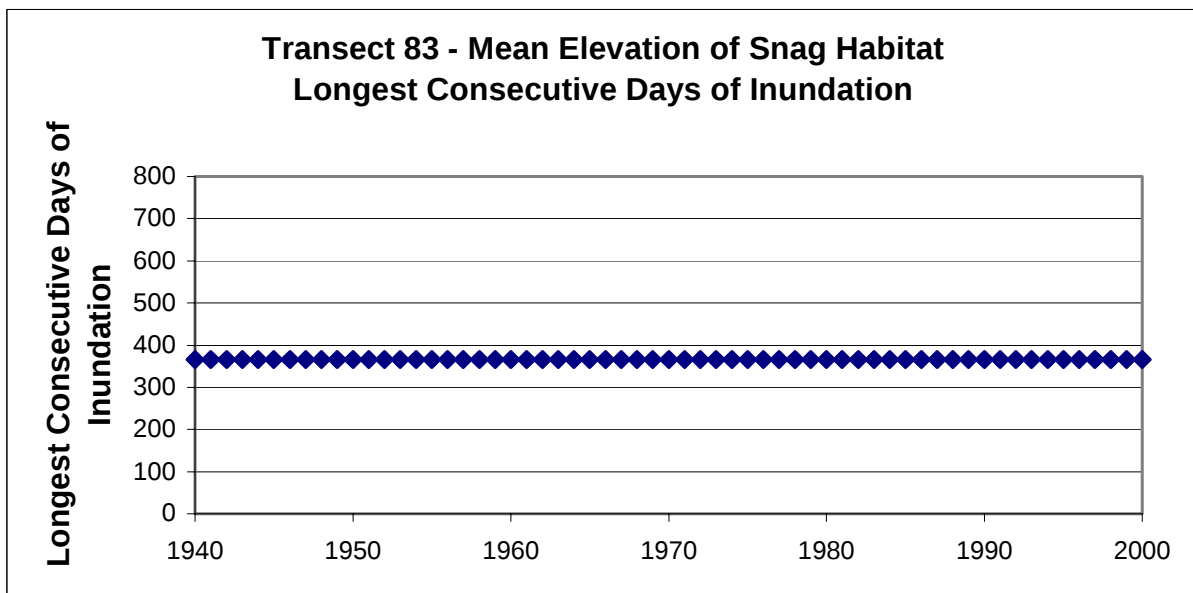
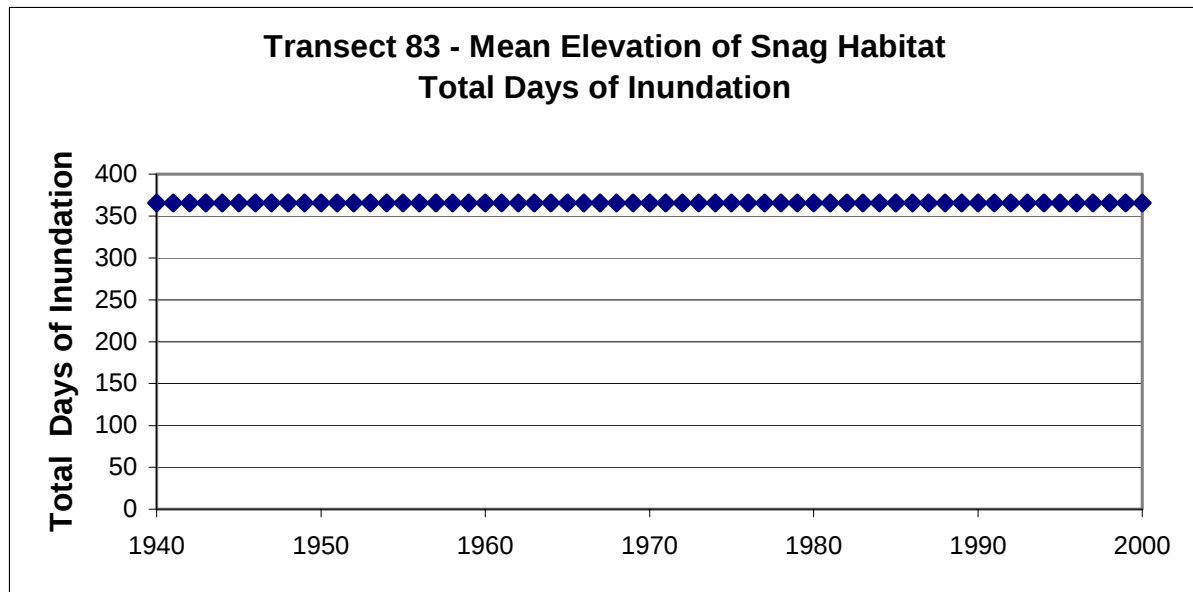


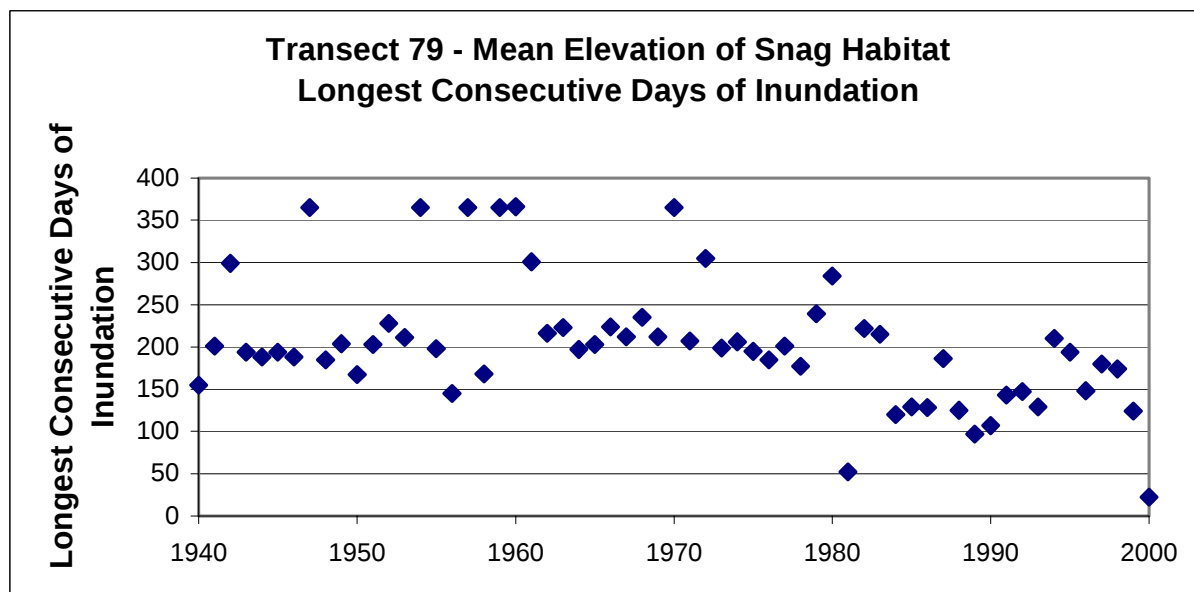
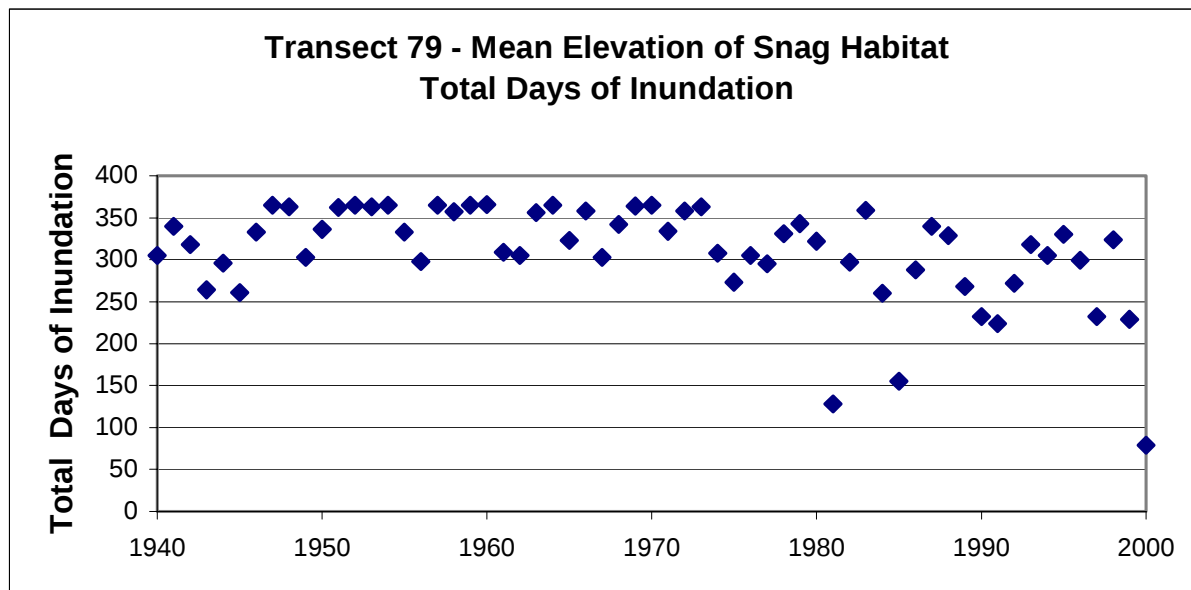


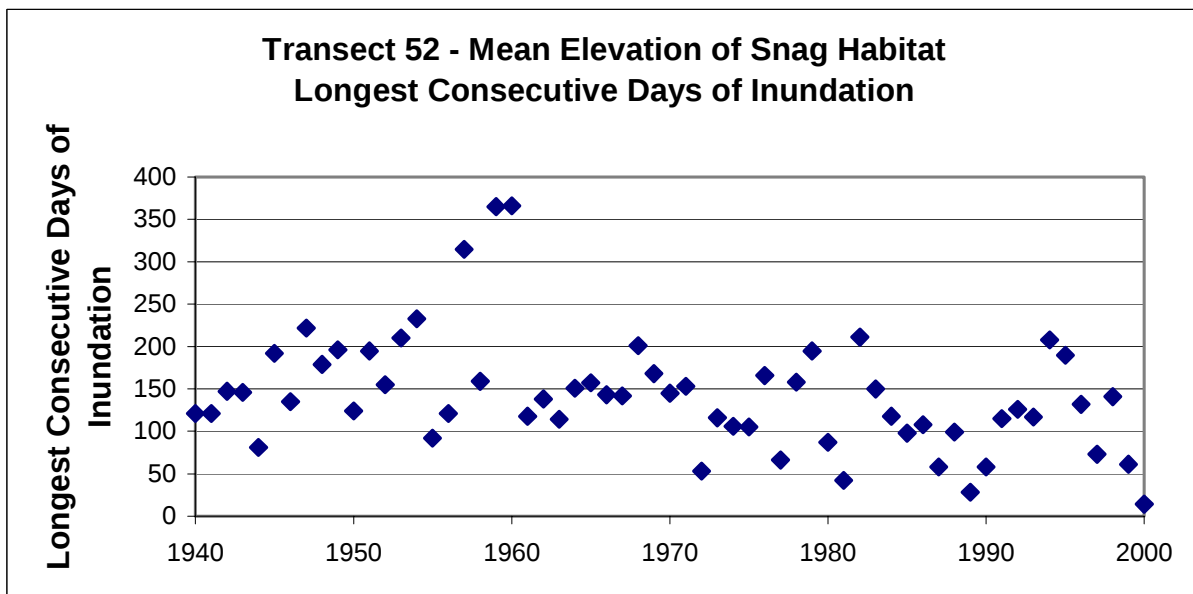
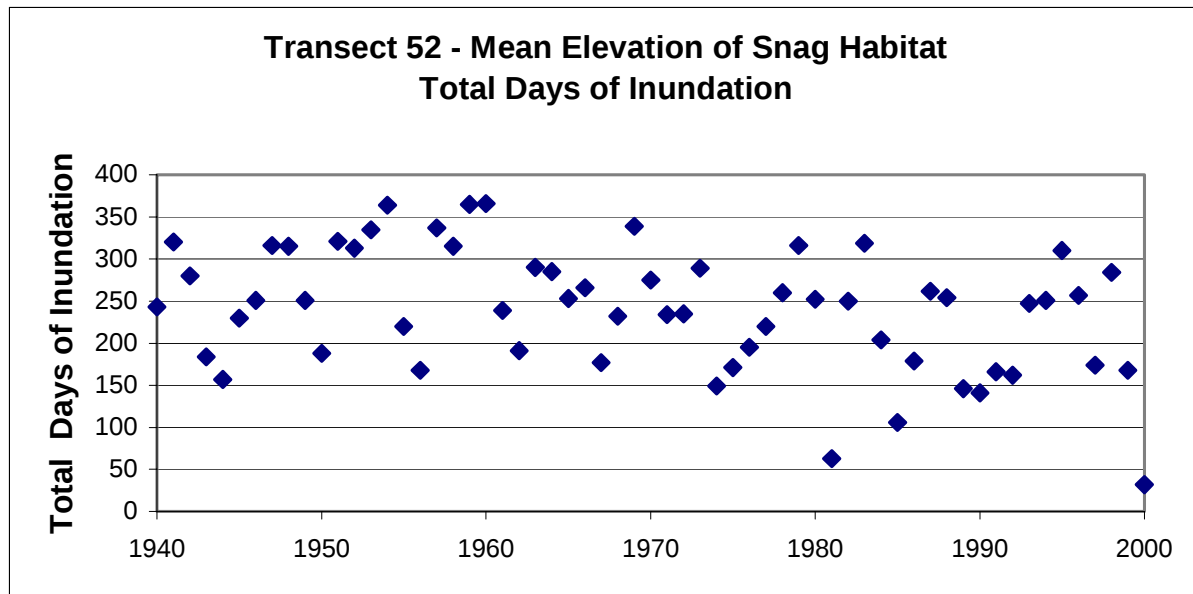


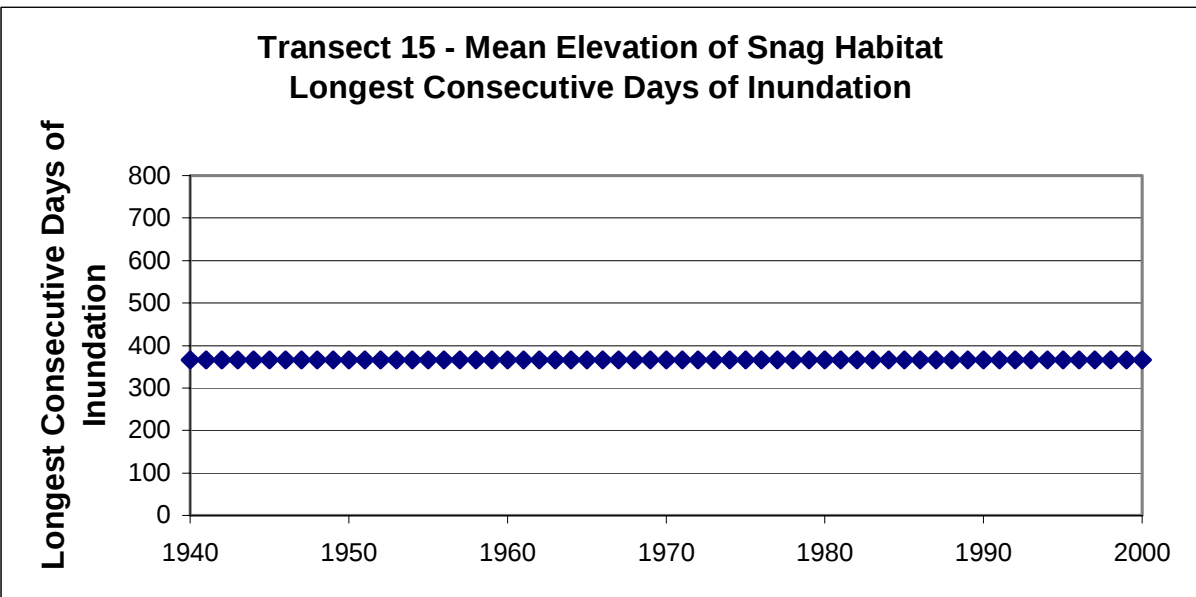
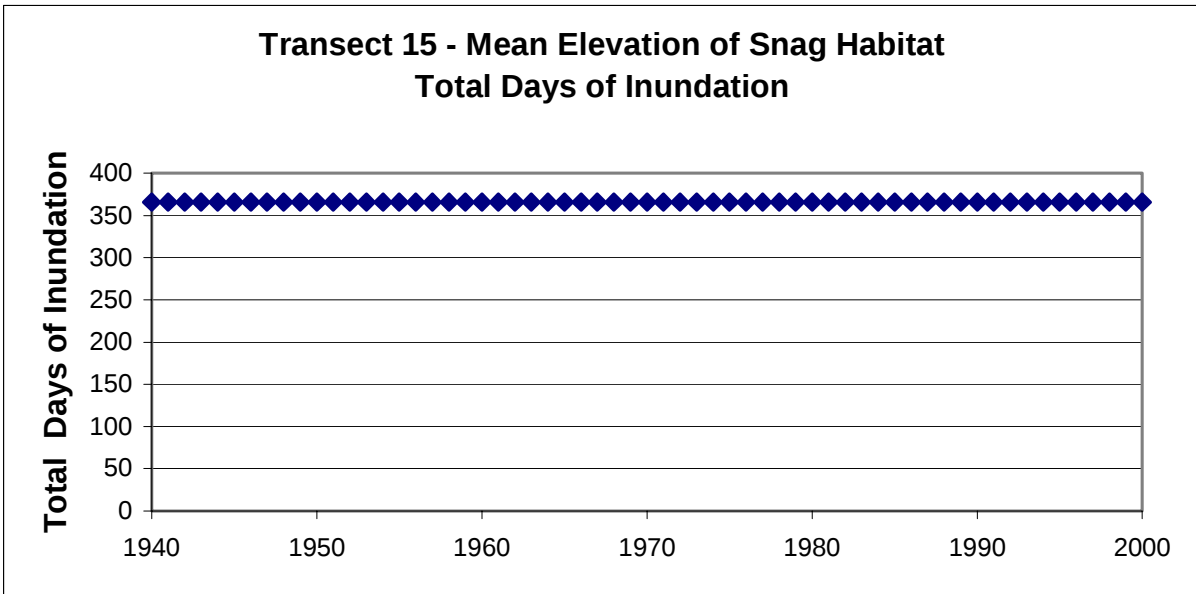










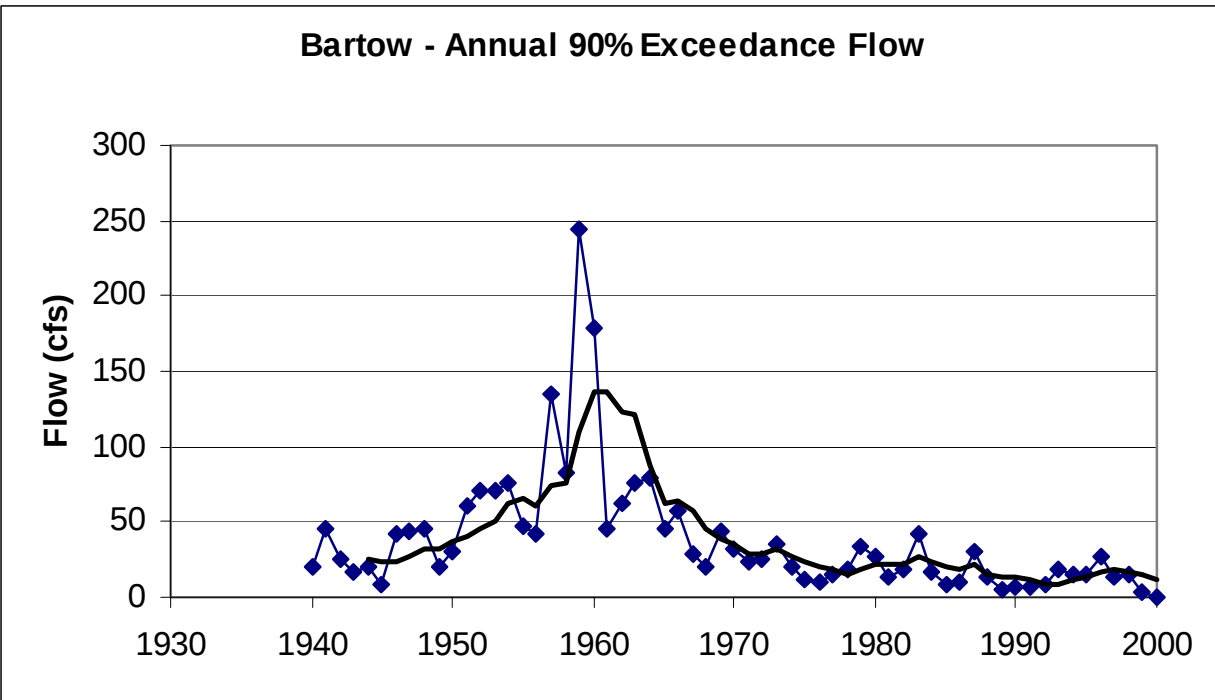
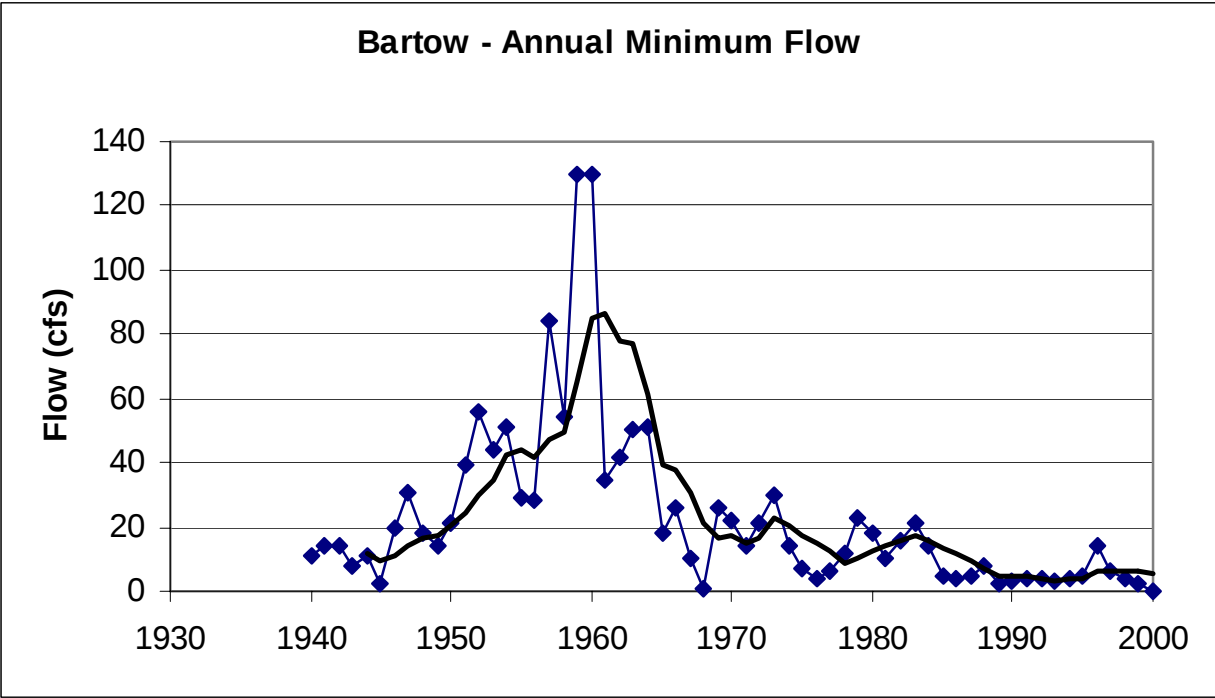


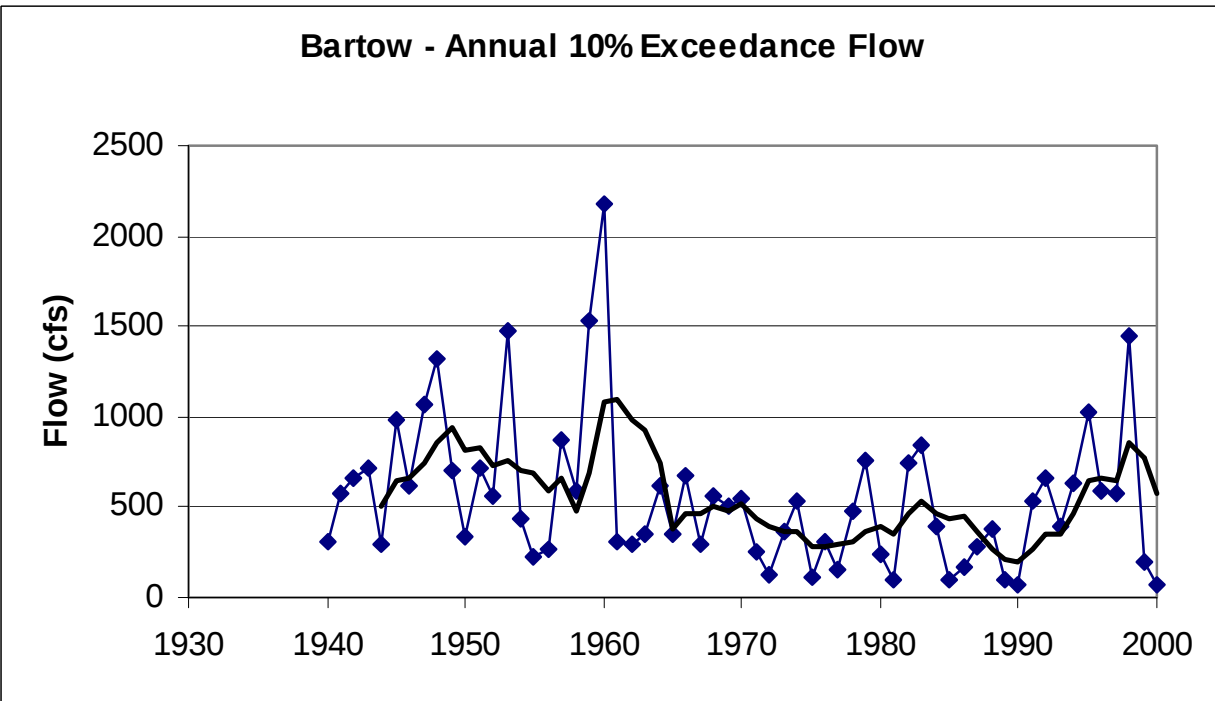
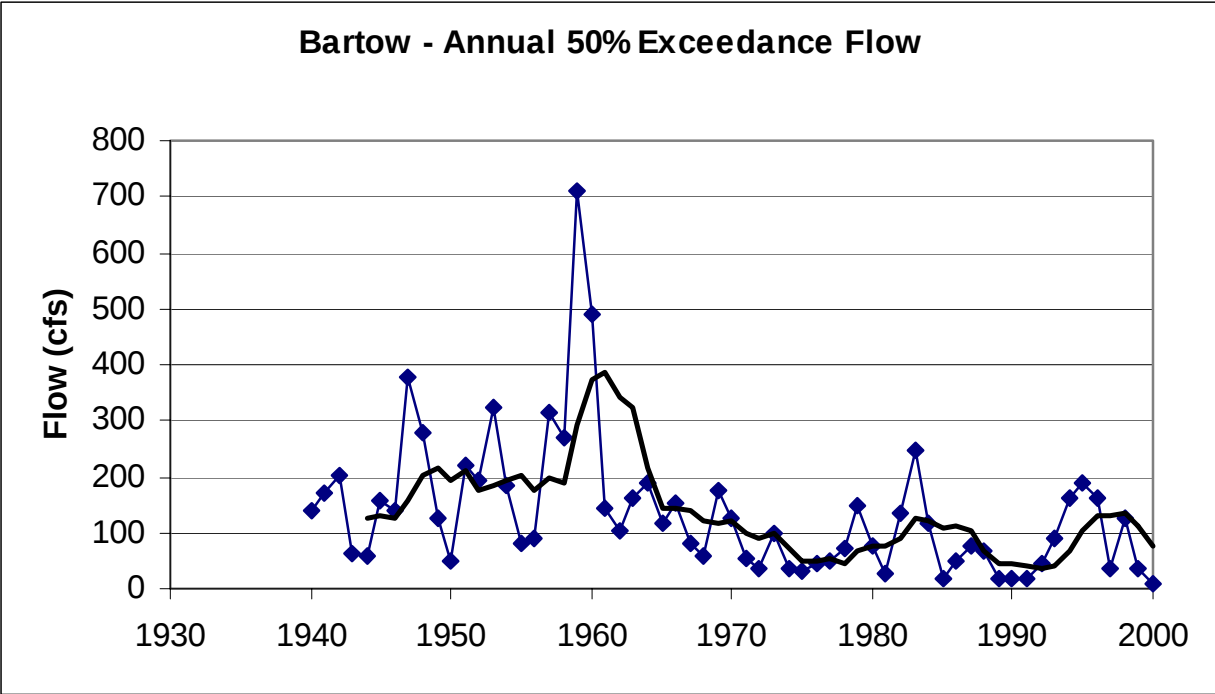
APPENDIX QE

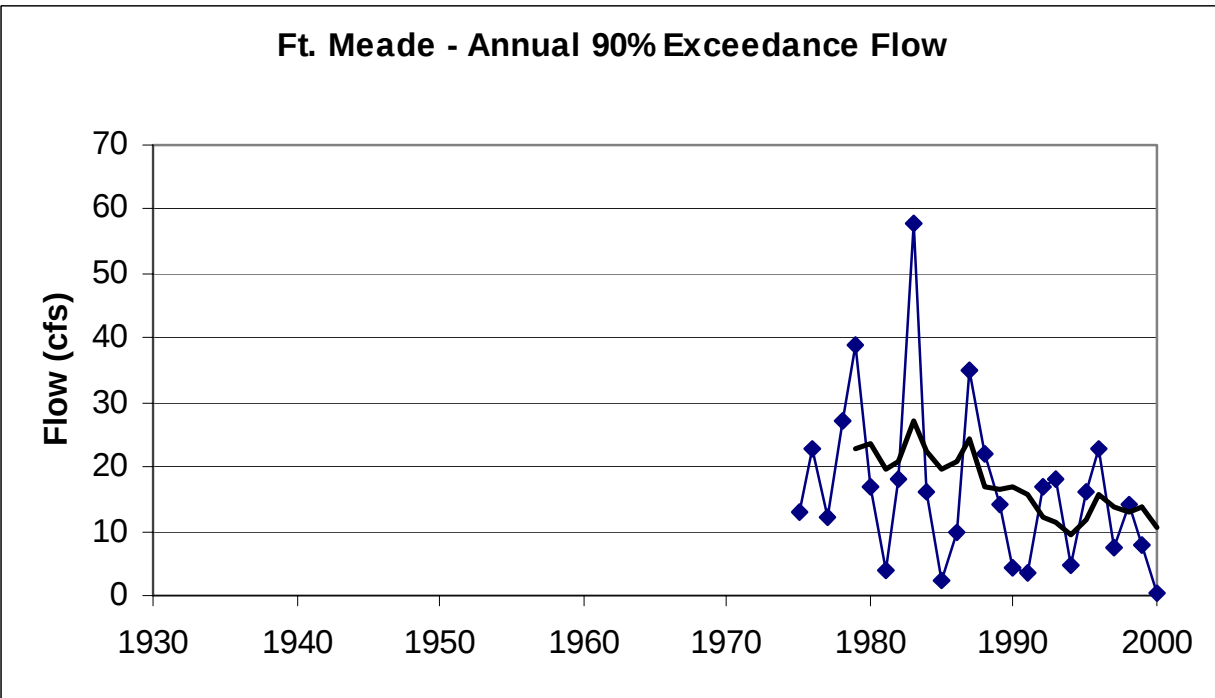
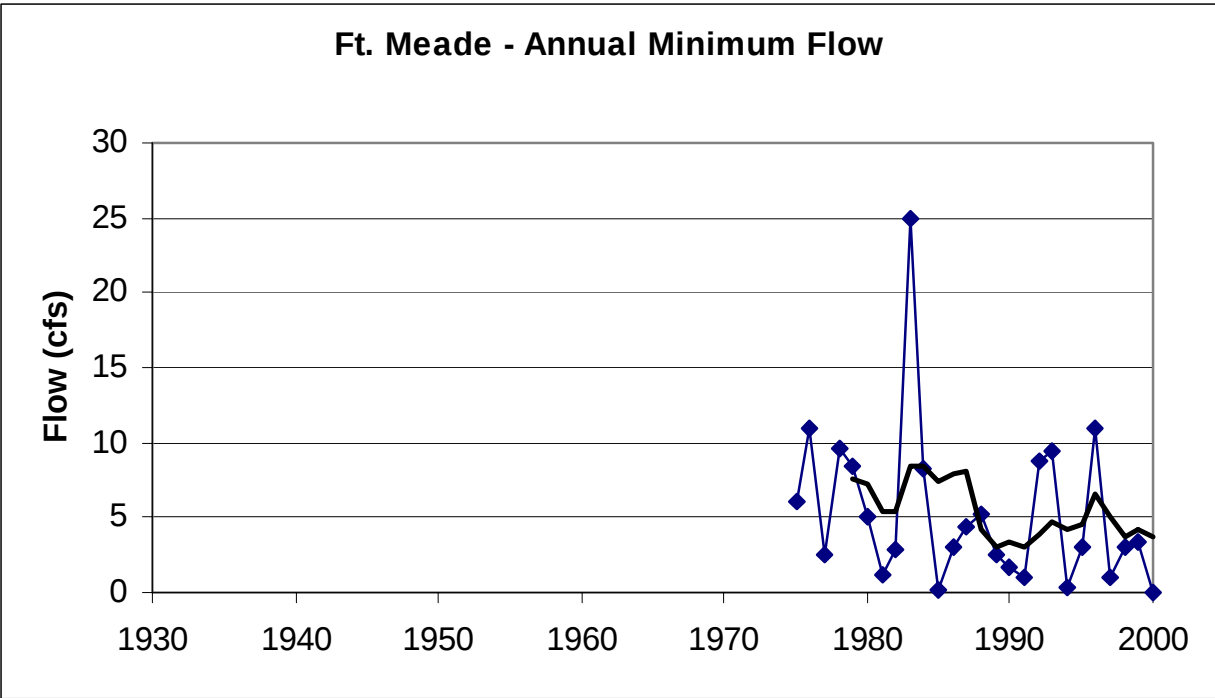
Flows/Exceedance - QE

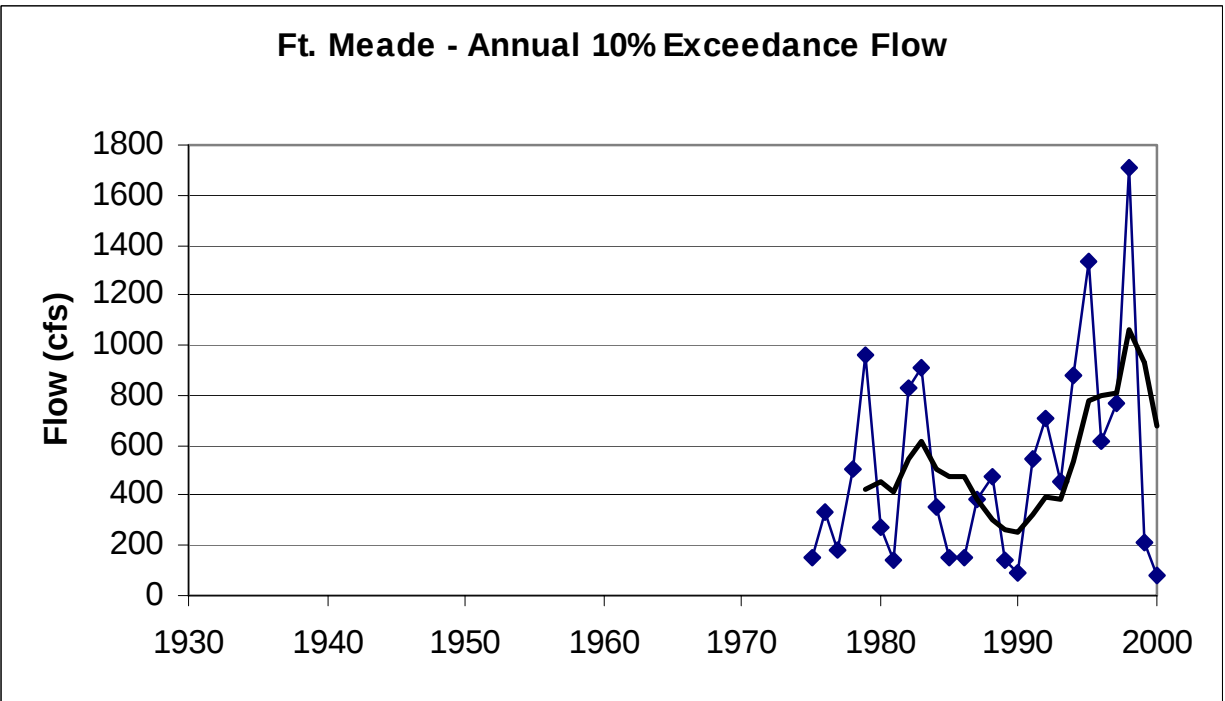
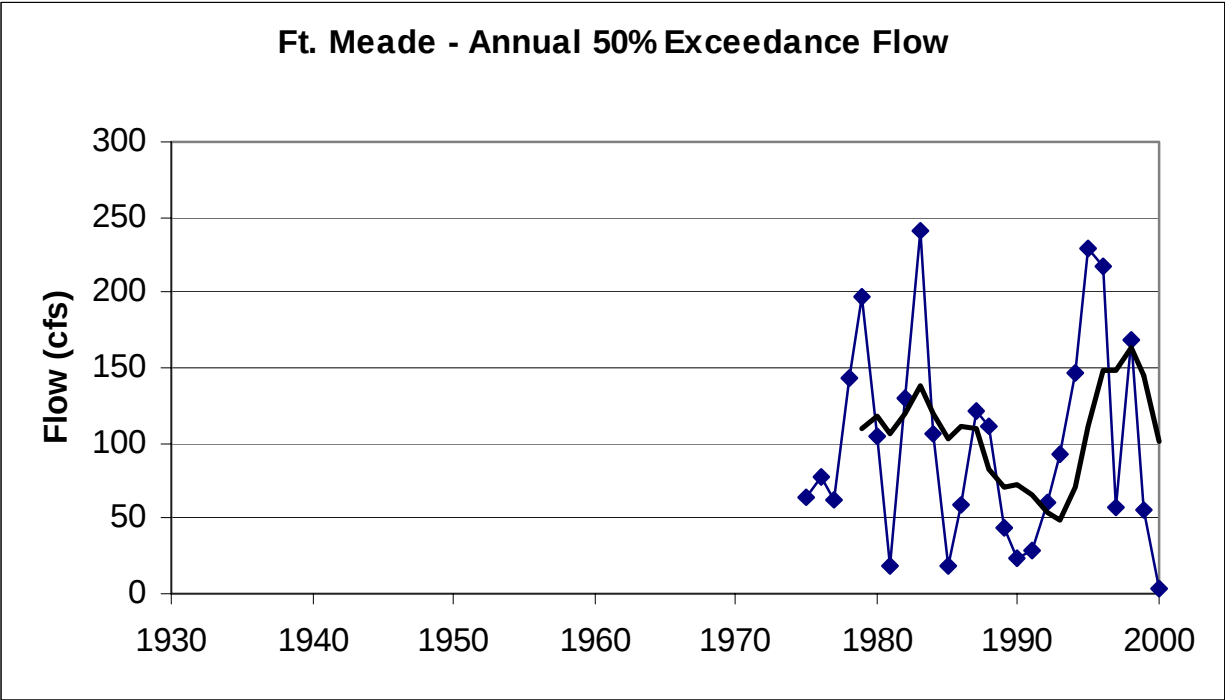
This appendix contains selected plots of percent exceedance flows for four gage sites on the Peace River: Bartow, Ft. Meade, Zolfo Springs and Arcadia. The reader is reminded that the period of record at the Ft. Meade site is considerably shorter (beginning in 1975) the other three sites which had periods of record to at least 1940. Percent exceedance plots are given for the 100% exceedance flow (the minimum flow) for each year of the period of record, for the 90% exceedance flow, the 50% exceedance flow (i.e., the median flow) and the 10% exceedance flow. Percent exceedance is for flows by year; the annual value is plotted as well as a 5-year running average. In addition to these plots, this appendix also includes several plots which also show the percent exceedance flow at an upstream site as a percent of the flow at a downstream site for selected time periods. One can visually see how the percent contribution of upstream flows to downstream flows has changed over time.

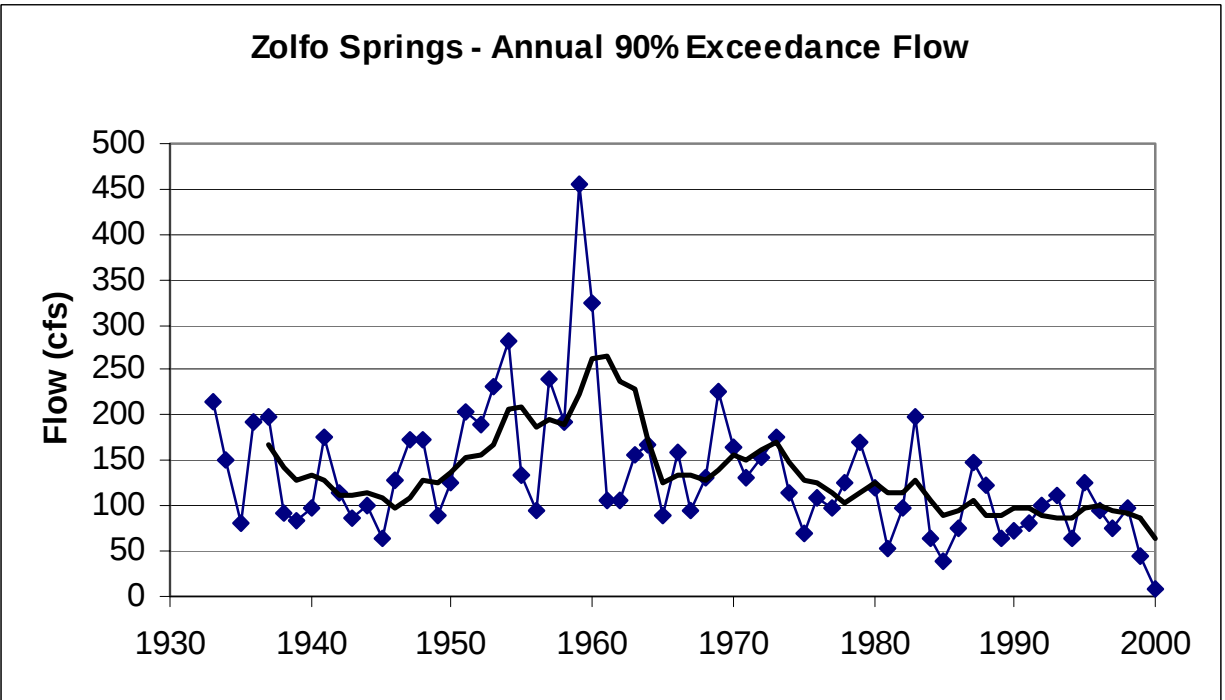
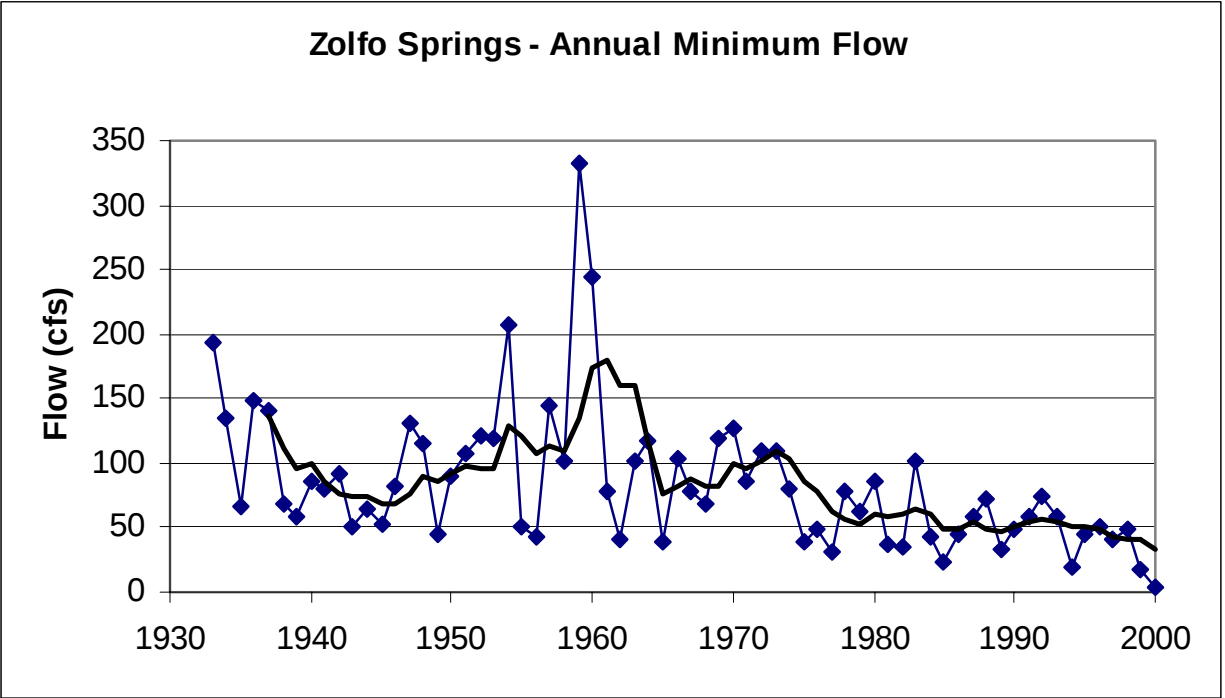
Chart/Table	Page
Bartow annual minimum flow (i.e., 100% exceedance flow)	QE-2
Bartow 90% exceedance flow	QE-2
Bartow median or 50% exceedance flow	QE-3
Bartow 10% exceedance flow	QE-3
Ft. Meade annual minimum flow (i.e., 100% exceedance flow)	QE-4
Ft. Meade 90% exceedance flow	QE-4
Ft. Meade median or 50% exceedance flow	QE-5
Ft. Meade 10% exceedance flow	QE-5
Zolfo Springs annual minimum flow (i.e., 100% exceedance flow)	QE-6
Zolfo Springs 90% exceedance flow	QE-6
Zolfo Springs median or 50% exceedance flow	QE-7
Zolfo Springs 10% exceedance flow	QE-7
Arcadia annual minimum flow (i.e., 100% exceedance flow)	QE-8
Arcadia 90% exceedance flow	QE-8
Arcadia or 50% exceedance flow	QE-9
Arcadia 10% exceedance flow	QE-9
Contribution of Bartow flow to Zolfo Springs flow	QE-10
Contribution of Bartow flow to Arcadia flow	QE-10
Contribution of Zolfo Springs flow to Arcadia flow	QE-11
Table of Annual Percent Exceedance Flows at Bartow	QE-12
Table of Annual Percent Exceedance Flows at Ft. Meade	QE-13
Table of Annual Percent Exceedance Flows at Zolfo Springs	QE-14
Table of Annual Percent Exceedance Flows at Arcadia	QE-15

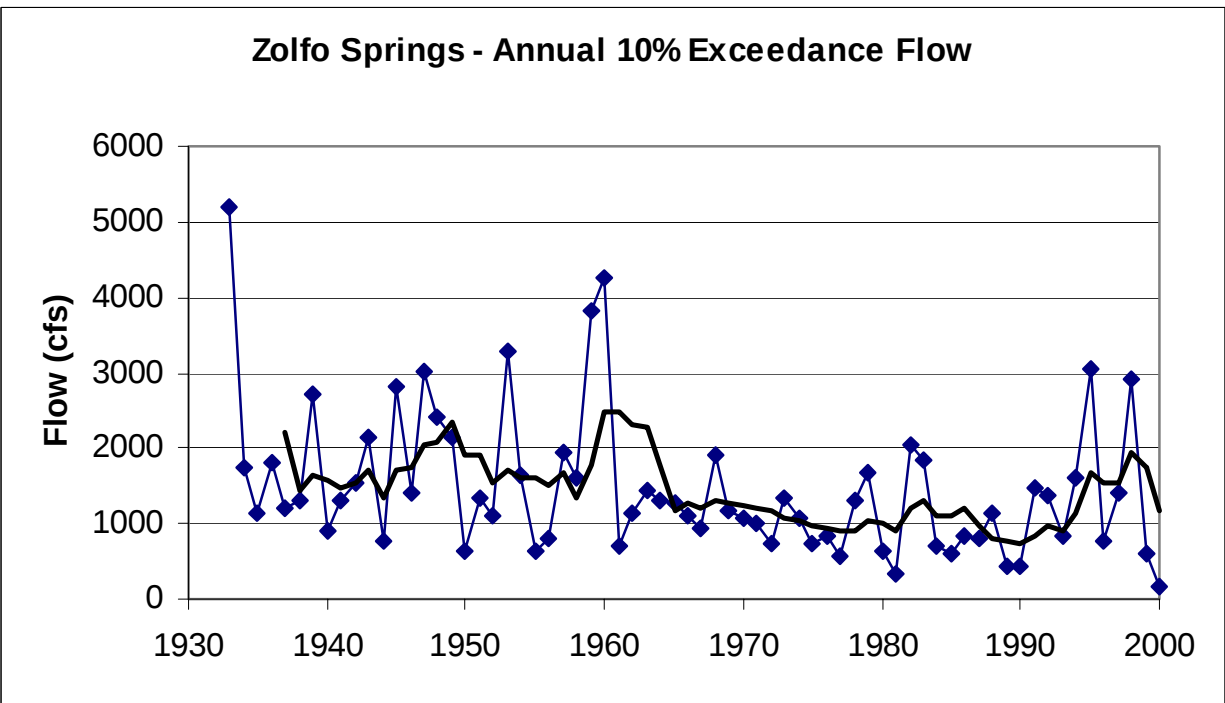
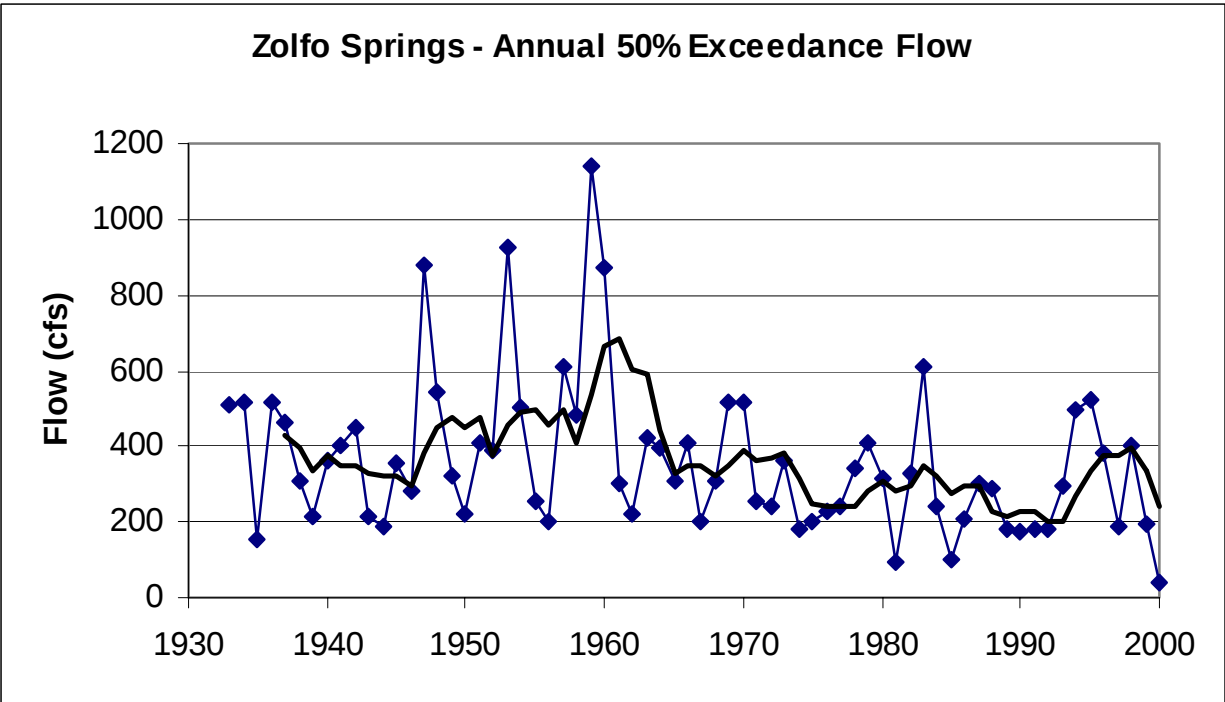


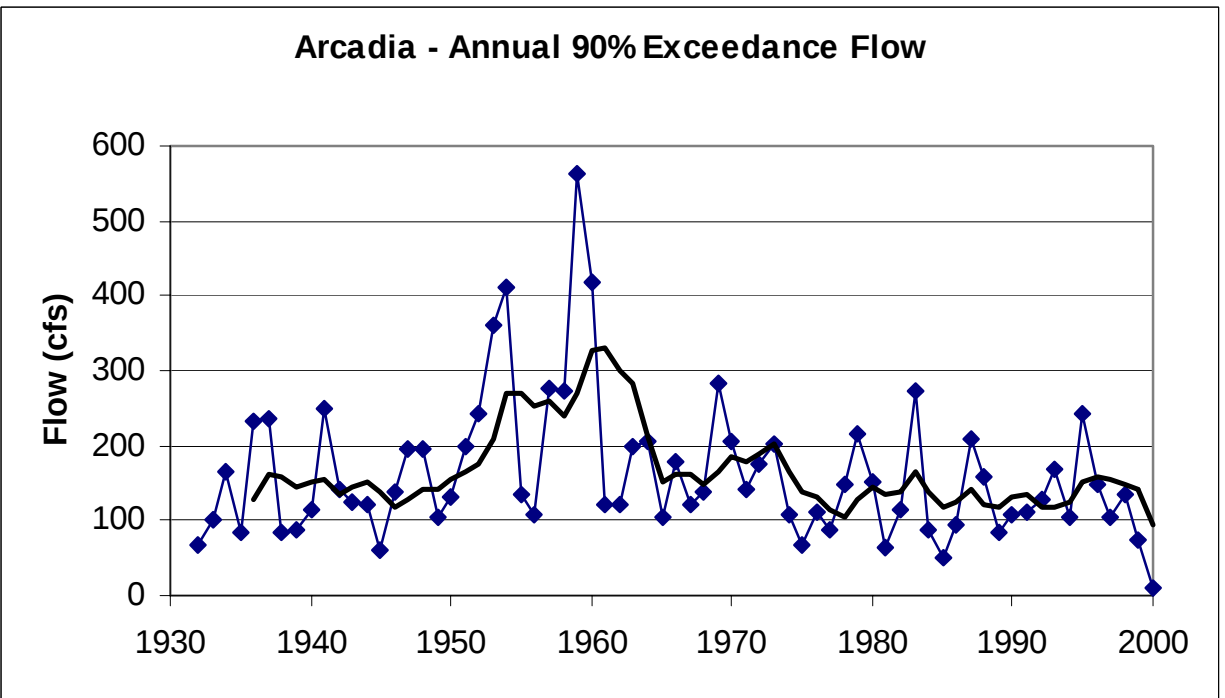
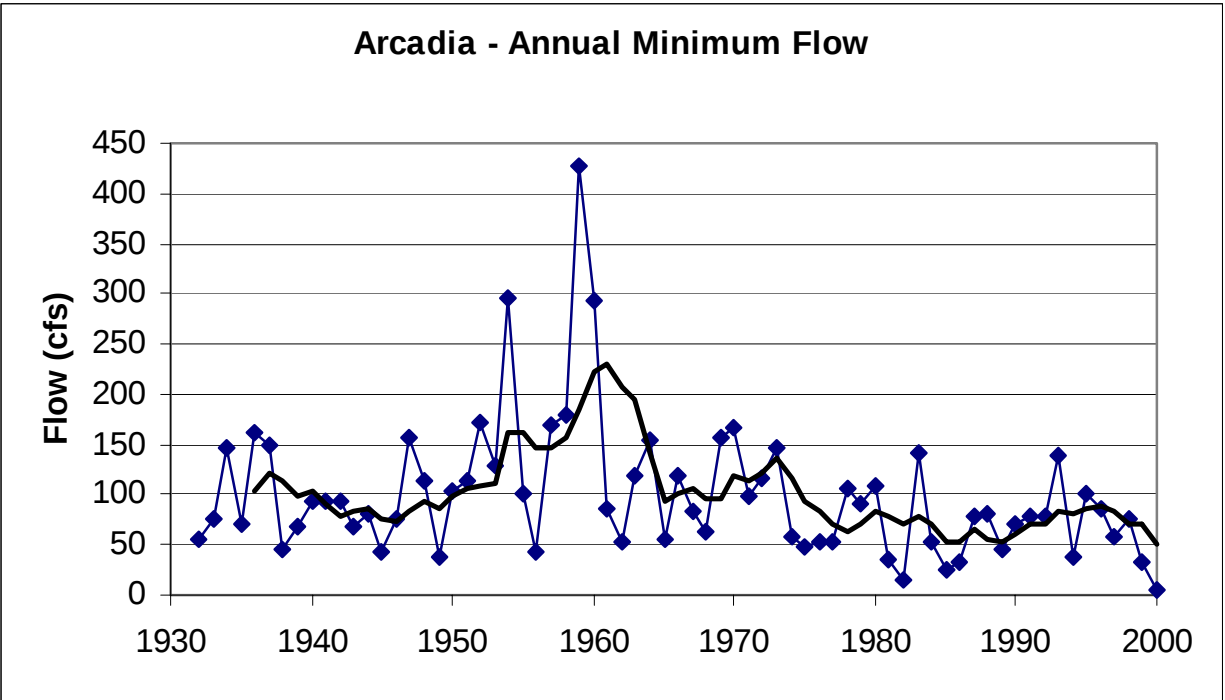


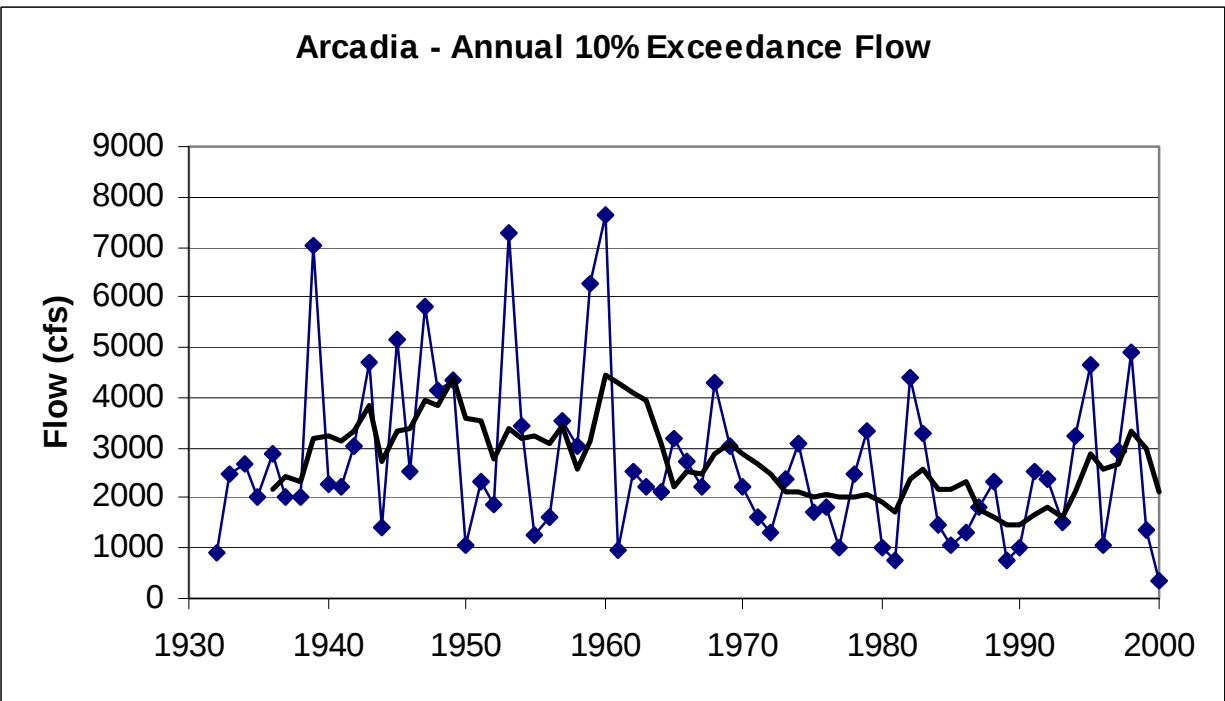
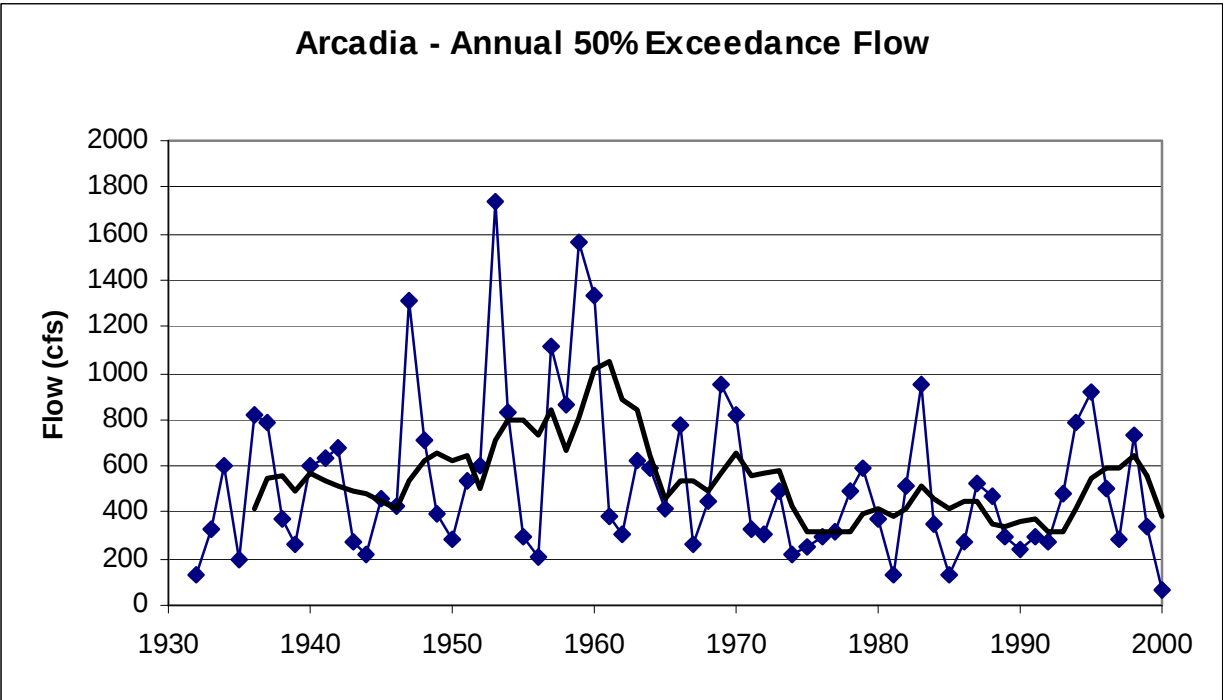


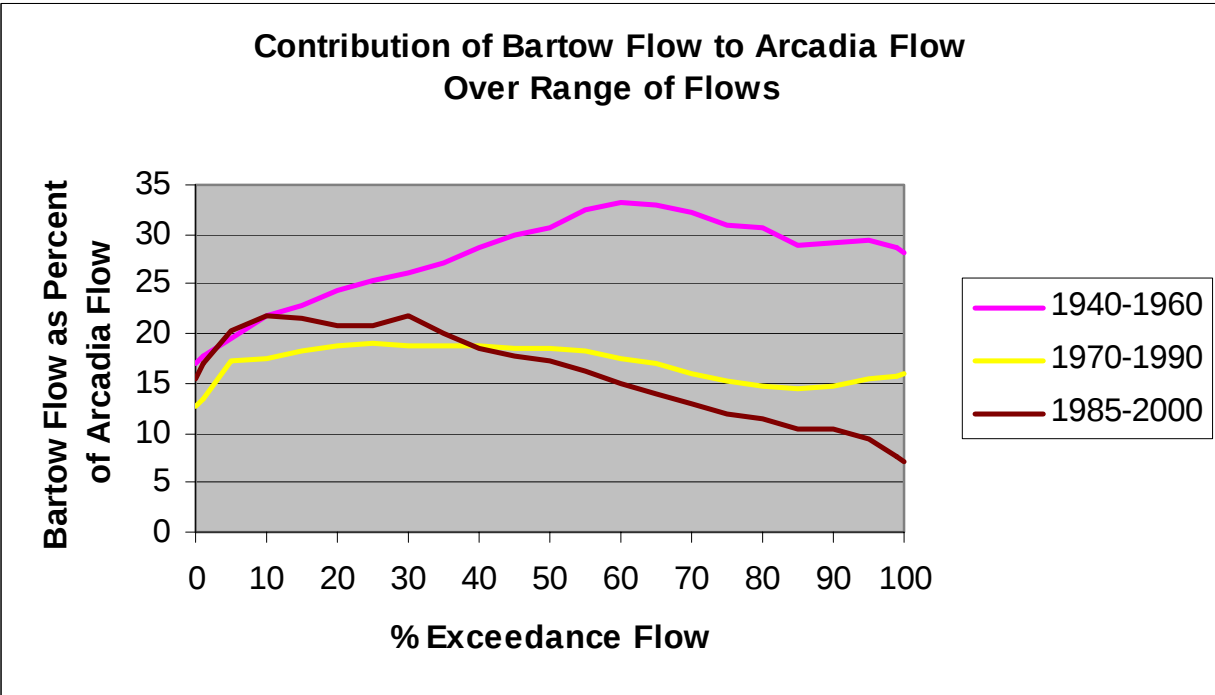
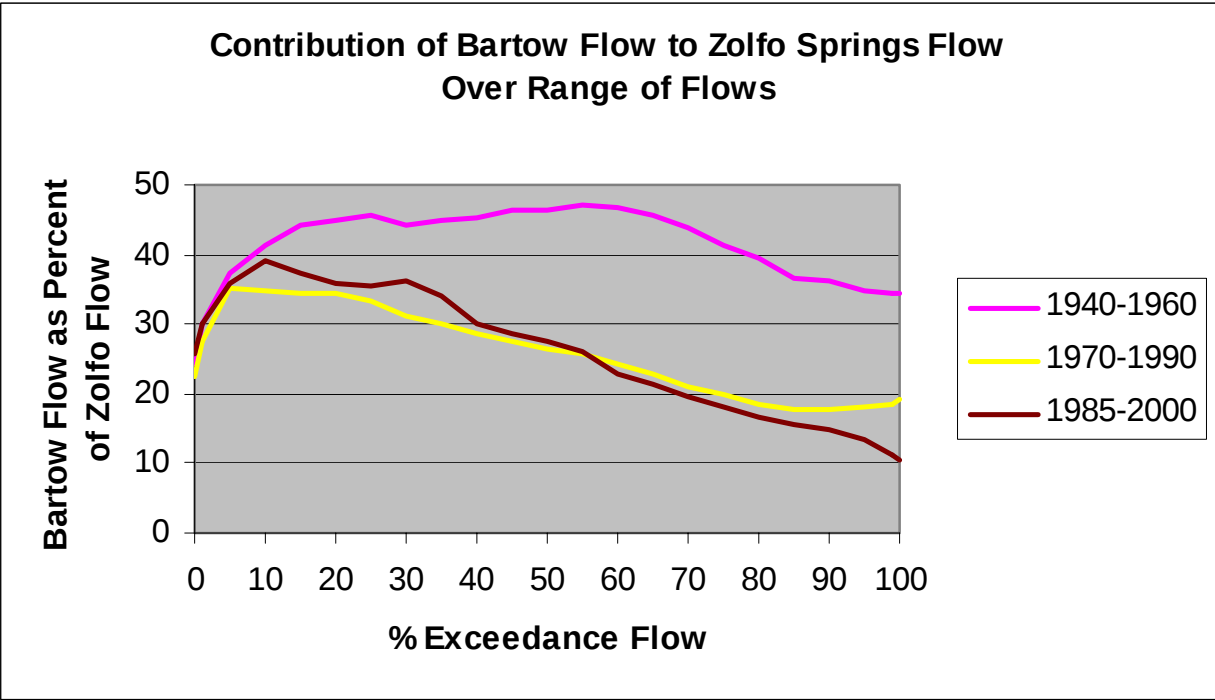




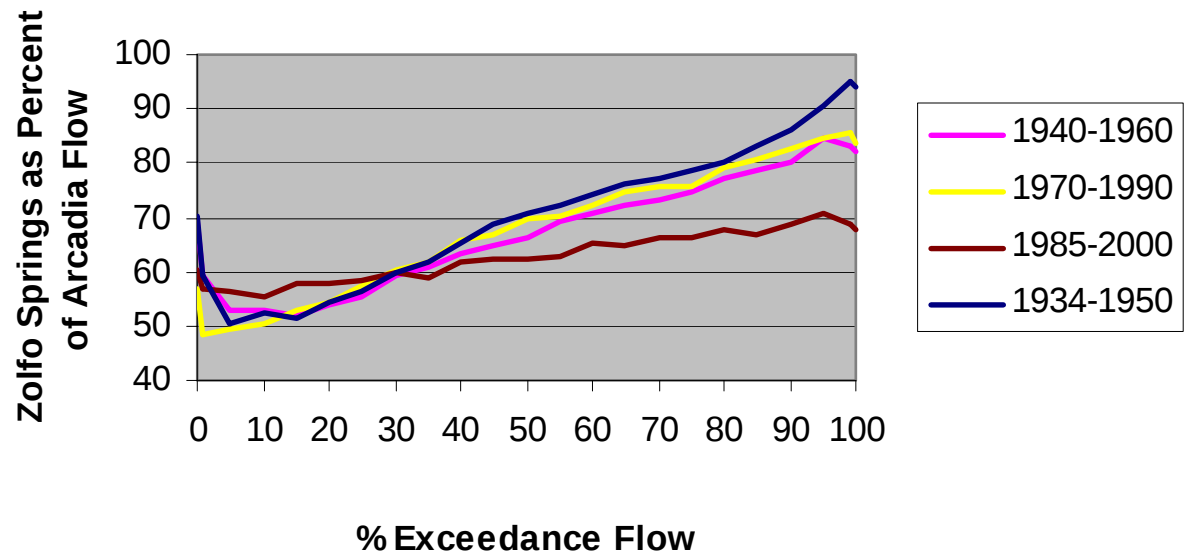








Contribution of Zolfo Flow to Arcadia Flow Over Range of Flows



Annual percent exceedance flows at the Bartow gage on the Peace River.

YEAR	MIN	95%	90%	80%	70%	60%	50%	40%	30%	20%	10%	MAX
1940	11	15	20	36	54	99	138	166	201	237	305	638
1941	14	27	46	97	113	140	171	203	242	323	572	1280
1942	14	19	26	55	121	158	202	256	369	481	654	1300
1943	8.3	13	17	21	27	40	63	94	252	479	718	1340
1944	11	16	21	30	37	47	56.5	78	131	211	301	779
1945	1.8	7	8.9	16	38	115	158	226	482	676	981	1880
1946	20	33	42	55.5	90	122	141	167	211	343	618	1060
1947	31	39	44	155	237	333	377	536	672	769	1070	4100
1948	18	31	46	91	175	224	278	377	601	772	1320	2810
1949	14	18	21	30	66	92.5	128	227	293	423	698	2810
1950	21	27	30	35	39	44	51	84.5	173	210	335	1580
1951	39	48	60	113	158	191	221	276	358	515	718	1200
1952	56	64	71	92	114	147	193	238	295	394	558	1650
1953	44	56	71	117	174	262	325	425	545	1105	1480	2030
1954	51	58	76	109	124	152	184	215	262	324	442	939
1955	29	37	47	54	60	71	83	97	130	171	221	385
1956	28	32	42	57	66	77	89	117	145	213	260	494
1957	84	100	134	160	212	272	313	382	493	672	866	1220
1958	54	71	82	116	160	207	270	315	364	477	596	900
1959	130	218	245	289	382	545	709	822	952	1270	1530	3350
1960	130	164	179	237	322	386	489	646	945	1370	2170	3460
1961	35	41	45	66	92	111	143	169	199	232	314	664
1962	42	52	62	75	84	92	102	113	158	219	289	591
1963	50	58	76	94.5	108	129	164	207	252	296	355	718
1964	51	73	80	93	102	124	187	242	286	420	616	966
1965	18	32	45	59	88	103	118	153	188	237	347	1370
1966	26	42	58	76.5	97	111	155	311	420	567	678	915
1967	10	23	28	38.5	50	69	80	88	105	135	297	682
1968	1.2	6.5	20	30	36	42	60	89	202	382	563	1020
1969	26	32	43	57.5	85	132	177	247	315	397	510	958
1970	22	30	32	41.5	61	84	128	186	265	336	548	778
1971	14	21	24	28	33	46	54	65.5	92	113	248	400
1972	21	25	26	28	31	34	37	40	46	58	124	472
1973	30	33	36	43.5	55	64	98	150	207	262	362	645
1974	14	19	20	23	26	28.5	34	40	56	305	538	774
1975	6.6	8.9	12	16	21	26	30	34.5	39	64.5	106	239
1976	3.9	6.4	9.9	18	22	31	46.5	74	121	160	303	566
1977	5.5	11	16	27	37	44	51	56	71	107	154	388
1978	12	17	19	28	41	58	71	105	202	293	476	982
1979	23	28	34	51	76	102	147	235	367	641	761	1610
1980	18	23	27	35	47	57	77	102	138	182	241	512
1981	10	13	14	16	20	22.5	25	28	30	39	92	232
1982	16	17	18	24	49	73.5	135	180	305	605	749	1620
1983	21	33	42	65	132	195	248	332	506	654	845	1150
1984	14	16	17	20	33	87	115	140	179	212	400	827
1985	4.6	6.7	8	10	13	15	20	27	36	62	103	310
1986	4.1	7.3	10	19	28	38	49	65	93	115	162	386
1987	4.6	26	30	36	41	52.5	78	106	156	207	285	1140
1988	7.8	11	14	20	27	50	69	96	125	204	376	1140
1989	2	3.9	4.5	8.8	11	15	19	24	28	35.5	93	361
1990	3.1	5.4	6.5	9.2	11	14	16	20	26	45.5	72	295
1991	4	6.3	6.9	8.9	12	14	20	29.5	59	209	531	931
1992	4.2	7.5	9	12	16	24	47	73	118	275	658	863
1993	2.8	7.9	18	25	36	53.5	92	133	195	234	400	607
1994	4.3	8.8	16	26.5	49	86.5	162	229	317	389	638	1160
1995	4.7	10	15	57	97	122	191	251	429	759	1030	1550
1996	14	22	27	41	72	123	161	205	283	399	596	1110
1997	6.3	10	14	17	21	28	37	95.5	203	363	570	1480
1998	3.8	6.9	16	28.5	40	63	128	234	790	1025	1450	2110
1999	1.5	2.4	3.4	7.4	18	29.5	38	60.5	85	116	198	562
2000	0	0	0	4.8	5.4	6.4	11	20	39	53	76	105

Annual percent exceedance flows at the Ft. Meade gage on the Peace River.

YEAR	MIN	95%	90%	80%	70%	60%	50%	40%	30%	20%	10%	MAX
1975	6	9	13	22	33	47	64	79	97	125	156	439
1976	11	19	23	33	45	56	78	165	214	270	335	509
1977	3	9	12	27	45	53	63	75	90	136	181	437
1978	10	19	27	39	66	98	143	194	276	348	506	877
1979	8	22	39	74	98	147	198	254	427	598	957	1340
1980	5	10	17	34	65	92	105	138	178	214	275	456
1981	1	3	4	10	12	16	19	23	28	39	139	269
1982	3	15	18	30	69	106	130	187	434	659	829	1210
1983	25	49	58	85	153	204	241	327	492	692	907	1090
1984	8	12	16	25	45	83	107	130	167	229	354	858
1985	0	1	2	5	7	9	18	35	54	108	150	503
1986	3	7	10	24	35	47	59	73	88	117	155	412
1987	4	19	35	45	68	96	122	157	192	273	380	898
1988	5	16	22	39	64	89	111	136	163	279	475	1250
1989	3	9	14	21	28	35	44	55	70	90	143	402
1990	2	3	4	9	12	19	24	34	49	70	91	182
1991	1	3	4	6	8	15	28	53	95	206	544	968
1992	9	14	17	20	28	46	60	83	120	269	711	867
1993	10	15	18	30	46	67	92	140	201	274	455	807
1994	0	2	5	32	51	91	146	268	413	487	877	1810
1995	3	6	16	90	122	170	229	340	463	886	1330	2020
1996	11	18	23	46	106	162	218	294	381	470	620	1030
1997	1	4	7	12	20	31	57	102	226	379	771	1540
1998	3	5	14	46	61	102	168	356	1010	1300	1710	2220
1999	3	7	8	12	20	35	56	80	100	130	214	581
2000	0	0	0	1	2	3	3	6	33	49	78	211

Annual percent exceedance flows at the Zolfo Springs gage on the Peace River.

YEAR	MIX	95%	90%	80%	70%	60%	50%	40%	30%	20%	10%	MAX
1933	193	200	215	265	323	365	509	656	950	1630	5210	26000
1934	134	141	152	193	215	293	516	684	922	1310	1740	9850
1935	67	73	80	89	105	121	156	253	373	539	1150	6420
1936	148	169	193	235	282	406	518	620	800	1030	1800	4680
1937	141	174	197	236	312	374	462	535	649	828	1220	3390
1938	69	83	92	148	214	254	310	384	531	781	1310	8800
1939	58	72	84	109	165	194	216	317	860	1940	2730	9400
1940	86	94	98	132	169	290	364	436	542	650	898	2850
1941	81	108	175	240	289	342	402	509	674	861	1300	4160
1942	91	105	115	172	289	382	446	566	818	1060	1540	4100
1943	51	74	86	113	129	179	212	292	748	1415	2150	4030
1944	64	85	100	124	142	165	185	220	311	514	773	2540
1945	53	61	63	72	135	245	354	497	1060	1710	2830	10600
1946	82	111	128	174	207	242	284	354	440	812	1400	2900
1947	131	153	174	415	598	706	875	1190	1680	2060	3010	19700
1948	116	150	172	284	372	432	542	731	1070	1420	2430	11200
1949	44	63	88	138	203	255	324	573	833	1280	2130	15100
1950	90	116	125	142	160	183	220	290	382	458	646	3300
1951	108	164	203	261	297	354	407	503	650	884	1350	3050
1952	121	166	189	251	280	323	390	469	561	675	1110	8460
1953	119	175	233	376	503	632	925	1300	1680	2310	3300	9130
1954	208	259	281	326	369	427	502	632	813	1110	1640	3630
1955	51	100	135	161	186	211	258	293	344	430	646	2540
1956	43	69	94	125	159	180	198	222	316	486	800	2050
1957	144	183	241	280	383	503	608	781	993	1285	1950	5300
1958	102	166	193	246	310	385	484	642	782	1075	1620	4980
1959	332	417	454	536	622	853	1140	1485	2050	2540	3830	9160
1960	245	310	325	397	513	665	873	1130	1660	2370	4270	15200
1961	78	93	107	143	182	239	300	347	415	512	716	2070
1962	42	96	107	132	156	186	222	310	488	730	1150	6200
1963	102	139	156	209	246	304	425	525	661	966	1450	3850
1964	118	152	167	204	246	314	395	504	661	931	1320	3310
1965	40	74	88	174	206	244	308	394	519	710	1260	4440
1966	104	141	159	187	220	290	408	603	706	886	1110	3970
1967	79	87	96	131	150	174	200	238	415	595	935	2470
1968	69	111	132	159	194	224	309	422	653	1060	1920	4320
1969	119	197	226	276	326	396	515	635	788	893	1180	3800
1970	127	151	166	189	290	396	517	610	728	887	1080	3090
1971	87	112	130	164	188	226	257	308	397	680	1000	3320
1972	110	136	154	181	197	218	244	288	357	485	739	4260
1973	109	163	175	204	225	278	364	525	738	975	1350	3790
1974	81	94	114	133	149	166	181	212	270	618	1080	4750
1975	39	58	71	108	137	170	198	236	354	493	731	3740
1976	49	88	110	127	154	185	229	366	507	630	839	1770
1977	31	74	97	129	184	210	244	269	325	399	584	2960
1978	79	104	127	152	236	291	340	475	711	889	1300	3240
1979	62	108	170	243	282	336	407	507	718	1060	1690	4840
1980	86	104	119	167	205	253	315	347	406	467	624	1360
1981	38	48	54	65	75	85	97	116	132	182	343	2340
1982	36	84	98	130	205	259	328	508	922	1205	2060	6100
1983	101	179	198	266	347	426	612	781	964	1305	1860	2820
1984	43	52	65	82	131	178	244	278	379	512	710	1260
1985	23	33	38	51	60	71	101	129	199	393	598	2780
1986	44	63	76	120	141	173	205	259	356	563	831	1720
1987	58	109	148	178	218	261	299	374	471	596	814	2740
1988	73	105	122	162	208	242	292	378	528	751	1140	6210
1989	34	49	64	111	130	152	183	210	245	293	422	986
1990	48	65	72	91	106	144	174	205	249	309	427	1520
1991	58	74	82	94	106	128	181	245	320	896	1470	2620
1992	74	88	100	114	130	154	182	238	473	799	1370	2980
1993	59	90	113	149	196	260	292	363	448	641	824	1580
1994	19	47	64	151	202	281	497	700	905	1245	1620	4700
1995	44	87	125	263	336	417	525	710	994	2090	3050	6800
1996	51	69	96	137	210	306	380	451	545	637	774	1750
1997	42	60	75	88	107	140	185	317	487	773	1420	5790
1998	49	78	99	189	260	315	403	700	1600	2065	2910	9960
1999	17	31	44	69	92	135	192	232	279	362	595	1840
2000	5	7	9	13	19	26	37	59	93	128	184	1160

Annual percent exceedance flows at the Arcadia gage on the Peace River.

YEAR	MIN	95%	90%	80%	70%	60%	50%	40%	30%	20%	10%	MAX
1932	56	61	69	90	100	113	135	195	285	442	885	6230
1933	77	88	100	111	134	219	330	487	810	1595	2480	34700
1934	146	152	164	194	218	296	605	889	1420	2075	2690	10300
1935	70	77	83	95	112	133	193	289	440	936	2030	9750
1936	163	199	231	296	394	638	820	1040	1380	1930	2880	9920
1937	150	191	236	317	453	660	792	974	1170	1380	2040	5130
1938	45	69	84	163	247	303	370	510	754	1130	2040	10300
1939	68	76	87	118	193	228	263	615	1710	3830	7040	13900
1940	94	108	116	168	271	434	602	844	1100	1700	2260	6180
1941	93	132	250	362	433	515	639	812	1110	1510	2240	5380
1942	94	113	142	208	392	540	681	979	1330	2010	3010	7460
1943	67	97	124	150	190	229	278	407	1270	3115	4700	7040
1944	82	99	121	148	172	194	214	274	427	928	1440	3840
1945	43	52	62	83	155	256	454	649	1720	3050	5180	9750
1946	75	105	138	195	255	324	424	512	776	1410	2510	5730
1947	156	179	197	580	807	996	1310	2120	3400	4585	5790	23600
1948	115	175	197	369	462	551	710	974	1500	2190	4170	15800
1949	39	72	106	158	222	308	392	712	1230	1970	4350	25800
1950	104	122	130	160	182	206	285	350	445	544	1070	5170
1951	114	153	200	271	347	445	537	822	1210	1620	2340	8440
1952	171	206	242	304	364	462	596	766	966	1240	1880	12000
1953	129	180	362	556	826	1095	1740	2300	3270	4310	7260	11600
1954	295	372	412	490	589	693	829	1020	1480	2140	3440	6330
1955	101	119	134	179	197	230	299	385	494	706	1270	5080
1956	43	70	109	139	167	196	212	245	365	733	1620	3690
1957	170	194	275	353	559	849	1120	1395	1820	2505	3540	6430
1958	180	242	272	382	534	677	858	1145	1410	2030	3030	6280
1959	426	531	562	686	799	1065	1560	2335	3500	4560	6290	11800
1960	292	382	419	488	683	990	1335	1680	2320	4140	7650	20900
1961	86	102	122	170	222	285	379	503	612	738	973	2600
1962	53	98	120	158	177	255	308	480	868	1480	2510	11200
1963	118	155	200	270	336	454	623	764	963	1385	2240	4850
1964	154	190	206	243	300	395	587	778	1040	1390	2120	4230
1965	56	85	103	208	238	292	410	657	1040	1370	3170	4480
1966	120	162	180	230	289	416	772	1080	1410	1800	2720	6830
1967	84	108	123	154	186	222	267	356	703	1170	2220	4990
1968	62	103	138	204	235	262	450	691	1170	2140	4280	7000
1969	158	244	284	378	495	713	950	1255	1520	2070	3040	5690
1970	166	193	207	251	422	654	815	1040	1270	1635	2250	5720
1971	99	122	142	185	210	264	328	401	604	1060	1620	6930
1972	116	154	176	206	233	260	305	389	488	769	1300	4170
1973	146	187	201	238	287	356	488	837	1320	1845	2380	4860
1974	57	93	108	136	164	192	215	255	345	1380	3100	11700
1975	48	59	68	125	156	199	249	352	669	1055	1700	4200
1976	54	93	110	151	184	231	301	412	902	1290	1840	3360
1977	52	66	89	131	218	285	319	373	482	697	1000	3990
1978	106	128	149	179	272	373	493	665	976	1485	2490	6920
1979	90	139	217	317	391	471	591	791	1170	1710	3330	6750
1980	109	123	152	197	251	305	371	448	549	688	1020	3250
1981	35	52	63	82	98	112	127	153	181	293	742	2630
1982	14	98	116	162	263	362	514	867	1680	2530	4410	16500
1983	141	225	273	374	520	697	954	1255	1620	2300	3290	5580
1984	54	69	86	107	179	265	352	439	613	992	1470	2950
1985	26	40	51	72	88	103	129	175	304	632	1060	3310
1986	33	59	93	159	191	223	276	378	643	966	1310	2740
1987	78	155	209	273	334	413	530	675	876	1160	1810	4680
1988	82	128	160	233	303	347	471	667	1000	1460	2340	11700
1989	46	62	84	163	207	238	291	365	465	578	761	1590
1990	70	93	107	122	150	199	244	300	386	552	1000	2270
1991	79	104	110	136	170	222	299	408	601	1610	2530	4060
1992	78	113	127	145	181	214	269	370	865	1510	2390	5340
1993	138	159	170	223	303	394	483	640	777	1080	1520	3220
1994	37	78	104	198	272	366	785	1010	1340	1970	3250	8800
1995	102	149	243	442	564	738	920	1170	1720	3135	4630	7710
1996	85	107	147	242	324	420	508	628	739	867	1080	2360
1997	59	84	106	123	151	202	282	555	813	1685	2940	9890
1998	76	103	135	246	369	522	732	1125	2430	3375	4880	18500
1999	33	51	74	119	165	262	343	469	617	871	1390	3290
2000	6	8	11	34	41	48	63	82	134	195	331	1770

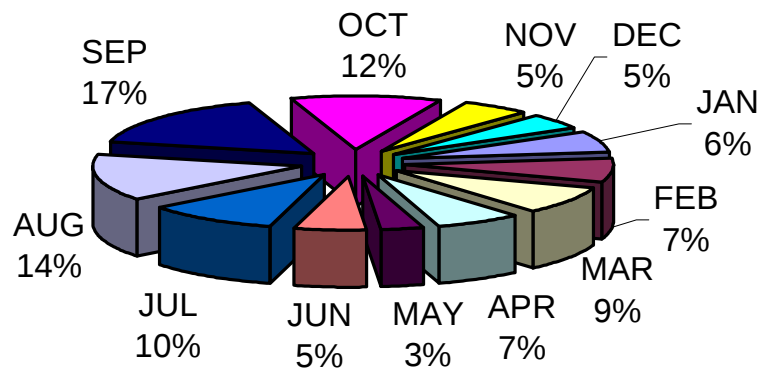
APPENDIX QM

Flows/Monthly - QM

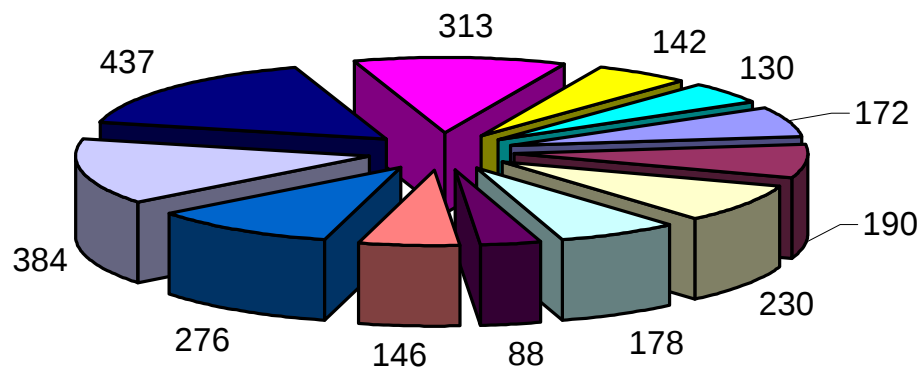
This appendix contains pie diagrams showing the percent distribution of flows by month for selected time periods and the actual mean monthly flows (cfs) by month for the selected time periods.

Chart and Table	Page
Bartow flows 1940-2000	QM-2
Bartow flows 1940-1960	QM-3
Bartow flows 1970-1990	QM-4
Bartow flows 1985-2000	QM-5
Ft. Meade flows 1975-2000	QM-6
Ft. Meade flows 1985-2000	QM-7
Zolfo Springs flows 1934-2000	QM-8
Zolfo Springs flows 1940-1960	QM-9
Zolfo Springs flows 1970-1990	QM-10
Zolfo Springs flows 1985-2000	QM-11
Arcadia flows 1931-2000	QM-12
Arcadia flows 1940-1960	QM-13
Arcadia flows 1970-1990	QM-14
Arcadia flows 1985-2000	QM-15

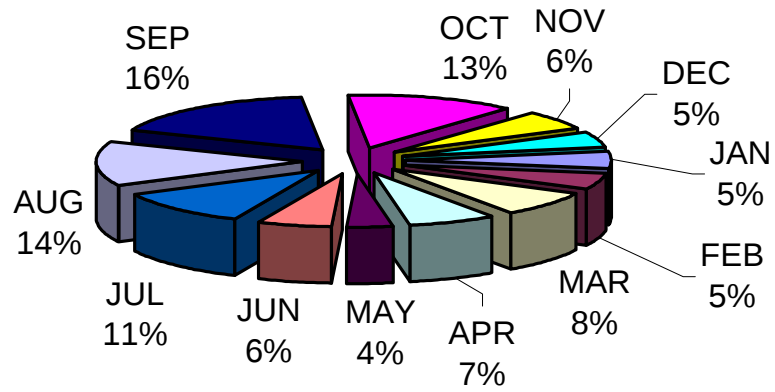
Bartow Flows 1940 - 2000



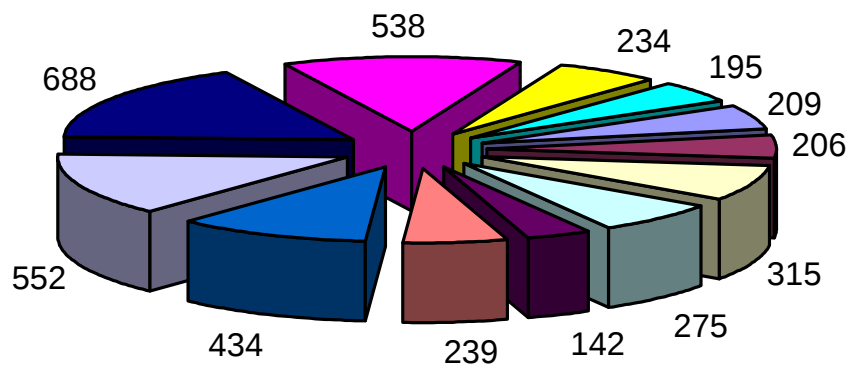
Bartow Flows (cfs) 1940 - 2000



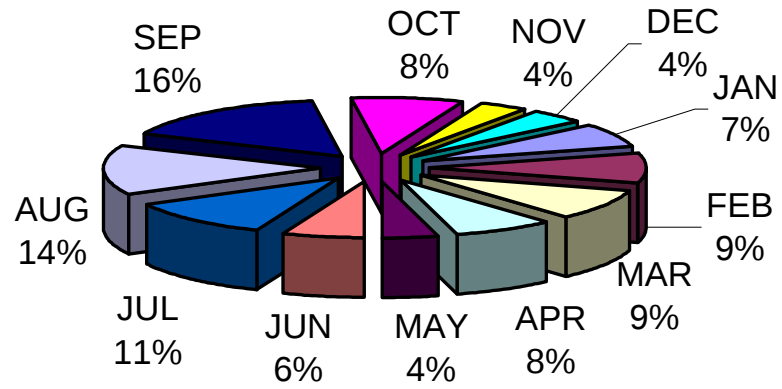
Bartow Flows 1940-1960



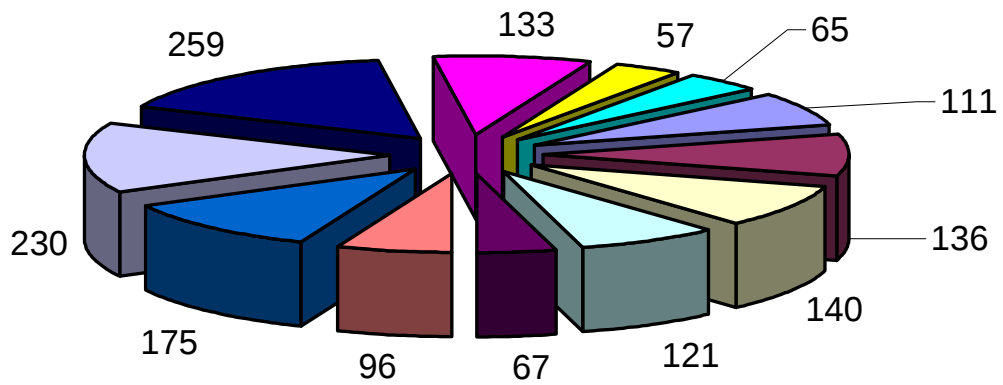
Bartow Flows (cfs) 1940-1960



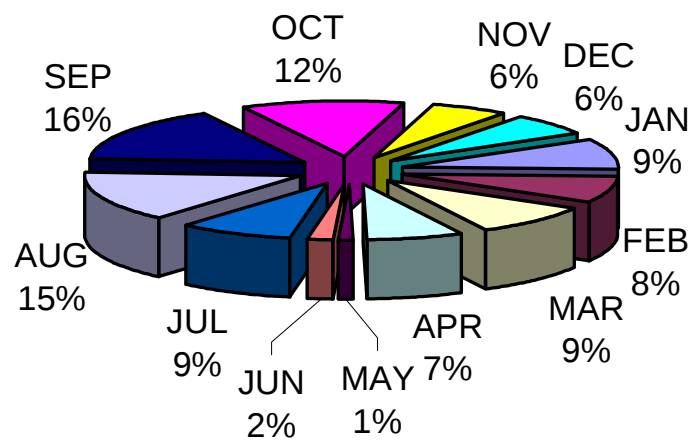
Bartow Flows 1970-1990



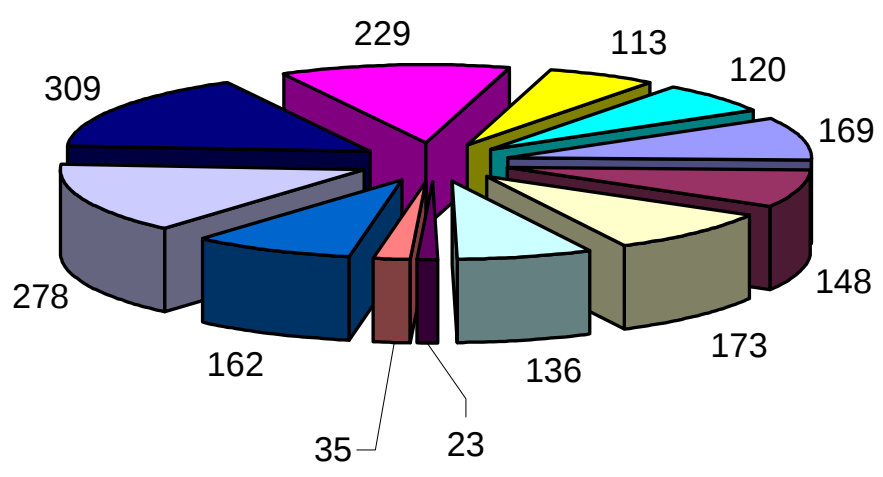
Bartow Flows (cfs) 1970-1990



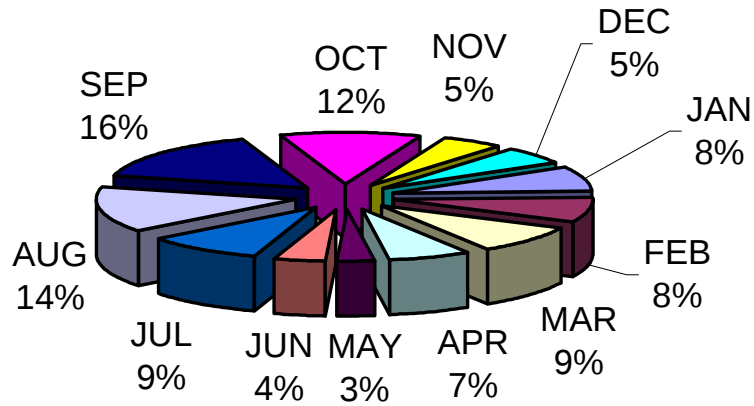
Bartow Flows 1985-2000



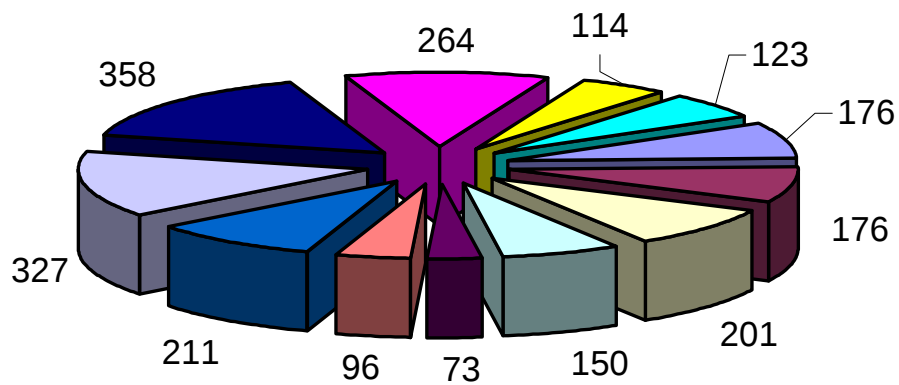
Bartow Flows (cfs) 1985-2000



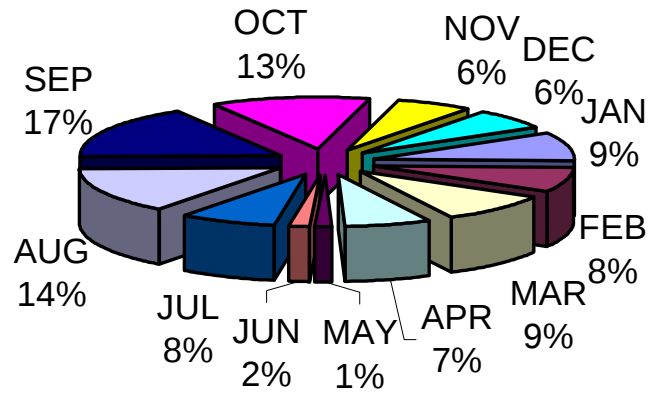
Ft Meade Flows 1975-2000



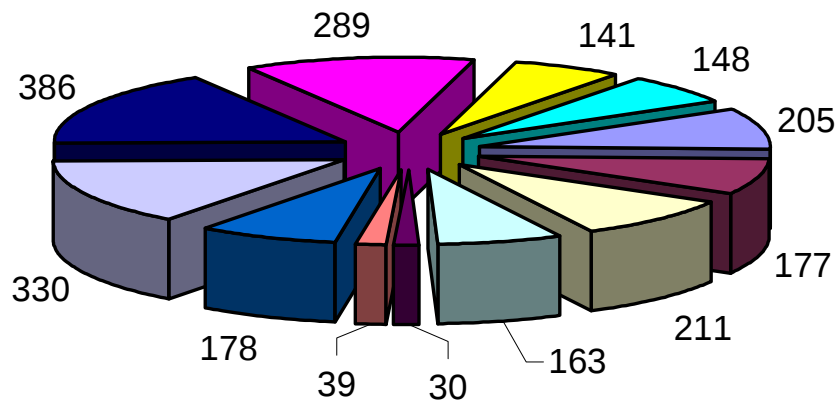
Ft Meade Flows 1975-2000



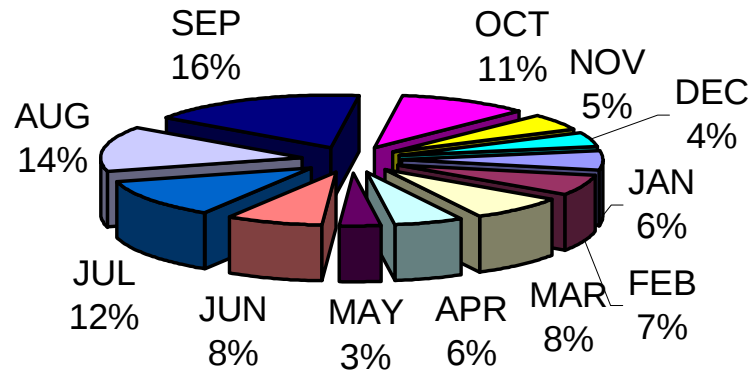
Ft Meade Flows 1985-2000



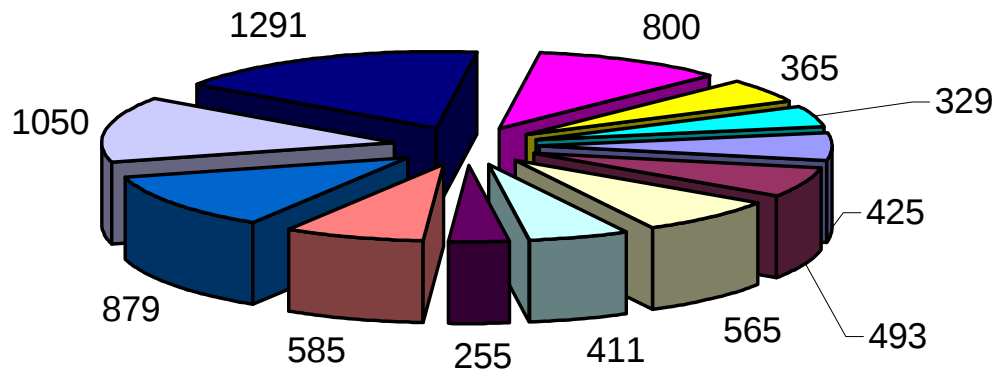
Ft Meade Flows (cfs) 1985-2000



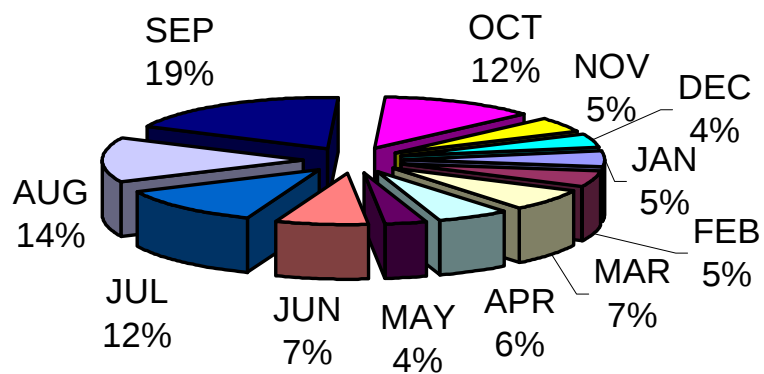
Zolfo Springs Flows 1934 - 2000



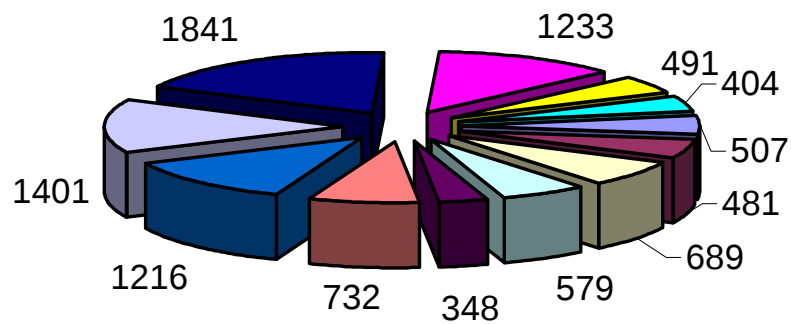
Zolfo Springs Flows (cfs) 1934 - 2000



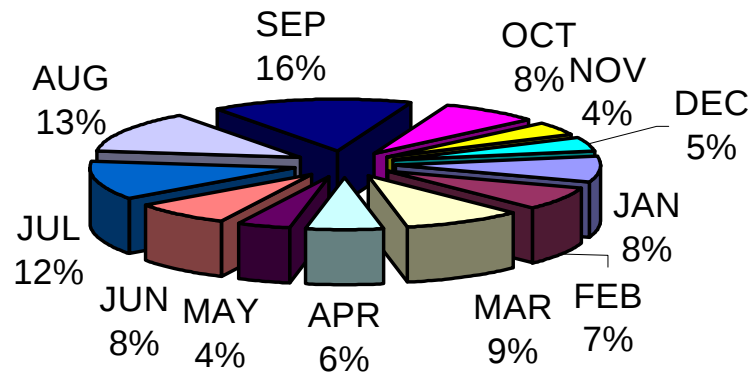
Zolfo Springs Flows 1940-1960



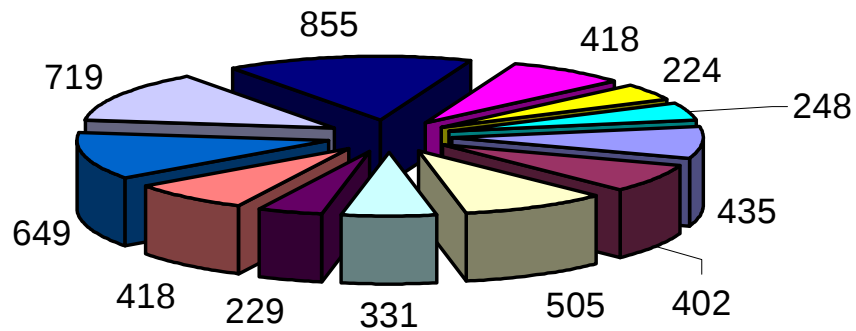
Zolfo Springs Flows (cfs) 1940-1960



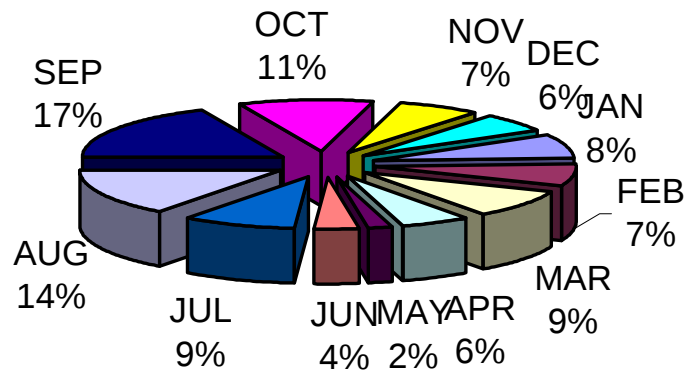
Zolfo Springs Flows 1970-1990



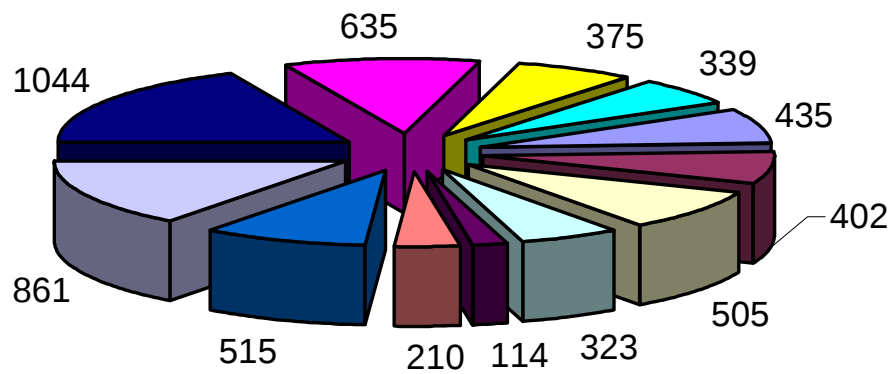
Zolfo Springs Flows (cfs) 1970-1990



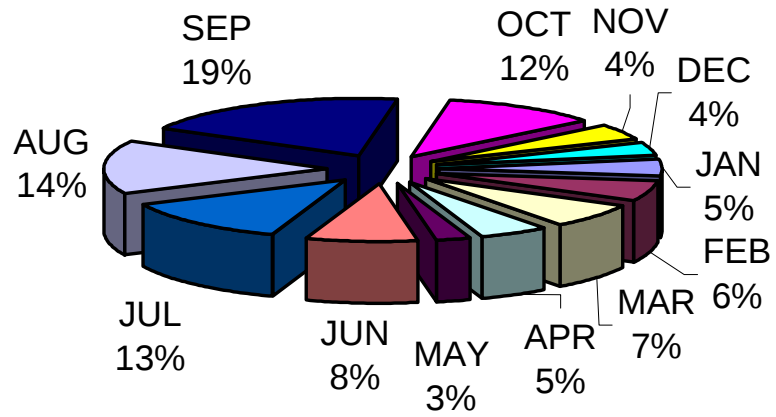
Zolfo Springs Flows 1985-2000



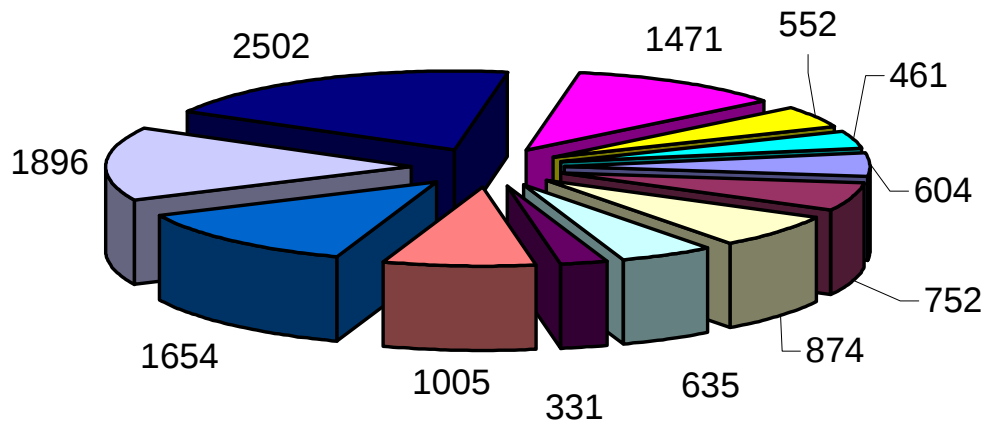
Zolfo Springs Flows 1985-2000



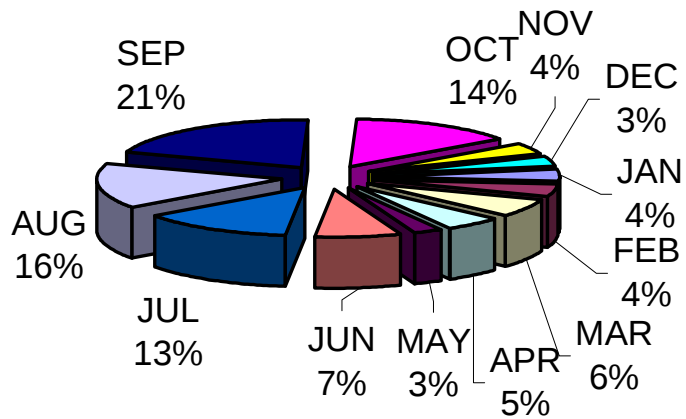
Arcadia Flows 1931-2000



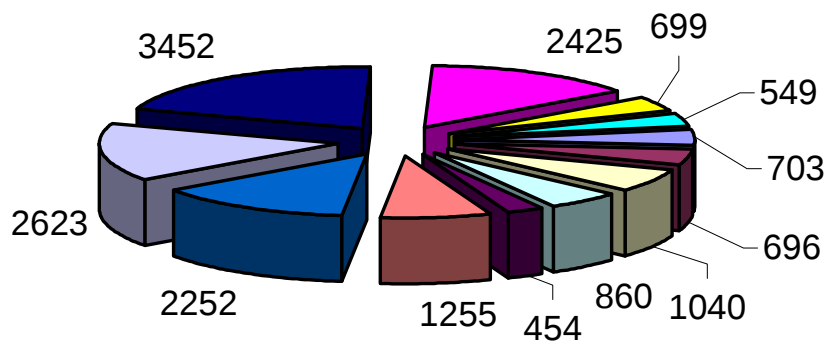
Arcadia Flows (cfs) 1931-2000



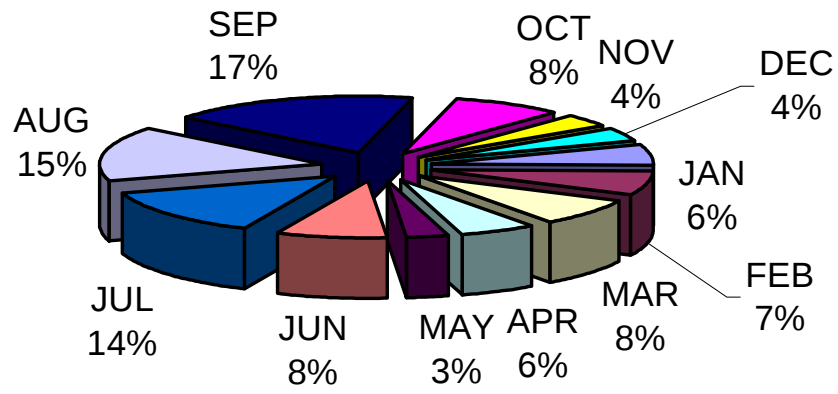
Arcadia Flows 1940-1960



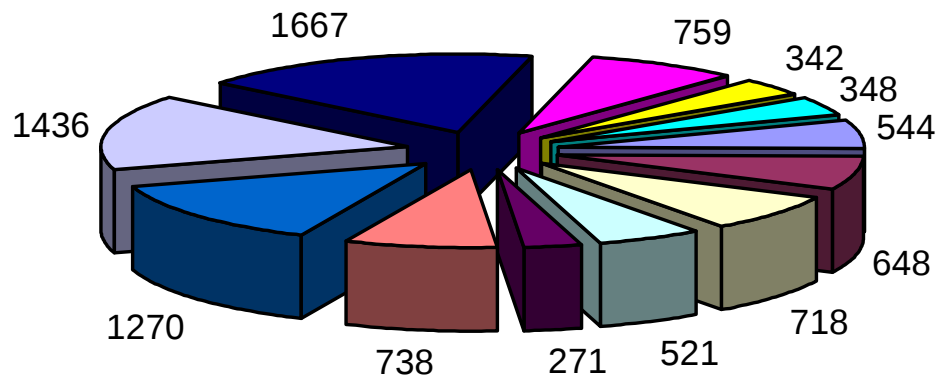
Arcadia Flows 1940-1960



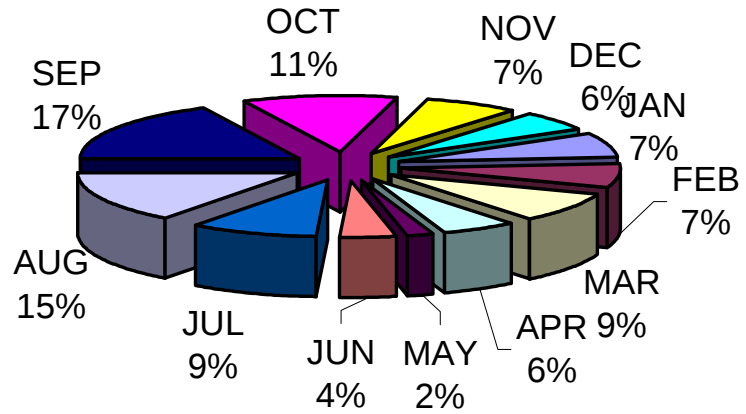
Arcadia Flows 1970-1990



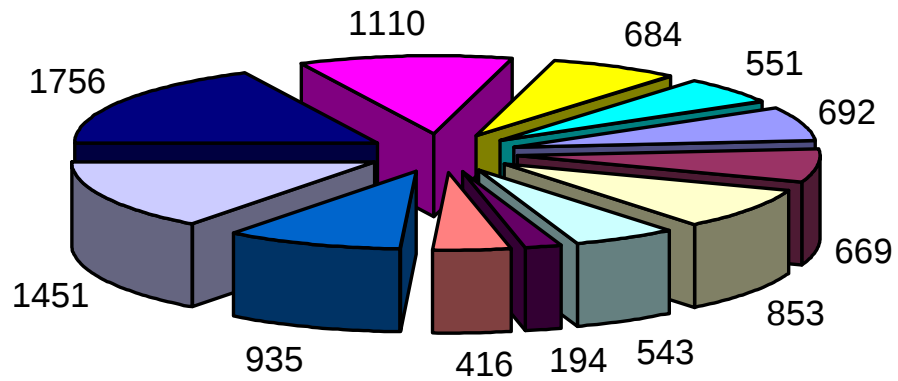
Arcadia Flows 1970-1990



Arcadia Flows 1985-2000



Arcadia Flows 1985-2000

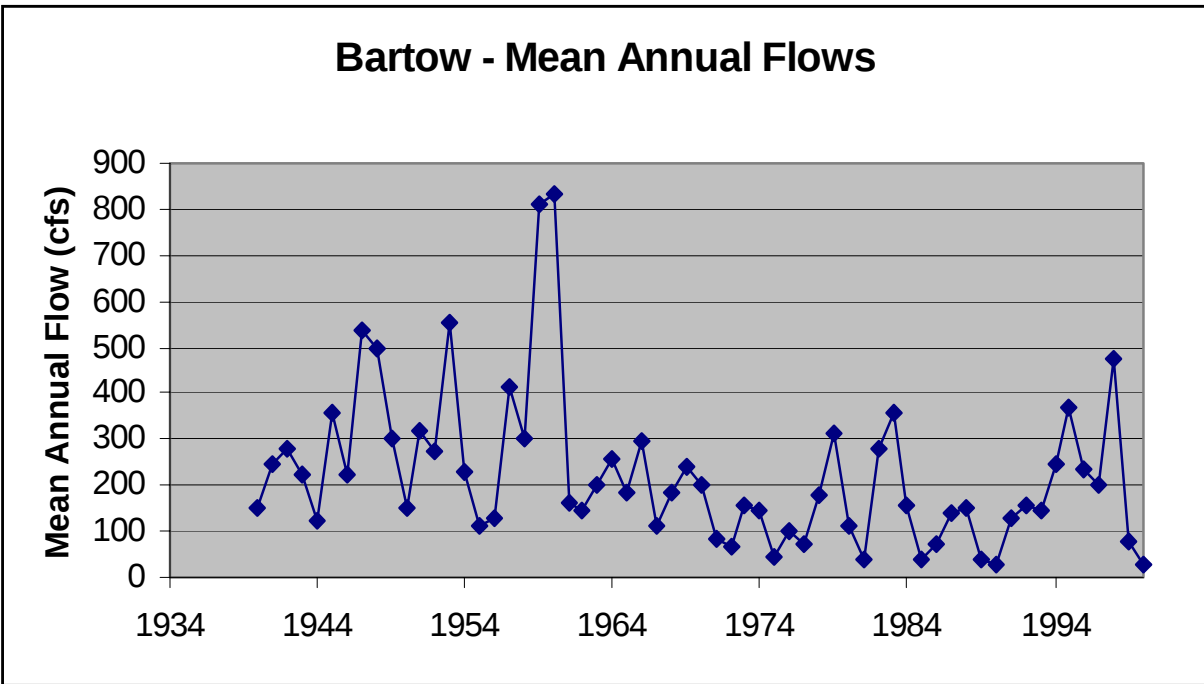
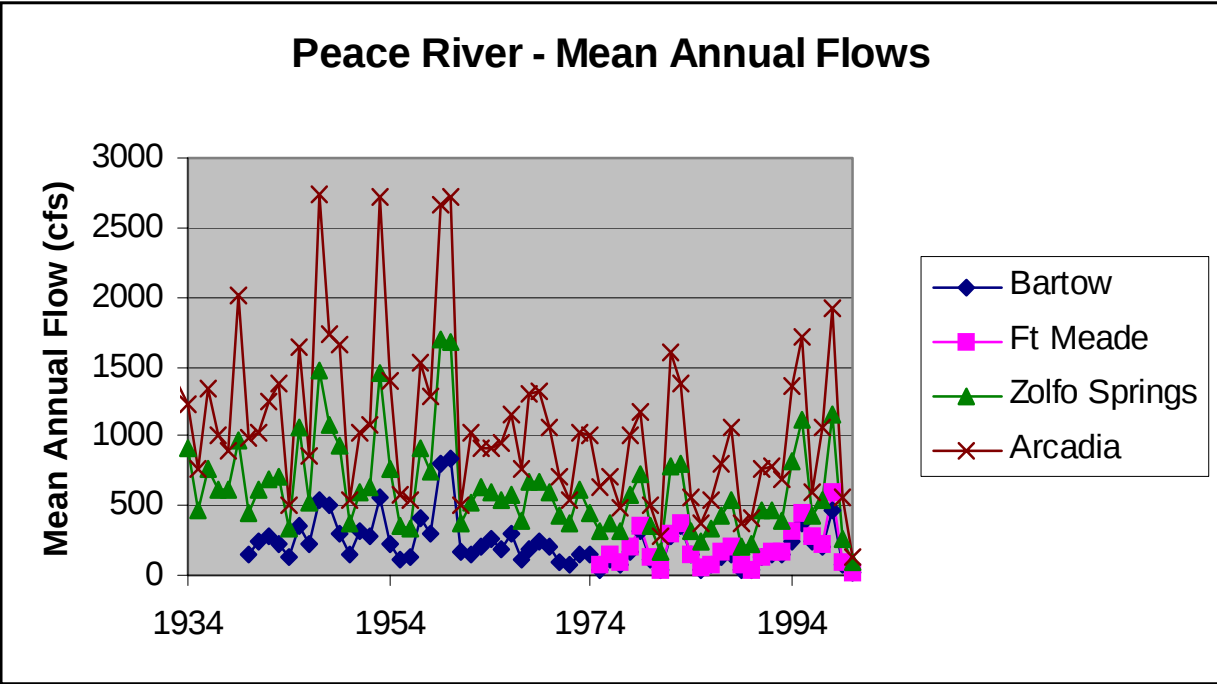


APPENDIX QX

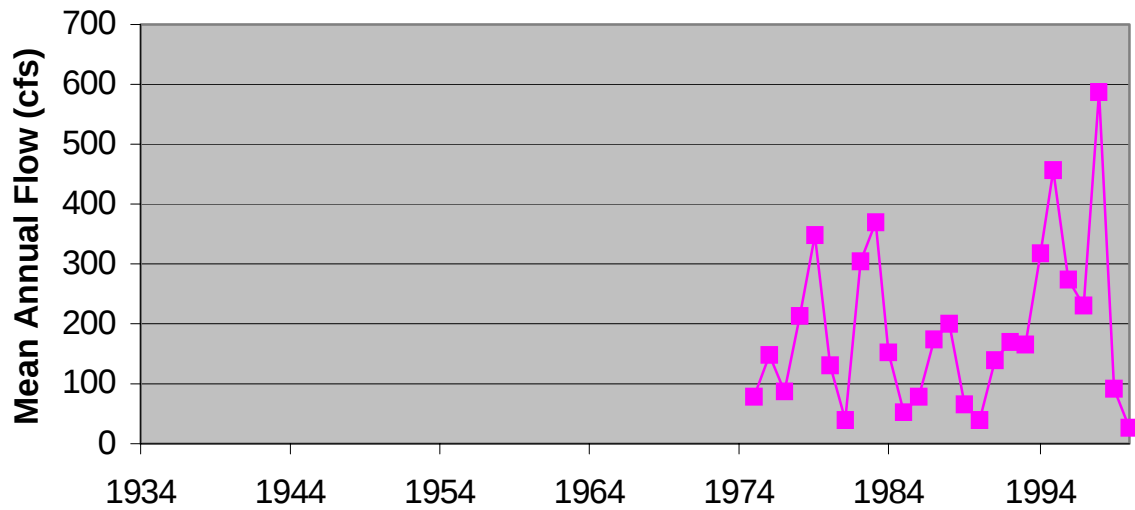
Mean Annual Flows - QX

This appendix contains various plots of the mean annual flow for stations on the Peace River and elsewhere for comparative purposes.

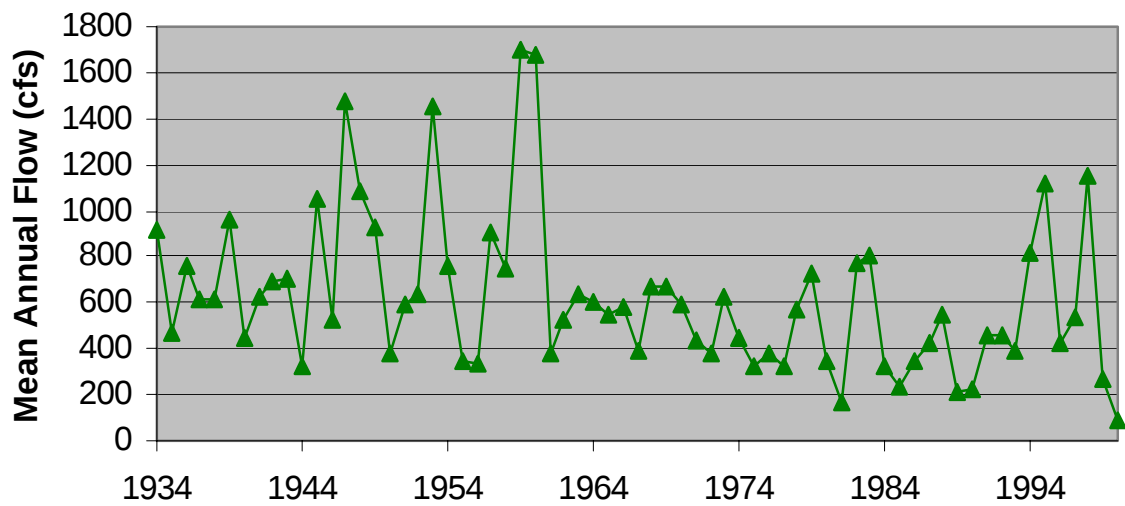
Chart/Table	Page
Peace River mean annual flows	QX-2
Mean annual flow at Bartow gage site	QX-2
Mean annual flow at Ft. Meade gage site	QX-3
Mean annual flow at Zolfo Springs gage site	QX-3
Mean annual flow at Arcadia gage site	QX-4
Peace River 5-year running average of mean flow at 4 gage sites	QX-4
Comparison of flows for three rivers - mean annual values	QX-5
Comparison of flows for three rivers - 5-year moving average	QX-5



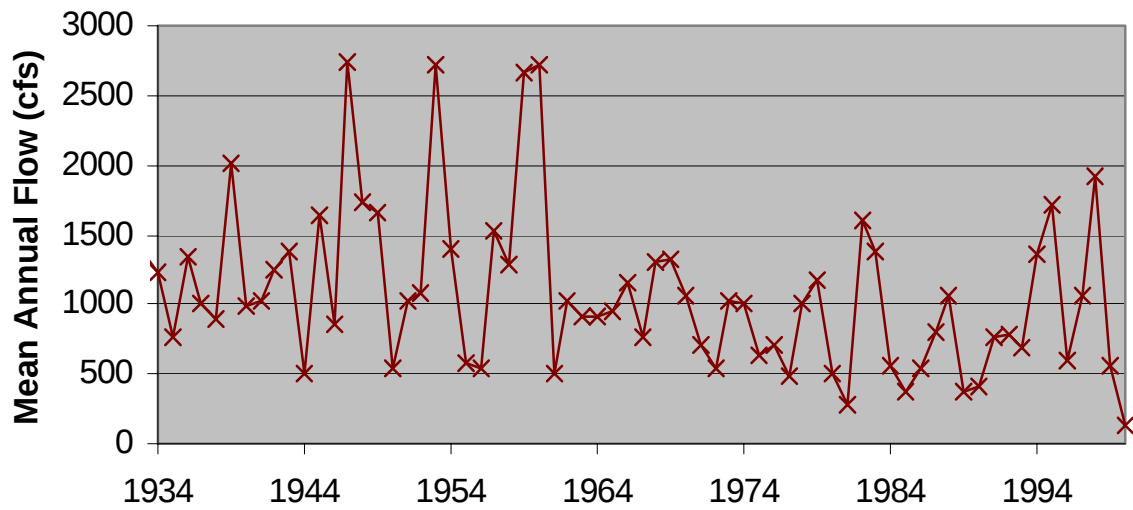
Ft. Meade - Mean Annual Flows



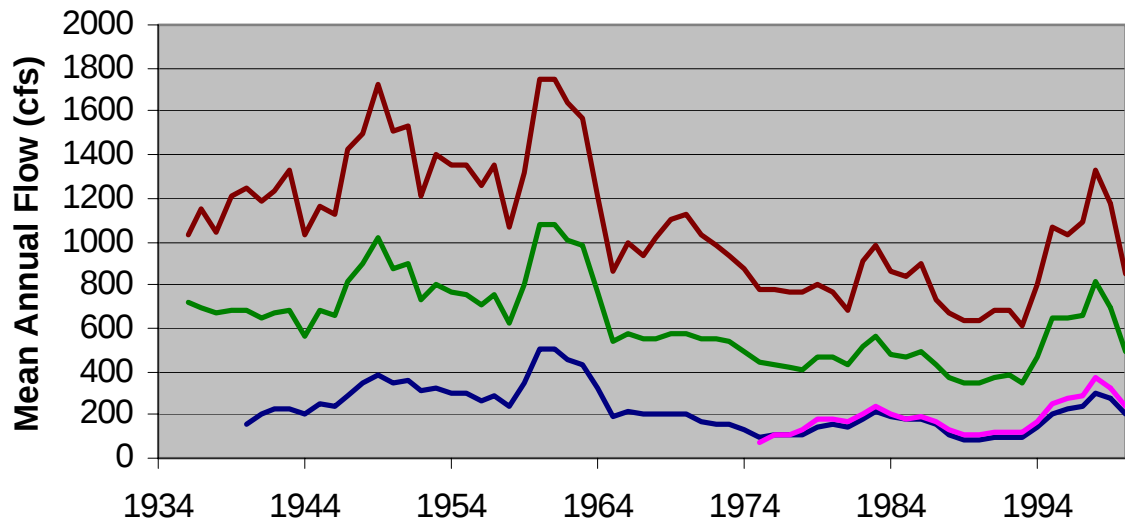
Zolfo Springs - Mean Annual Flows

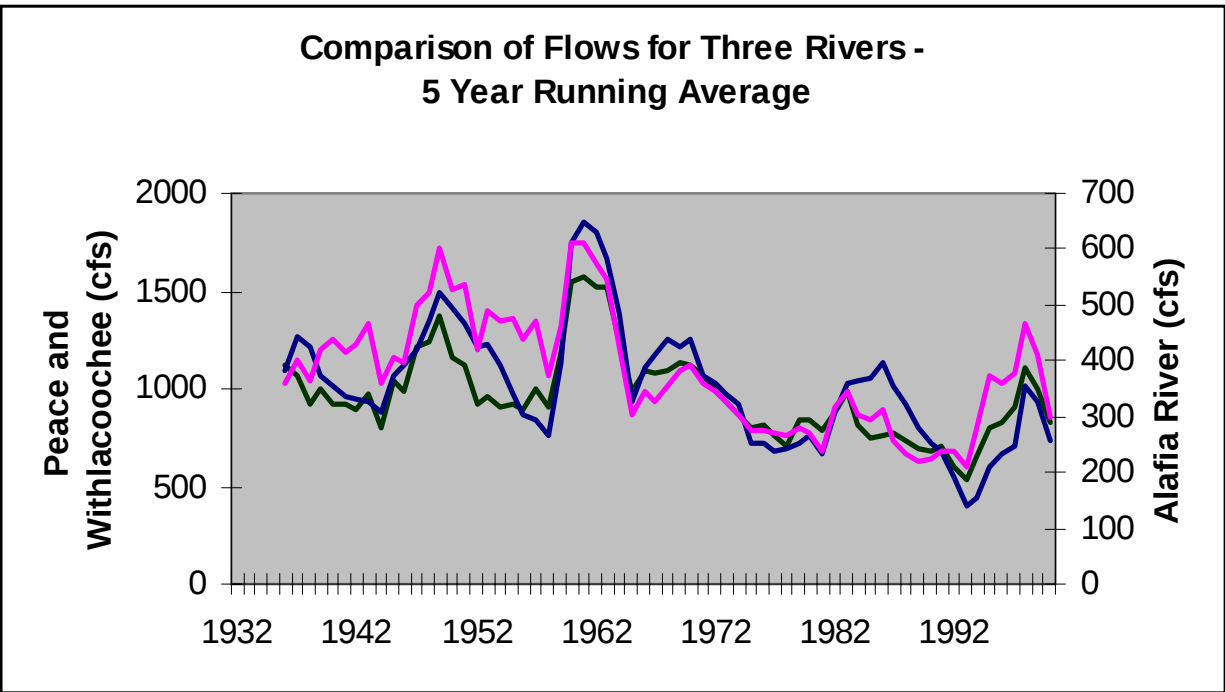
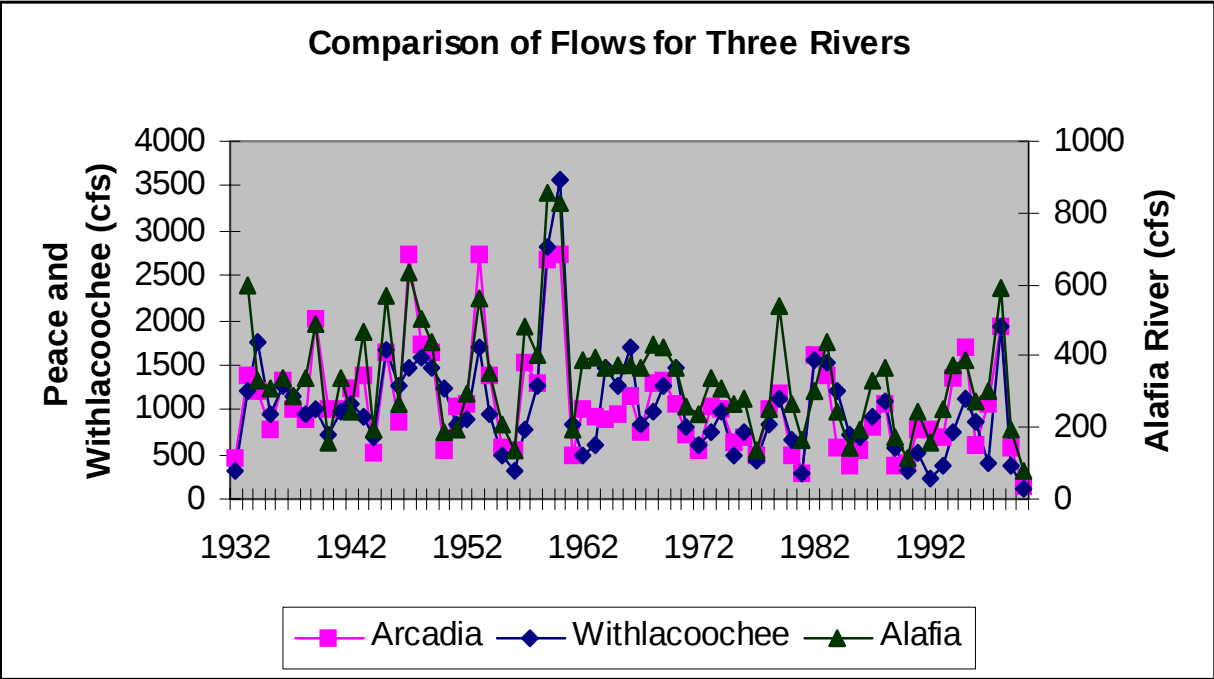


Arcadia - Mean Annual Flows



5 Year Running Average - Mean Annual Flows





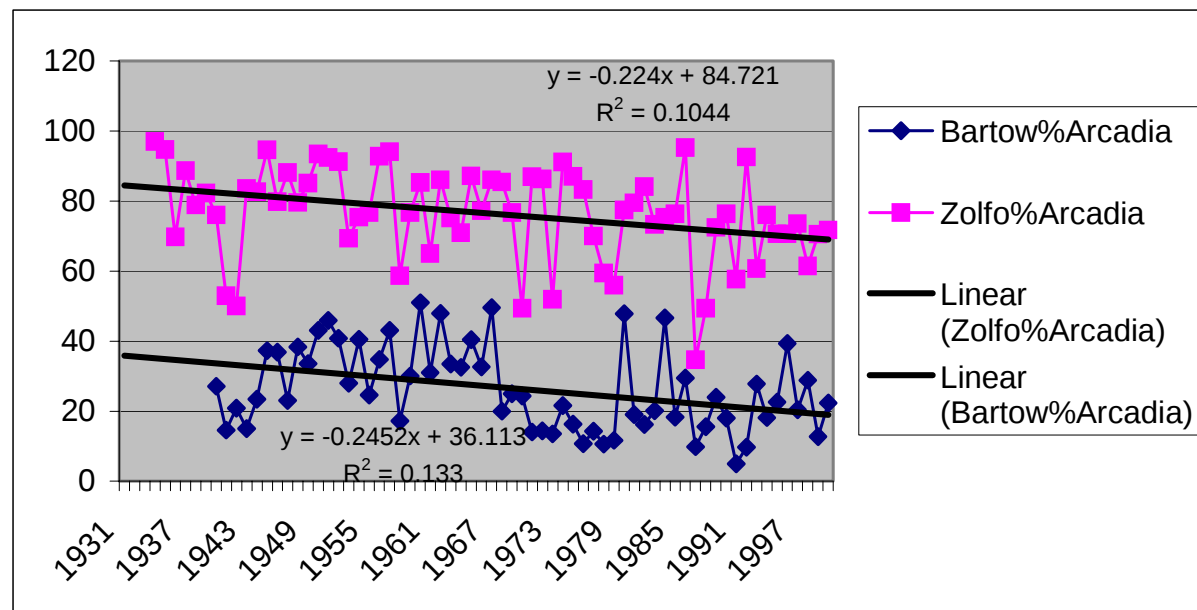
APPENDIX QPC

Flows - Percent Contribution

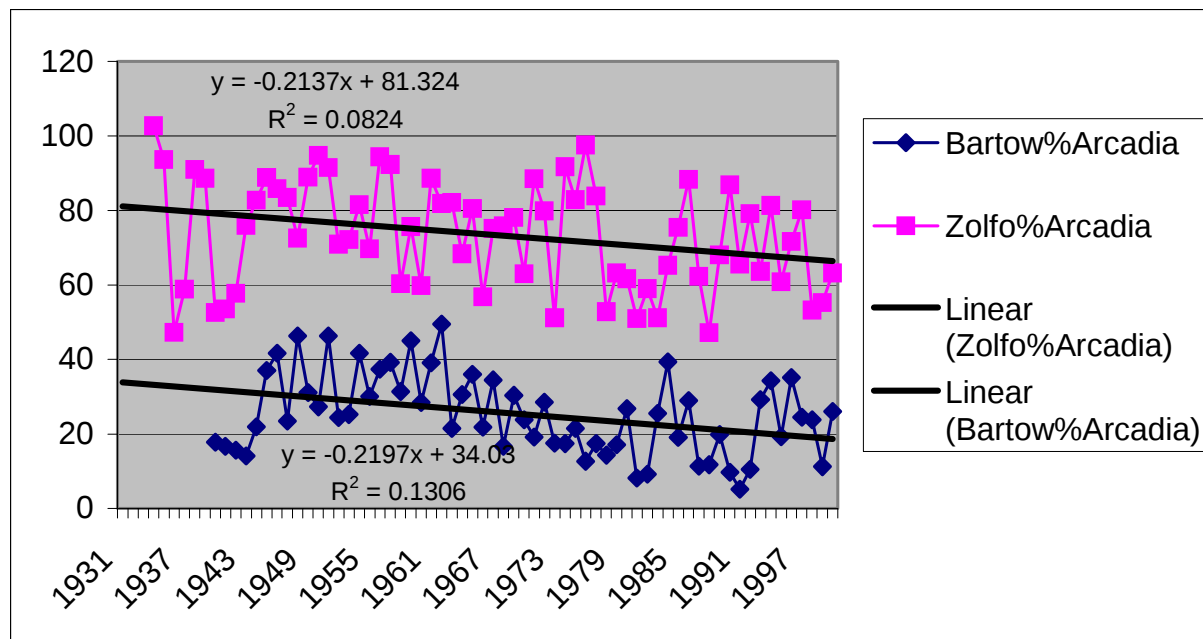
This appendix contains twelve pages. Each page is composed of a table and a plot. The plot shows Bartow and Zolfo Springs monthly flow for each year as a percentage of the monthly flow at Arcadia. The table above the plot gives the mean of the monthly flows for each gage for selected periods and the percentage of the Bartow, Ft. Meade and Zolfo Springs mean period monthly flow as a percentage of the Arcadia period monthly flow. The main text of this document (Chapter Three) discusses the highest flow month, September, and the lowest flow month, May.

Chart/Table	Page
January comparison	QPC-2
February comparison	QPC-3
March comparison	QPC-4
April comparison	QPC-5
May comparison	QPC-6
June comparison	QPC-7
July comparison	QPC-8
August comparison	QPC-9
September comparison	QPC-10
October comparison	QPC-11
November comparison	QPC-12
December comparison	QPC-13

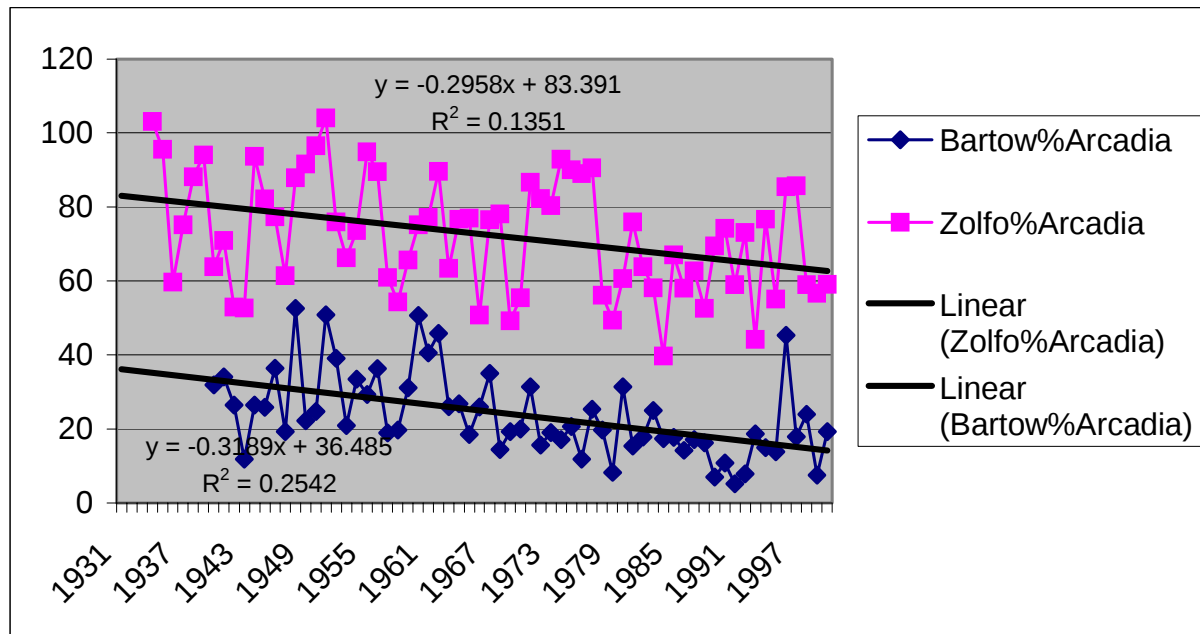
Flow Period	Mean Annual January Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	604	172	176	425			
From 1940-2000	640	172		435	27		68
From 1940-1950	607	176		435	29		72
From 1940-1960	703	209		507	30		72
From 1961-2000	606	152		398	25		66
From 1970-1990	544	111		334	20		61
From 1974-2000	596	146	176	388	24	30	65
From 1985-2000	692	170	205	435	25	30	63



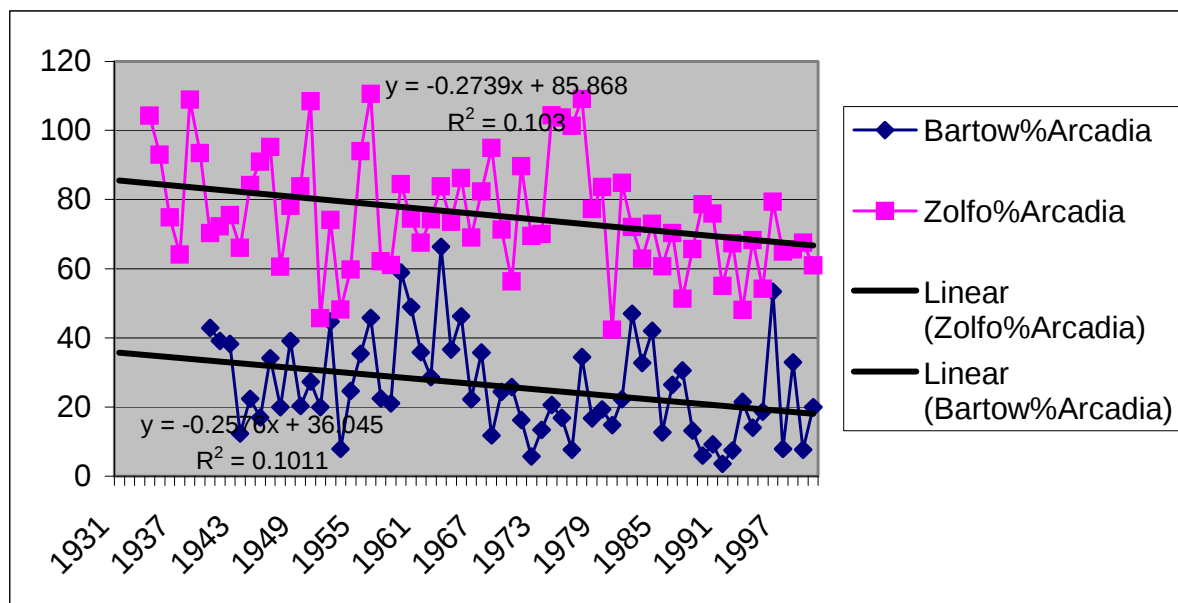
Flow Period	Mean Annual February Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	752	190	176	493			
From 1940-2000	742	190		484	26		65
From 1940-1950	628	165		420	26		67
From 1940-1960	697	206		481	30		69
From 1961-2000	765	181		486	24		64
From 1970-1990	648	136		401	21		62
From 1974-2000	683	151	176	406	22	26	60
From 1985-2000	670	149	177	402	22	26	60



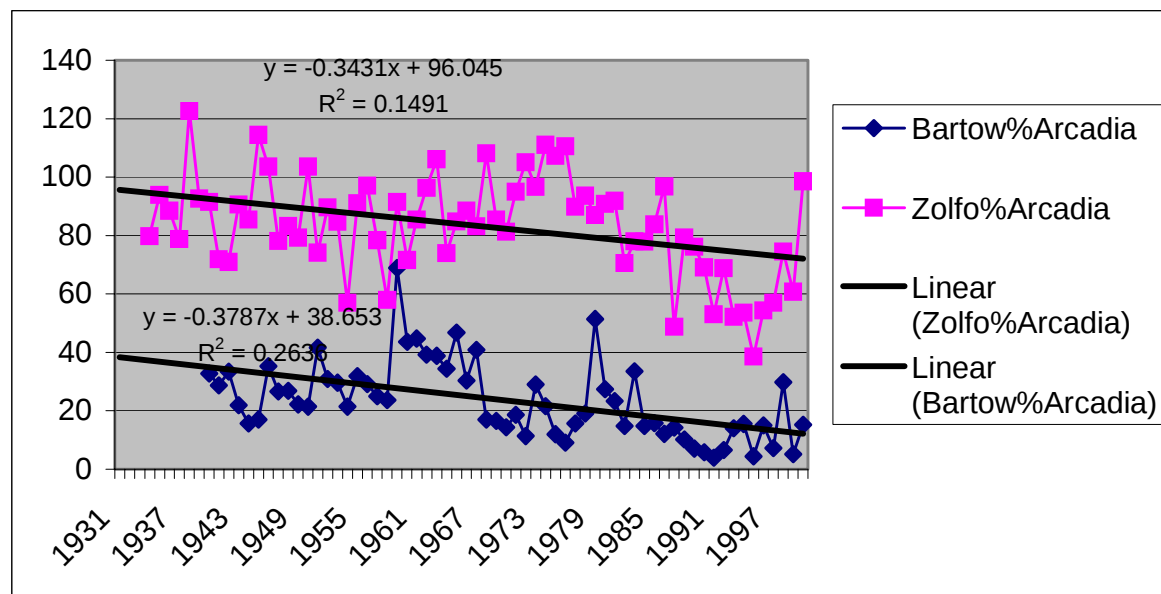
Flow Period	Mean Annual March Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	874	230	201	565			
From 1940-2000	919	230		575	25		63
From 1940-1950	728	204		476	28		65
From 1940-1960	1040	315		689	30		66
From 1961-2000	855	185		516	22		60
From 1970-1990	718	140		431	19		60
From 1974-2000	802	166	201	471	21	25	59
From 1985-2000	854	173	211	505	20	25	59



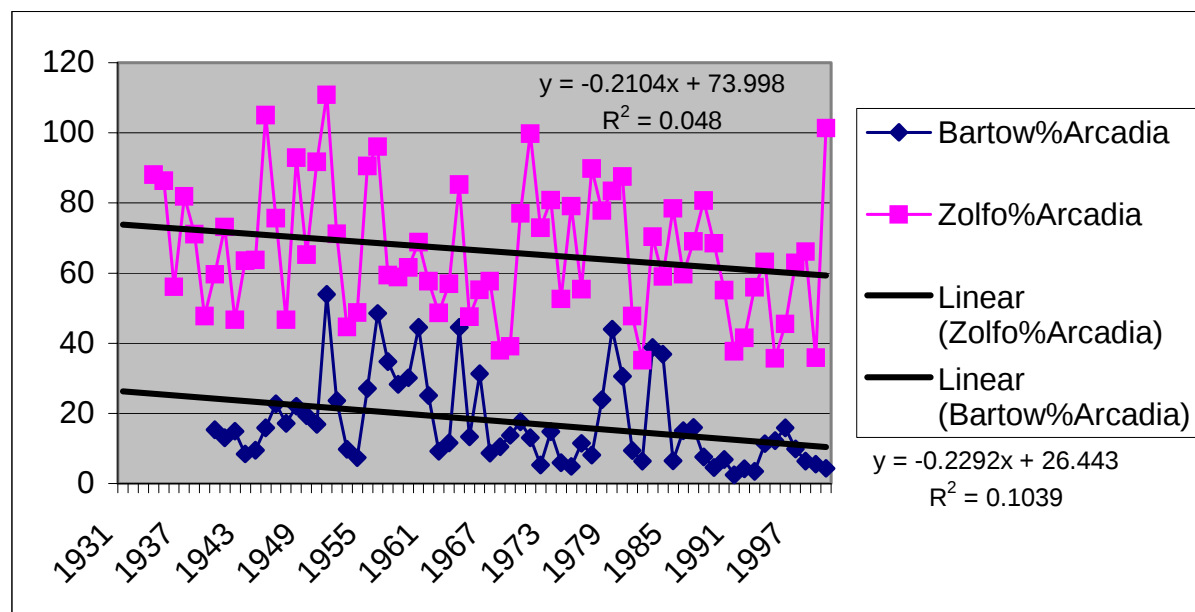
Flow Period	Mean Annual April Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	635	178	150	411			
From 1940-2000	624	178		410	29		66
From 1940-1950	563	181		404	32		72
From 1940-1960	860	275		579	32		67
From 1961-2000	501	127		321	25		64
From 1970-1990	522	121		330	23		63
From 1974-2000	493	128	150	301	26	30	61
From 1985-2000	544	136	163	323	25	30	59



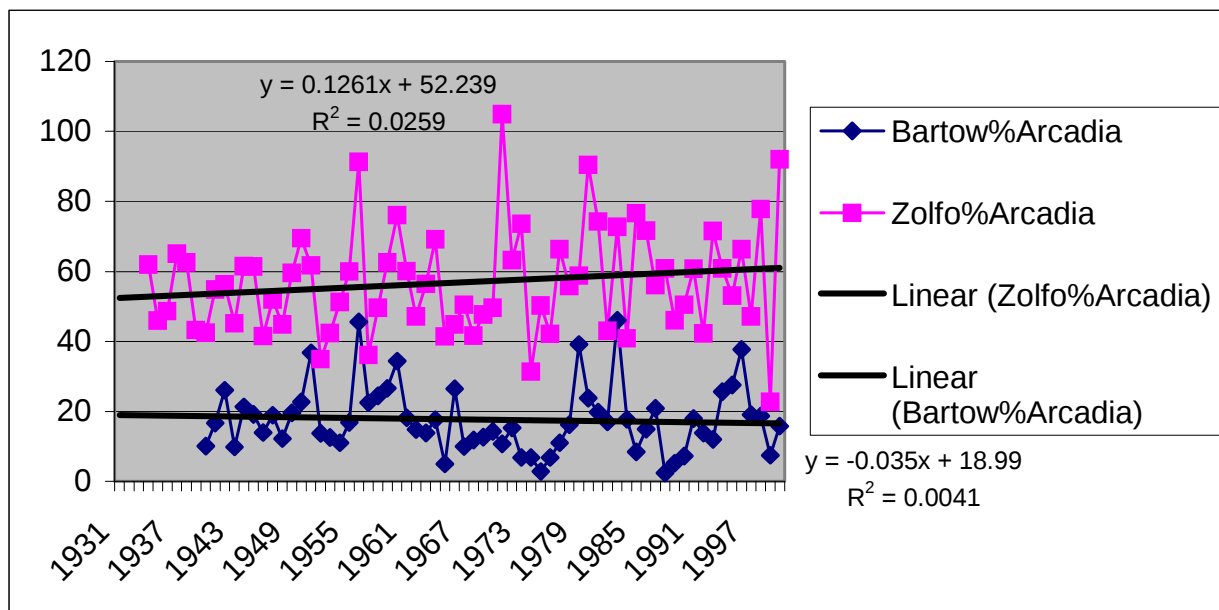
Flow Period	Mean Annual May Flows (in cfs) for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	331	88	73	255			
From 1940-2000	319	88		249	27.5		78.1
From 1940-1950	208	58		173	27.6		83.1
From 1940-1960	454	142		348	31.2		76.8
From 1961-2000	249	60		197	24.0		79.3
From 1970-1990	271	67		229	24.8		84.5
From 1974-2000	252	55	73	188	21.8	29.1	74.7
From 1985-2000	195	23	30	114	11.7	15.4	58.7



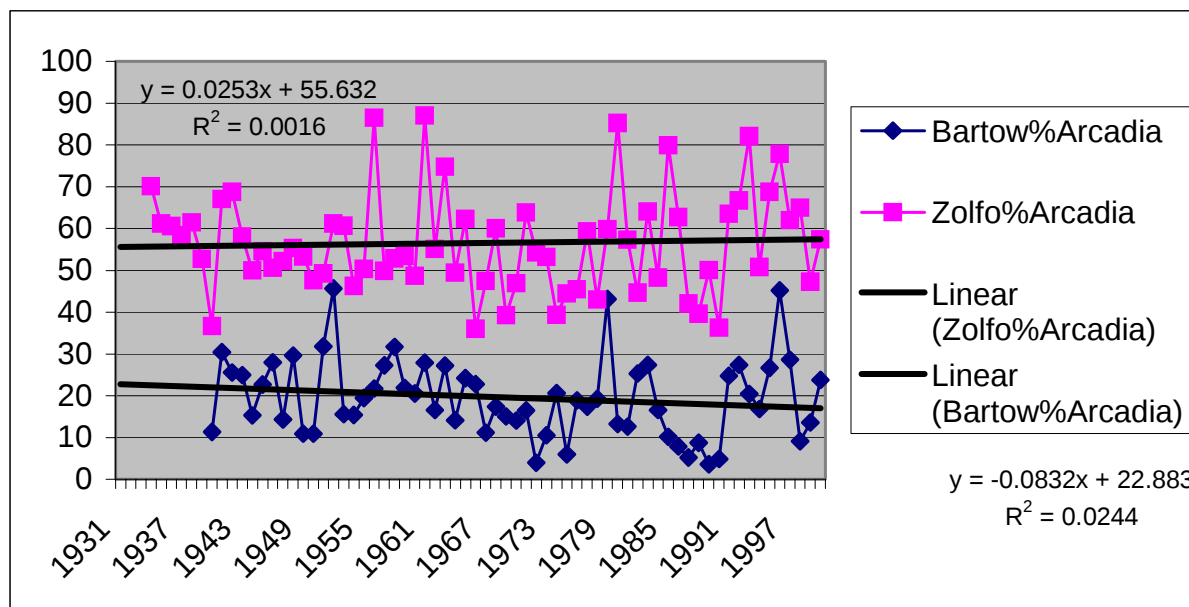
Flow Period	Mean Annual June Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	1005	146	97	585			
From 1940-2000	943	146		517	16		55
From 1940-1950	1136	178		680	16		60
From 1940-1960	1255	239		732	19		58
From 1961-2000	780	98		405	13		52
From 1970-1990	739	96		419	13		57
From 1974-2000	681	80	97	347	12	14	51
From 1985-2000	416	35	39	210	8	9	50



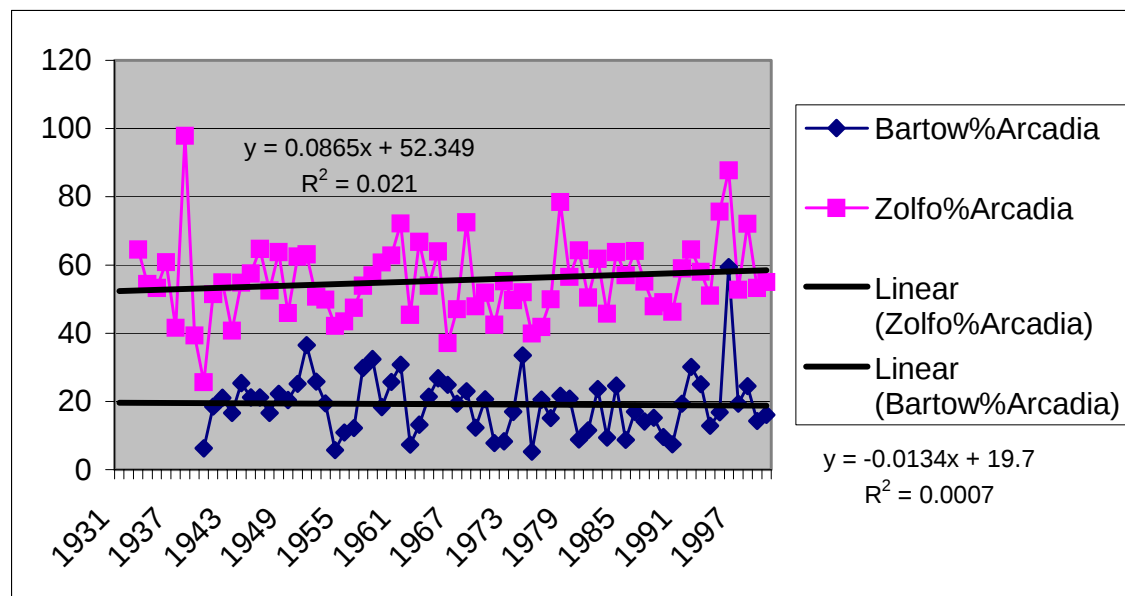
Flow Period	Mean Annual July Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	1654	276	216	879			
From 1940-2000	1639	276		853	17		52
From 1940-1950	2617	439		1380	17		53
From 1940-1960	2252	434		1216	19		54
From 1961-2000	1317	193		662	15		50
From 1970-1990	1270	175		649	14		51
From 1974-2000	1243	198	216	624	16	17	50
From 1985-2000	936	162	178	515	17	19	55



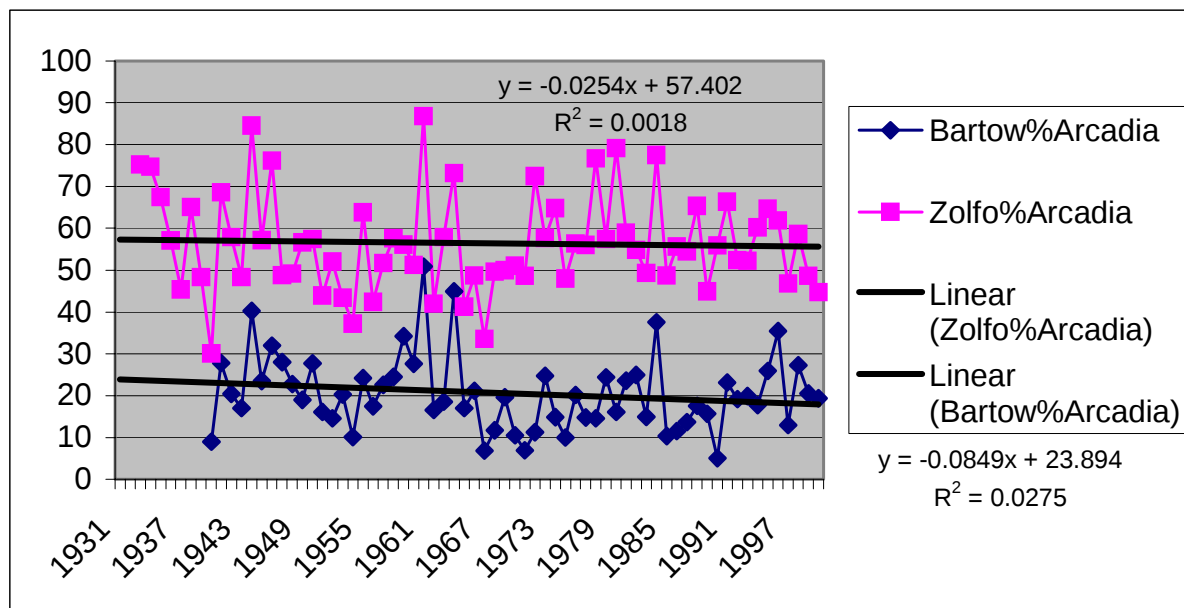
Flow Period	Mean Annual August Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	1896	384	330	1050			
From 1940-2000	1927	384		1036	20		54
From 1940-1950	2768	546		1485	20		54
From 1940-1960	2623	552		1401	21		53
From 1961-2000	1562	297		844	19		54
From 1970-1990	1436	230		719	16		50
From 1974-2000	1501	300	330	822	20	22	55
From 1985-2000	1451	278	330	861	19	23	59



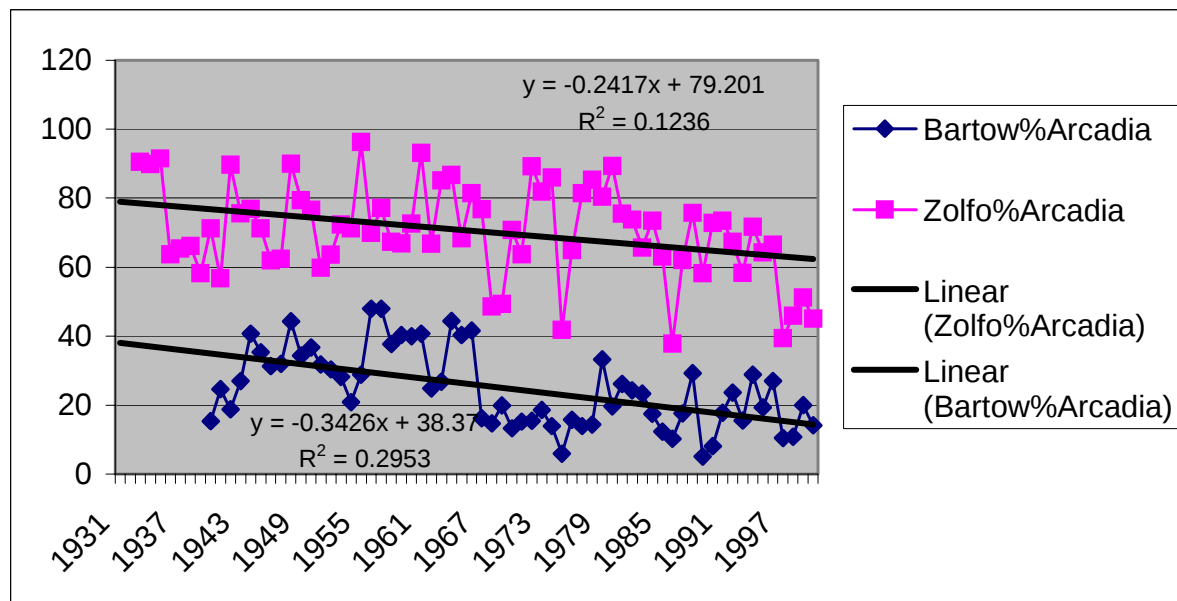
Flow Period	Mean Annual September Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	2502	437	356	1366			
From 1940-2000	2374	437		1285	18		54
From 1940-1950	3317	620		1714	19		52
From 1940-1960	3453	688		1841	20		53
From 1961-2000	1808	306		993	17		55
From 1970-1990	1667	259		855	16		51
From 1974-2000	1711	301	356	972	18	21	57
From 1985-2000	1757	309	386	1044	18	22	59



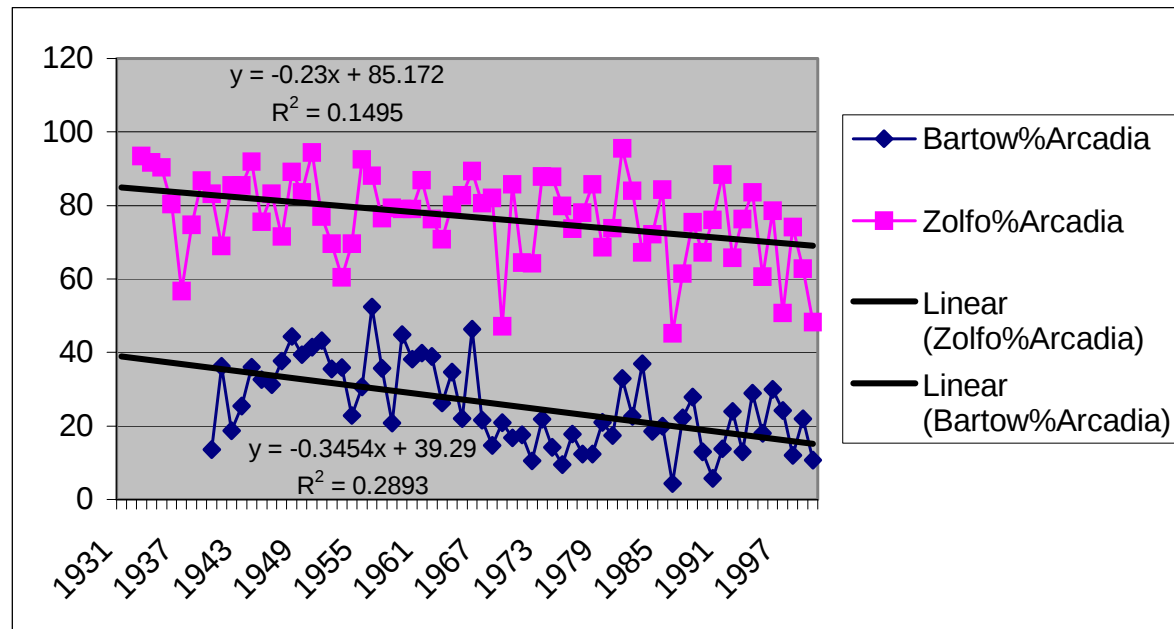
Flow Period	Mean Annual October Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	1471	313	257	801			
From 1940-2000	1491	313		781	21		52
From 1940-1950	2048	477		1104	23		54
From 1940-1960	2425	538		1233	22		51
From 1961-2000	1000	195		544	20		54
From 1970-1990	759	133		418	18		55
From 1974-2000	1027	211	257	583	21	25	57
From 1985-2000	1111	229	289	635	21	26	57



Flow Period	Mean Annual November Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	552	142	113	366			
From 1940-2000	573	142		368	25		64
From 1940-1950	533	177		381	33		71
From 1940-1960	699	234		491	34		70
From 1961-2000	507	94		304	19		60
From 1970-1990	342	57		224	17		66
From 1974-2000	530	88	113	306	17	21	58
From 1985-2000	684	113	141	375	16	21	55



Flow Period	Mean Annual December Flows for				Percentage contribution to Arcadia Flow		
	Arcadia	Bartow	Ft Meade	Zolfo Springs	Bartow	Fort Meade	Zolfo Springs
Period of Record	461	131	123	328			
From 1940-2000	480	131		333	27		69
From 1940-1950	399	141		319	35		80
From 1940-1960	549	195		404	36		74
From 1961-2000	445	98		295	22		66
From 1970-1990	348	65		248	19		71
From 1974-2000	466	101	123	306	22	26	66
From 1985-2000	551	120	148	339	22	27	61

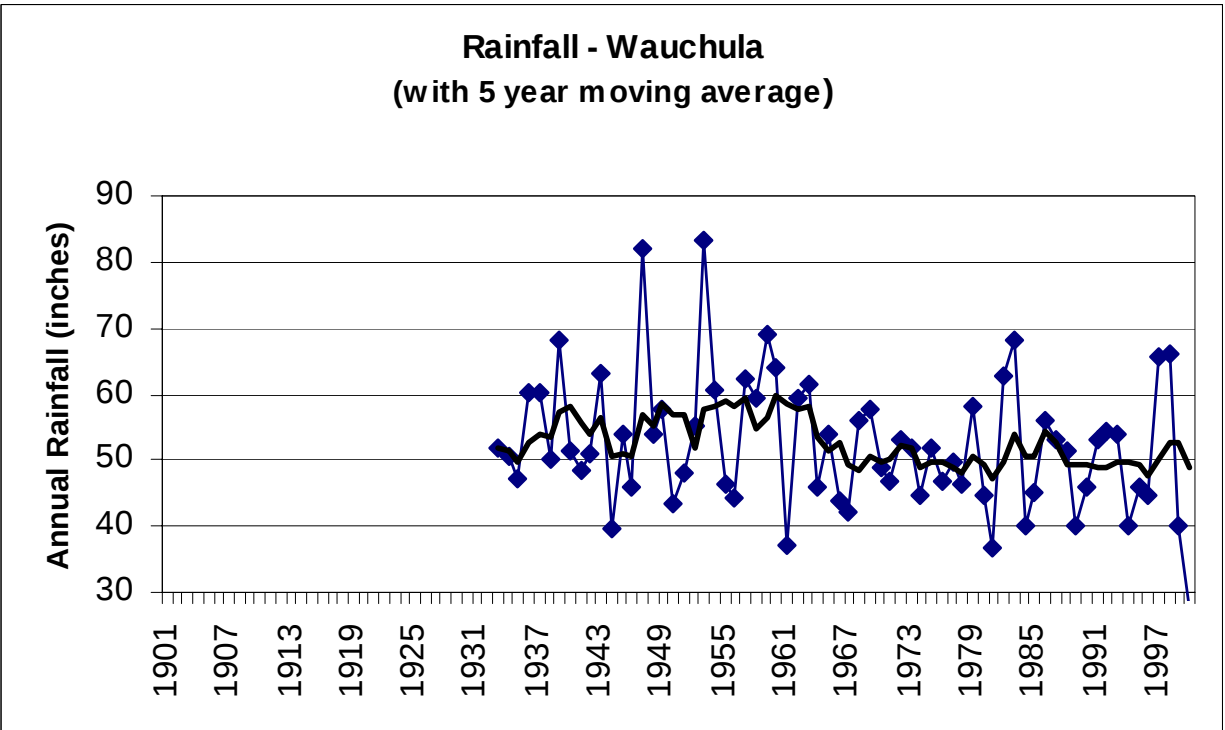
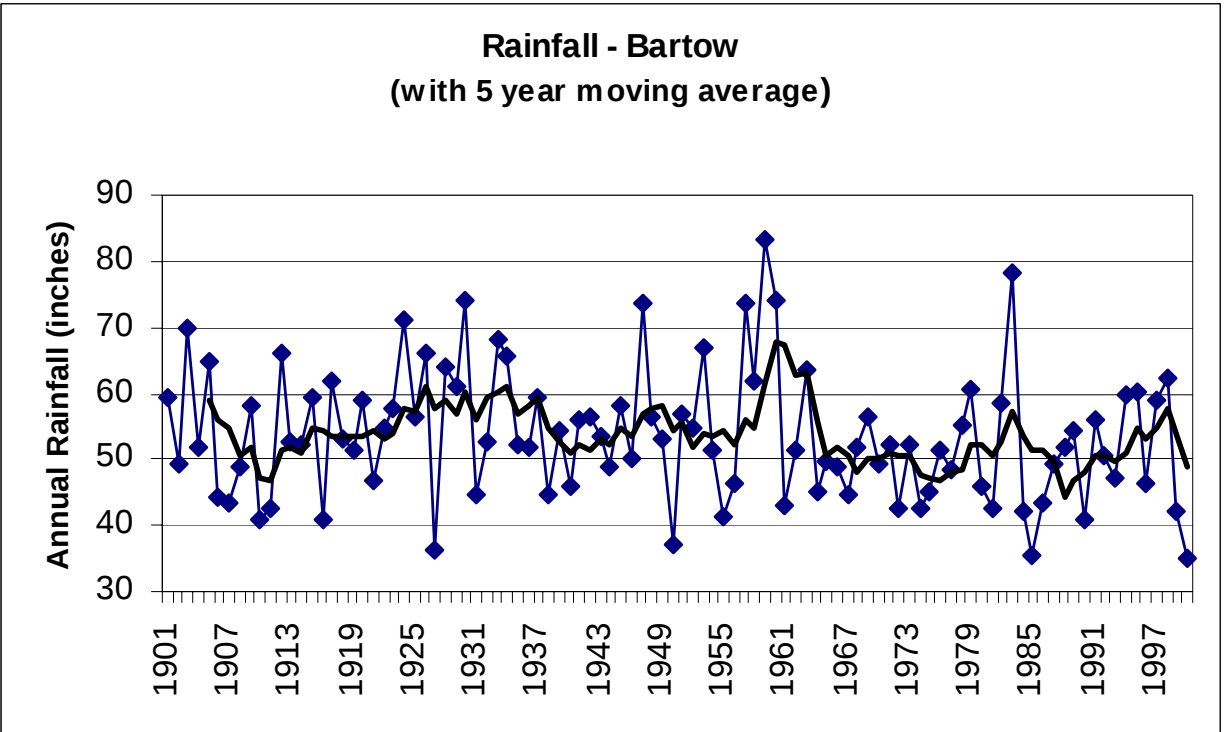


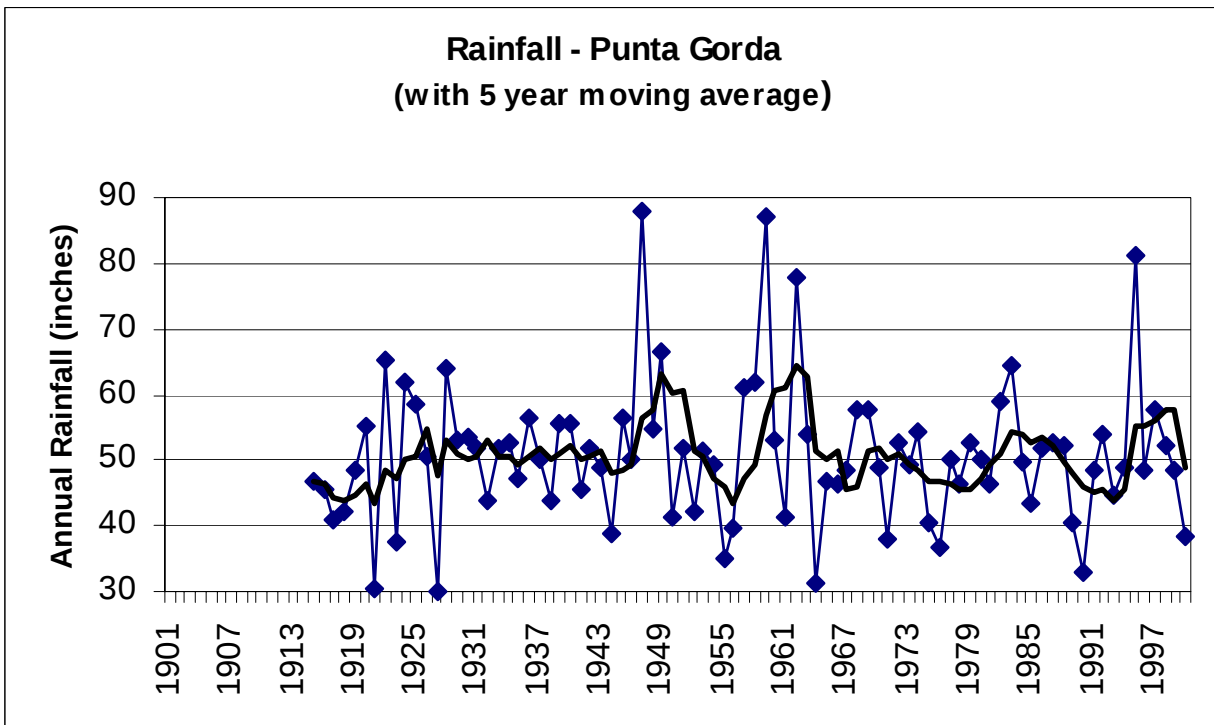
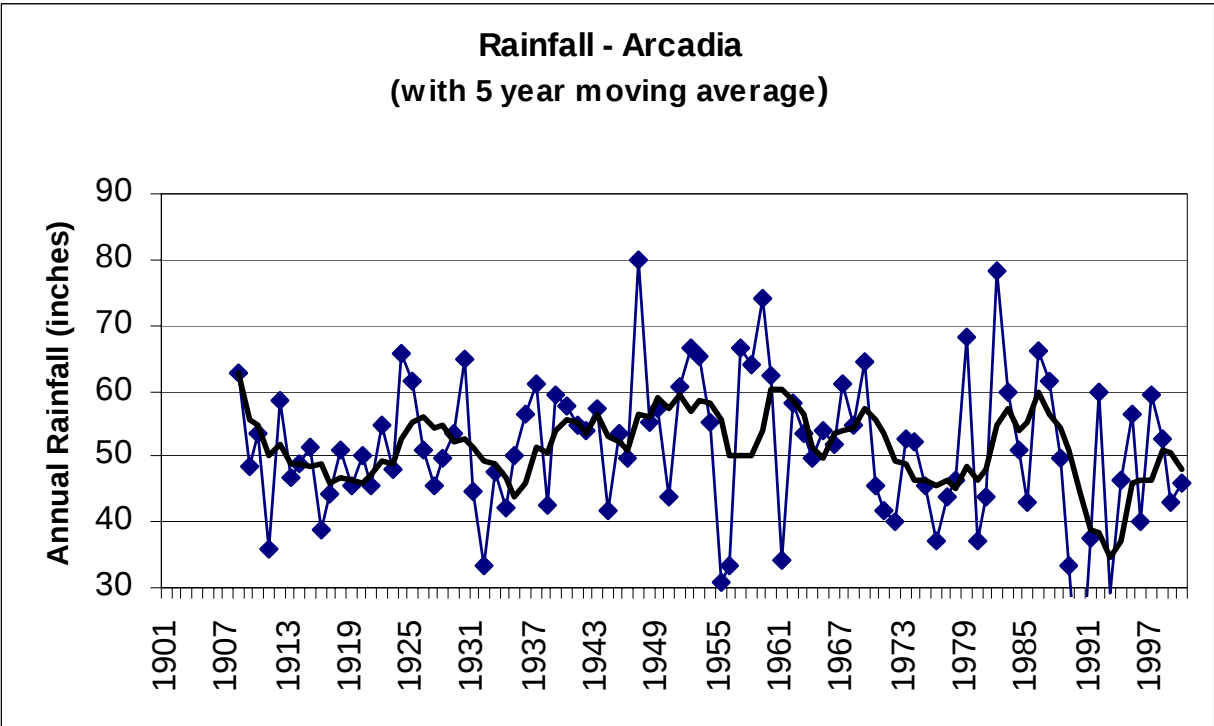
APPENDIX RF

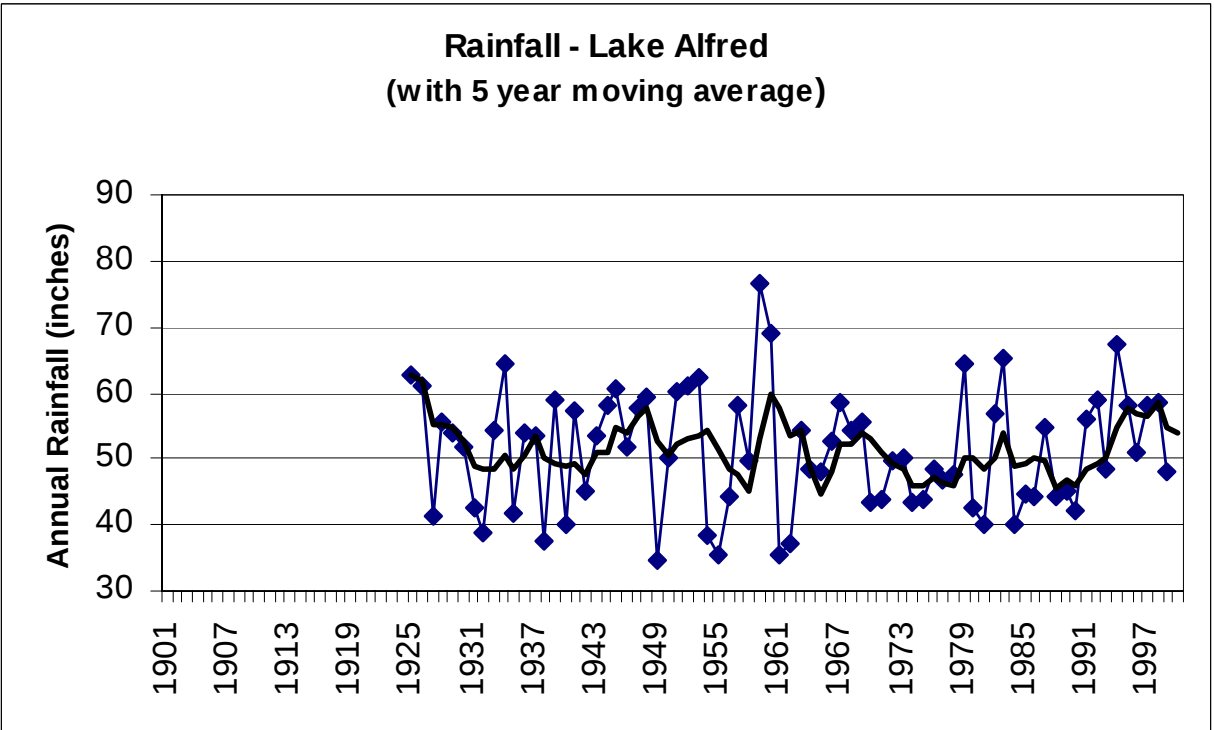
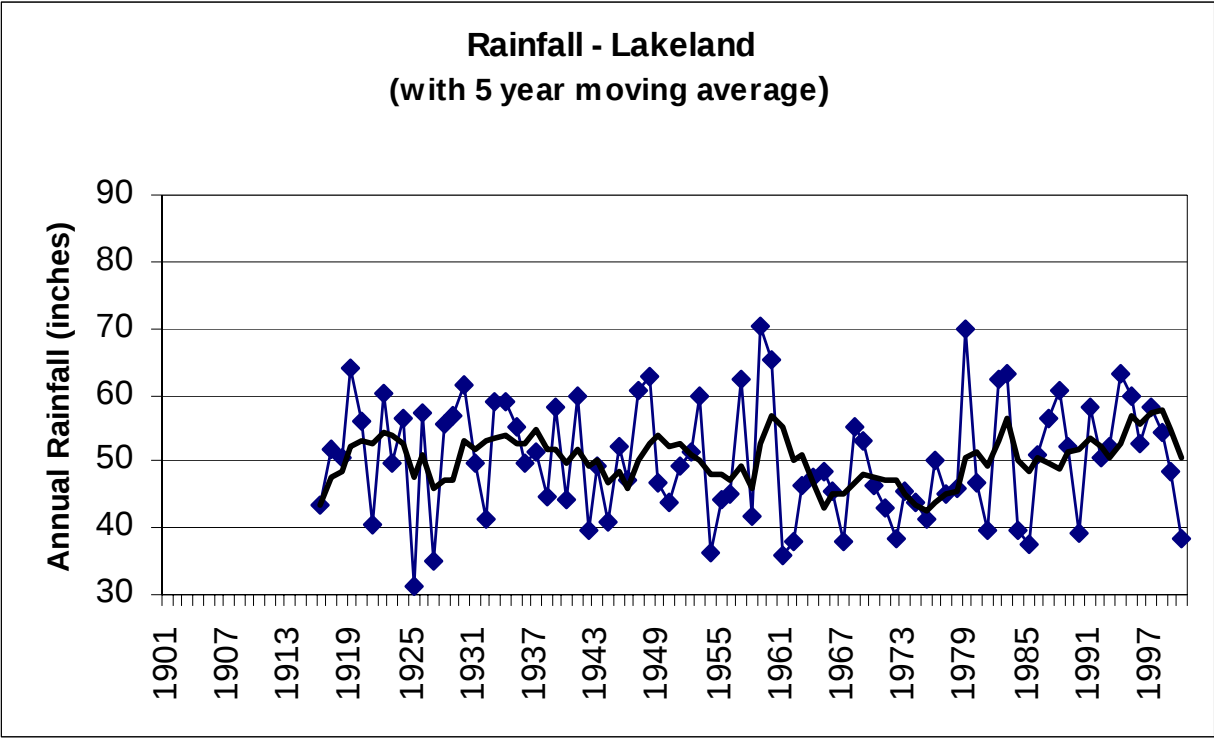
Rainfall - RF

This appendix contains plots for seven rainfall sites located within the Peace River basin. Several sites are located in relatively close proximity to the river and USGS gage sites and are presented in upstream to downstream order. These sites are Bartow, Ft. Meade, Wauchula, Arcadia, and Punta Gorda. Three other rainfall sites located in the upper most part of the watershed are also included; these are Lake Alfred, Lakeland and Winter Haven. Two sets of plots are presented. The first set is simply a plot of total annual rainfall for the period of record for each site; this plot also includes a 5-year running average plot. The second set of plots is the cumulative deviation in rainfall plots. Two plots were prepared for each site. The upper plot is the cumulative deviation from the mean annual rainfall over the period of record; the lower plot is the cumulative deviation from the median annual rainfall over the period of record. A general upward slope is indicative of a period of above normal rainfall, while an extended downward slope is indicative of a period of below normal rainfall.

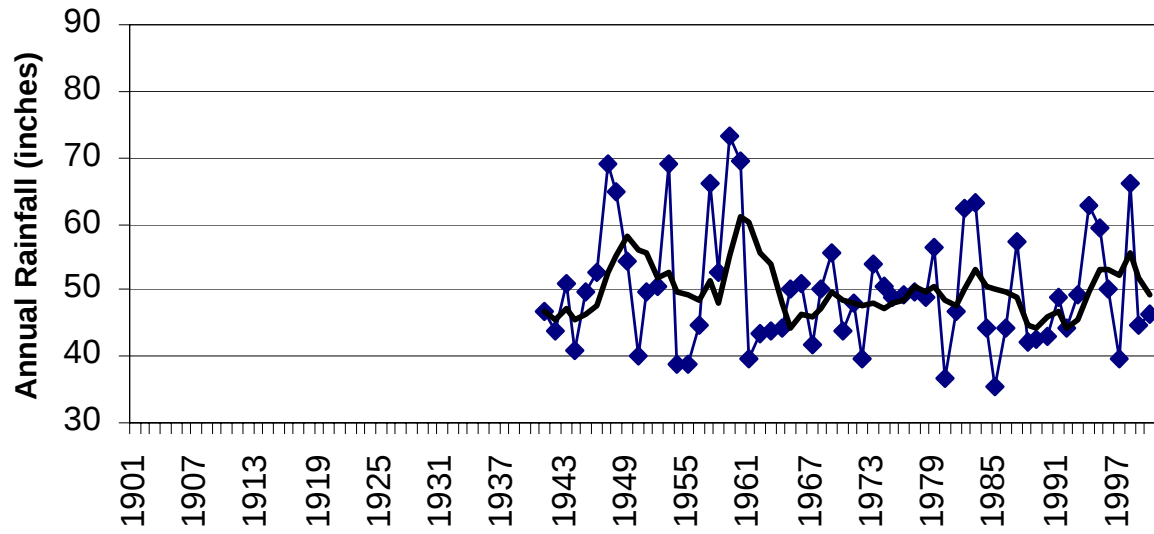
Chart/Table	Page
Period of record total annual rainfall - Bartow	RF-2
Period of record total annual rainfall - Wauchula	RF-2
Period of record total annual rainfall - Arcadia	RF-3
Period of record total annual rainfall - Punta Gorda	RF-3
Period of record total annual rainfall - Lake Alfred	RF-4
Period of record total annual rainfall - Lakeland	RF-4
Period of record total annual rainfall - Winter Haven	RF-5
Cumulative deviation from mean annual rainfall - Bartow	RF-6
Cumulative deviation from median annual rainfall - Bartow	RF-6
Cumulative deviation from mean annual rainfall - Wauchula	RF-7
Cumulative deviation from median annual rainfall - Wauchula	RF-7
Cumulative deviation from mean annual rainfall - Arcadia	RF-8
Cumulative deviation from median annual rainfall - Arcadia	RF-8
Cumulative deviation from mean annual rainfall - Punta Gorda	RF-9
Cumulative deviation from median annual rainfall - Punta Gorda	RF-9
Cumulative deviation from mean annual rainfall - Lake Alfred	RF-10
Cumulative deviation from median annual rainfall - Lake Alfred	RF-10
Cumulative deviation from mean annual rainfall - Lakeland	RF-11
Cumulative deviation from median annual rainfall - Lakeland	RF-11
Cumulative deviation from mean annual rainfall - Winter Haven	RF-12
Cumulative deviation from median annual rainfall - Winter Haven	RF-12
Monthly mean and median period of record rainfall at seven sites	RF-13

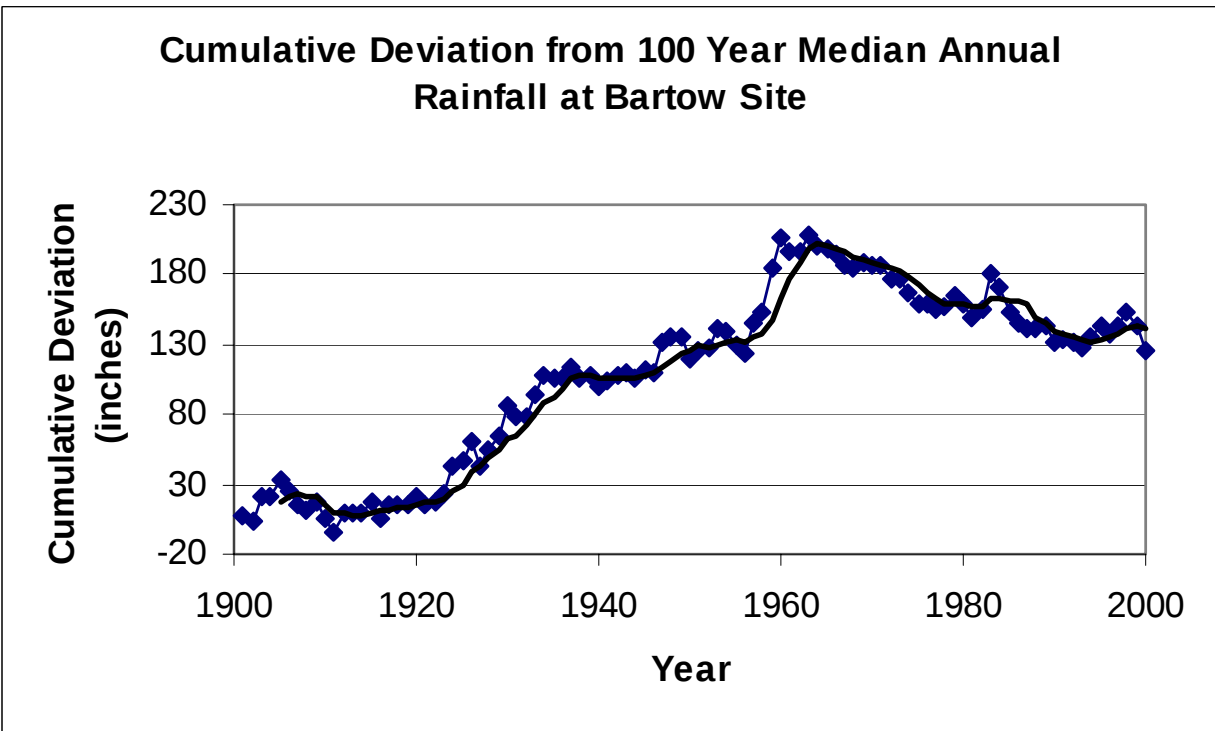
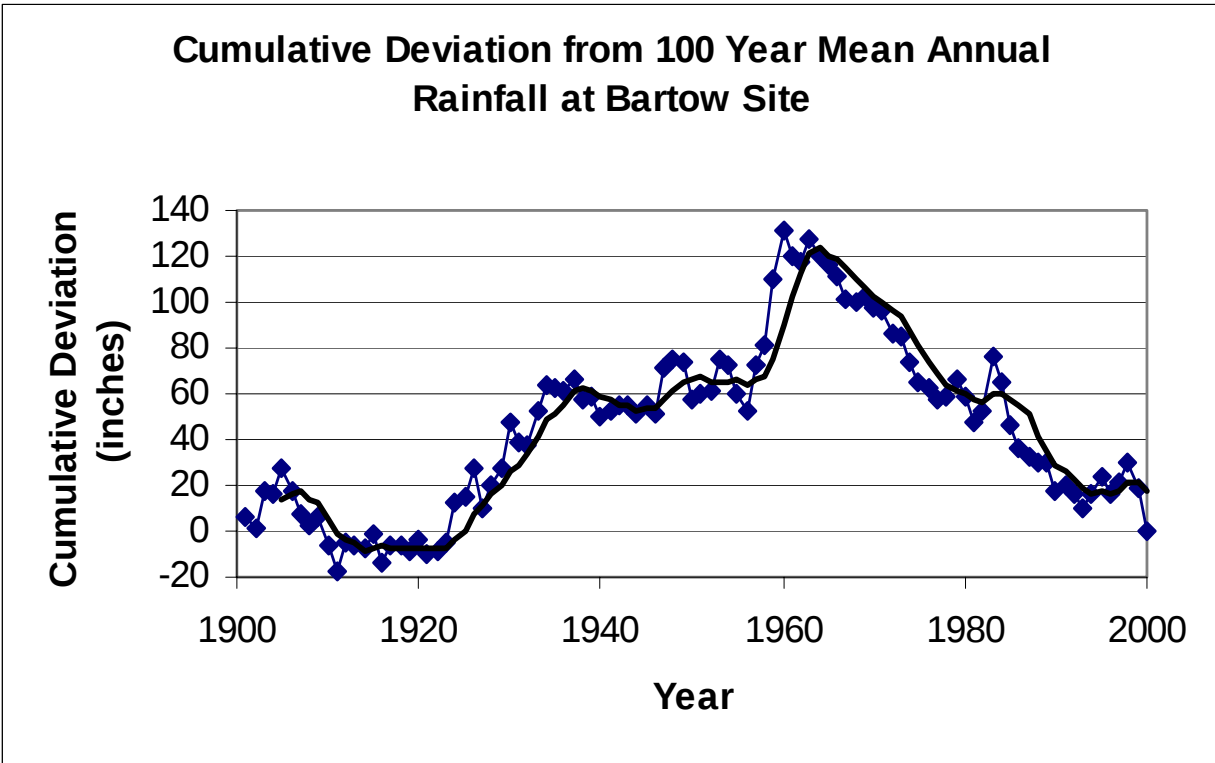


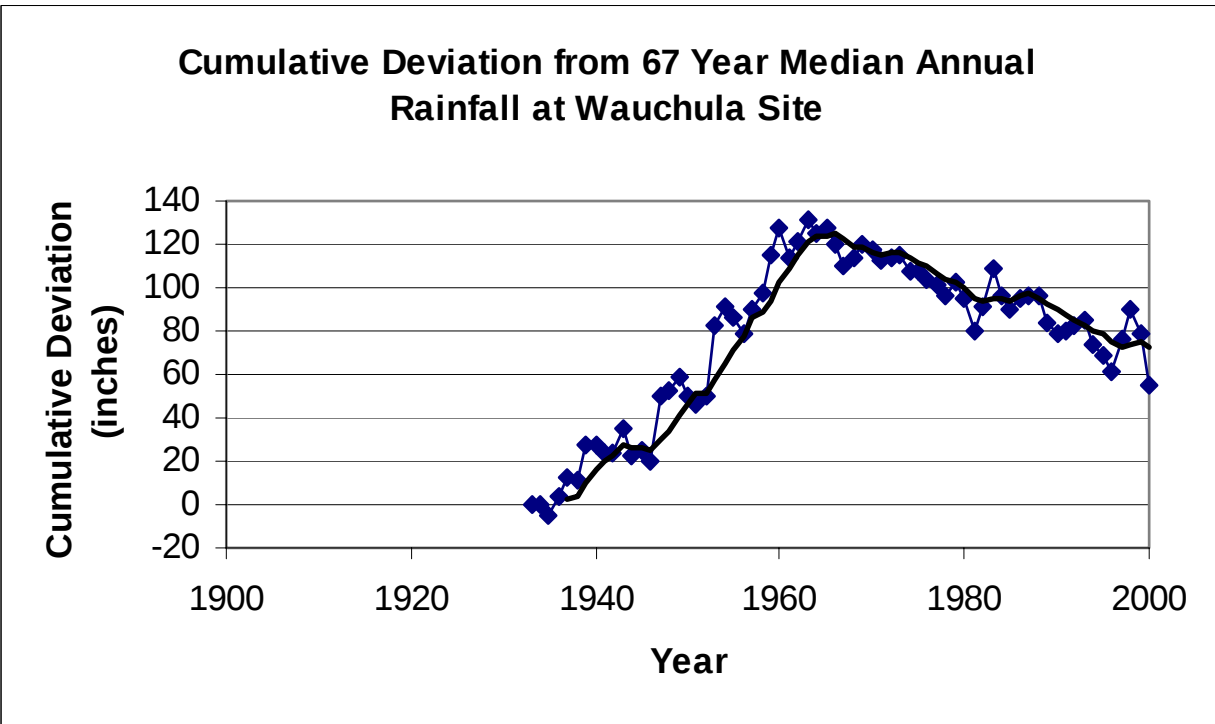
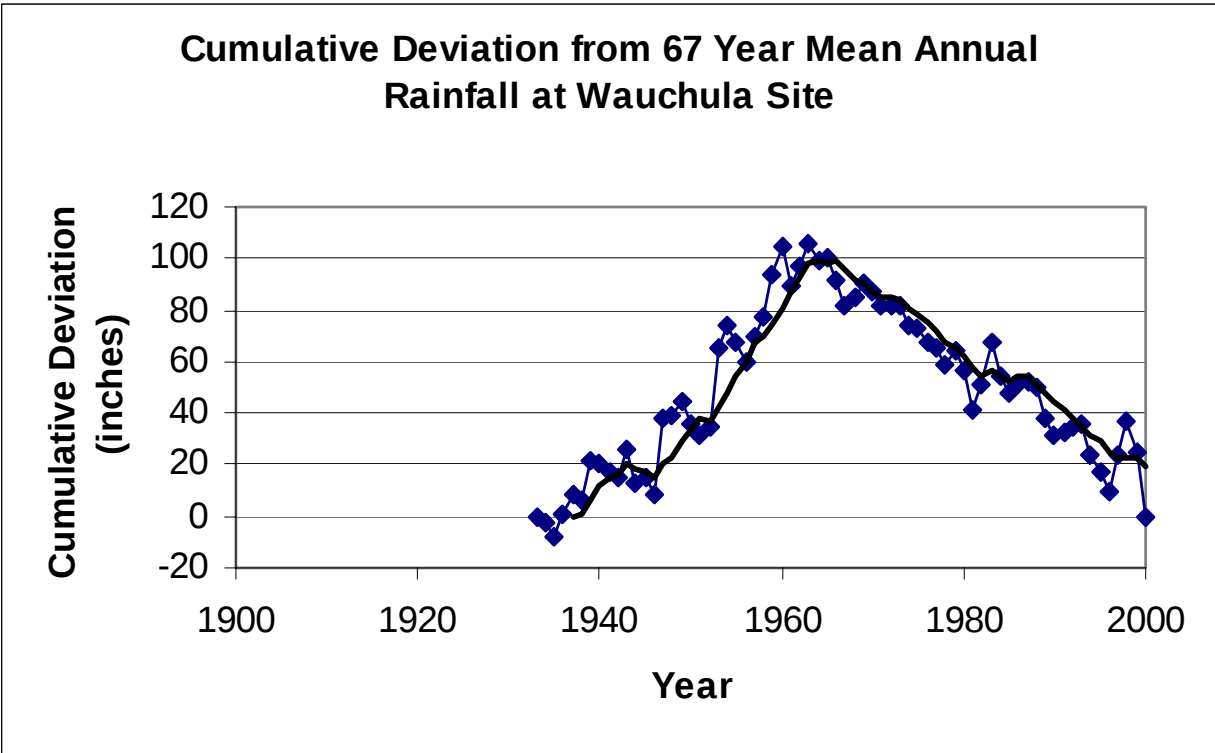




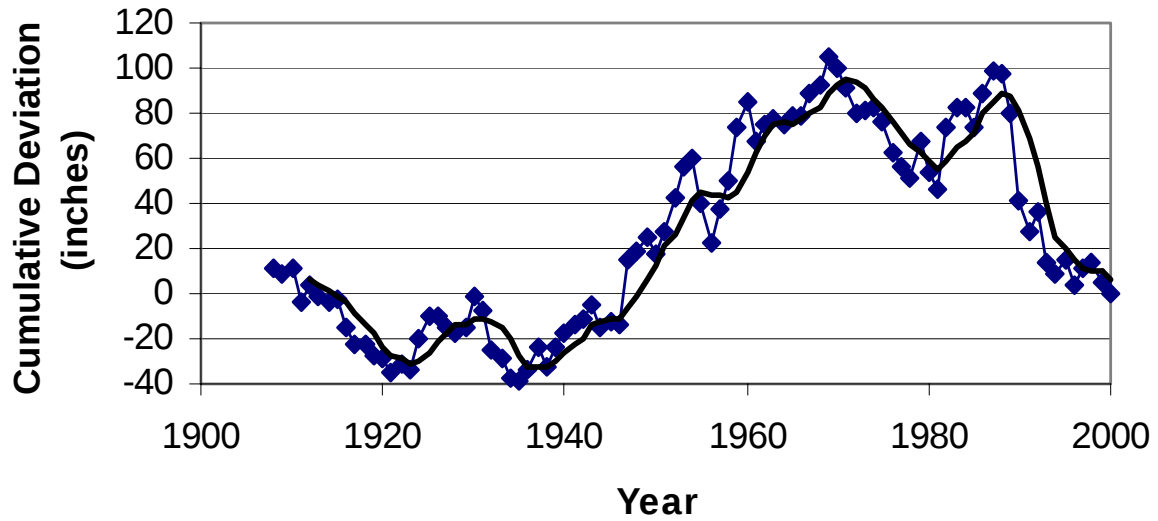
Rainfall - Winter Haven
(with 5 year moving average)



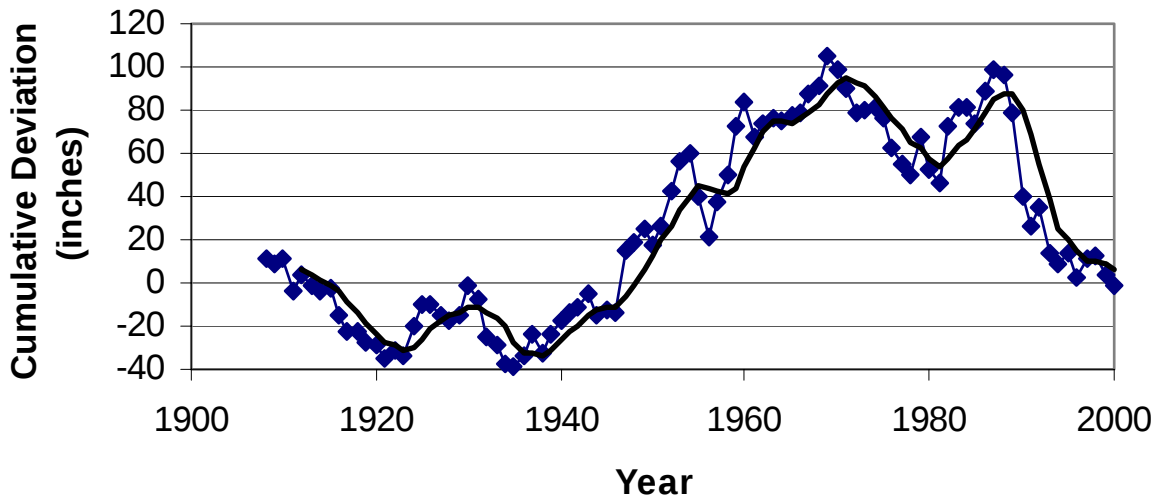




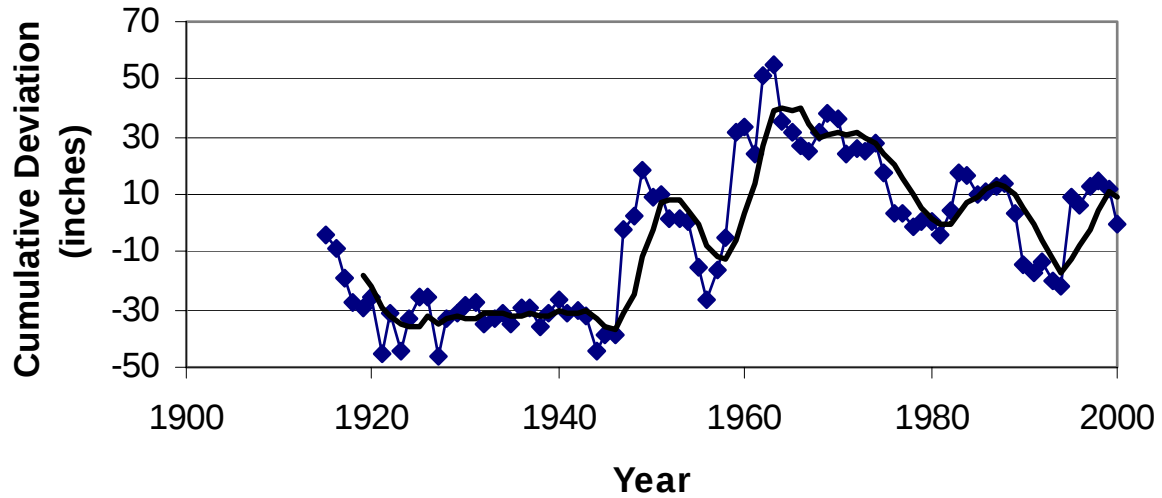
**Cumulative Deviation from 92 Year Mean Annual
Rainfall at Arcadia Site**



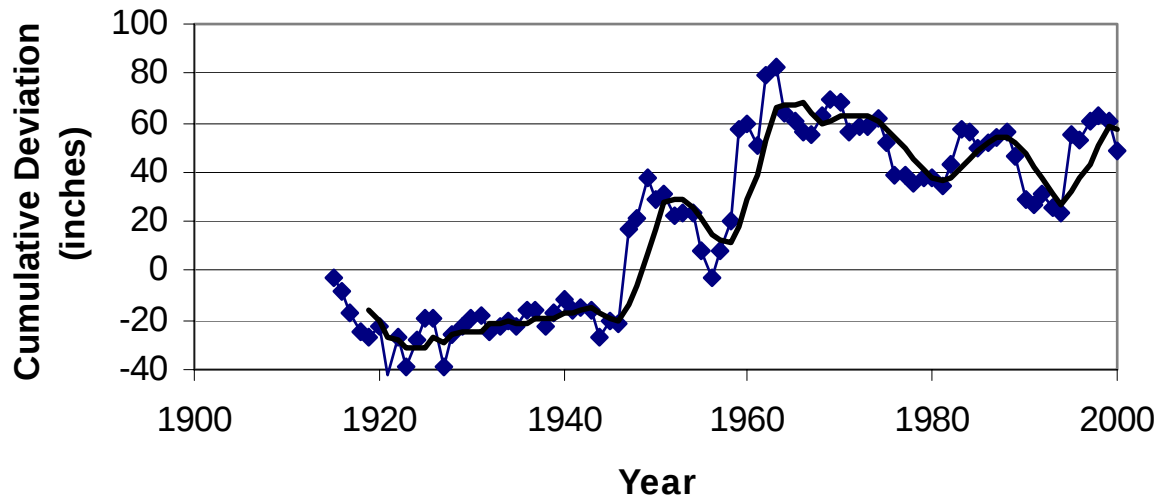
**Cumulative Deviation from 92 Year Median Annual
Rainfall at Arcadia Site**

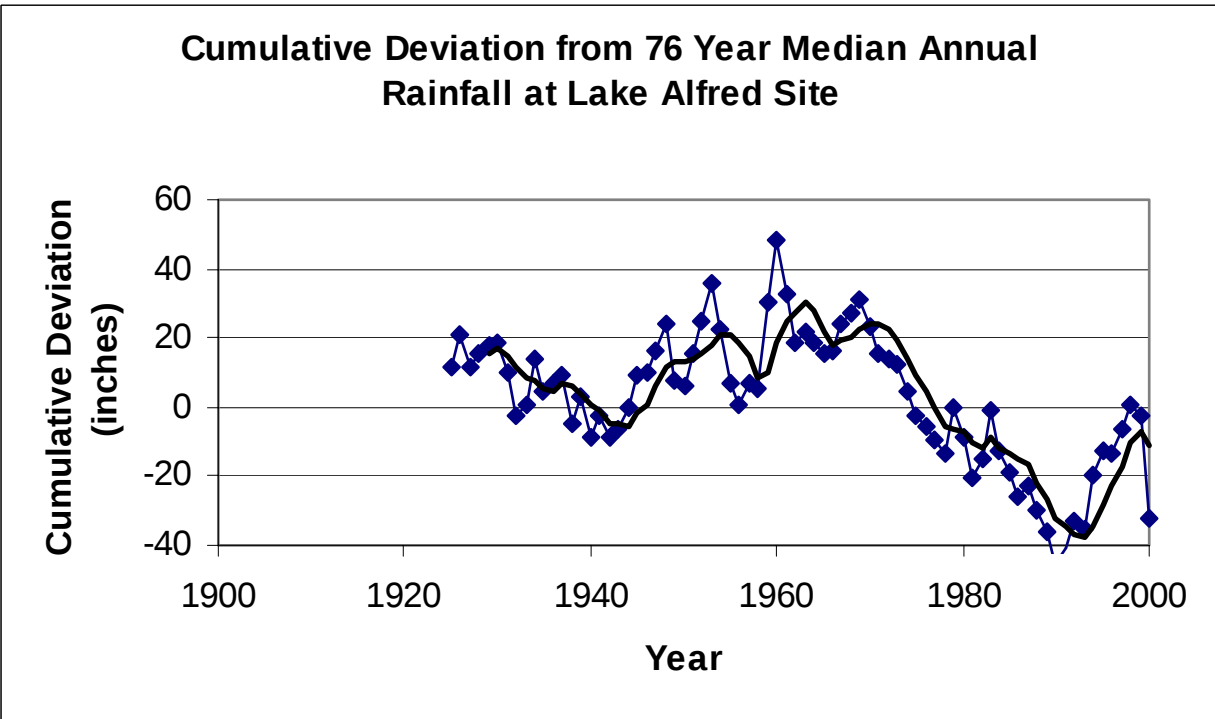
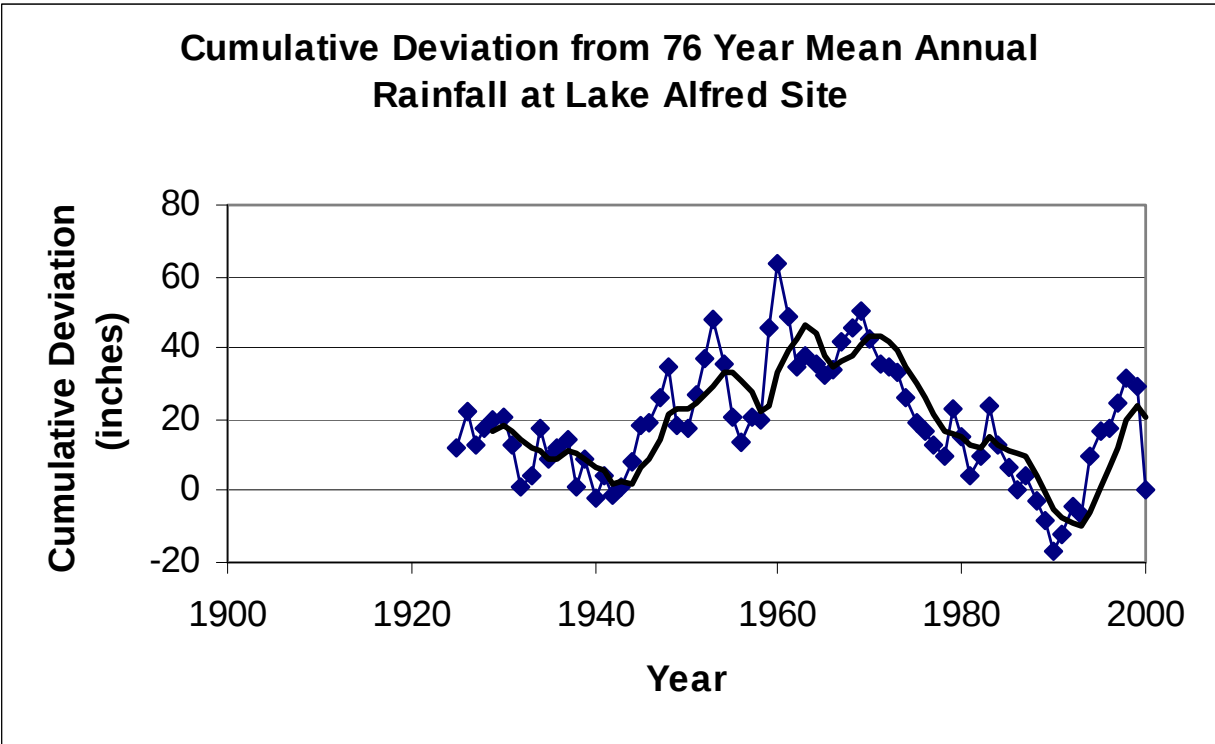


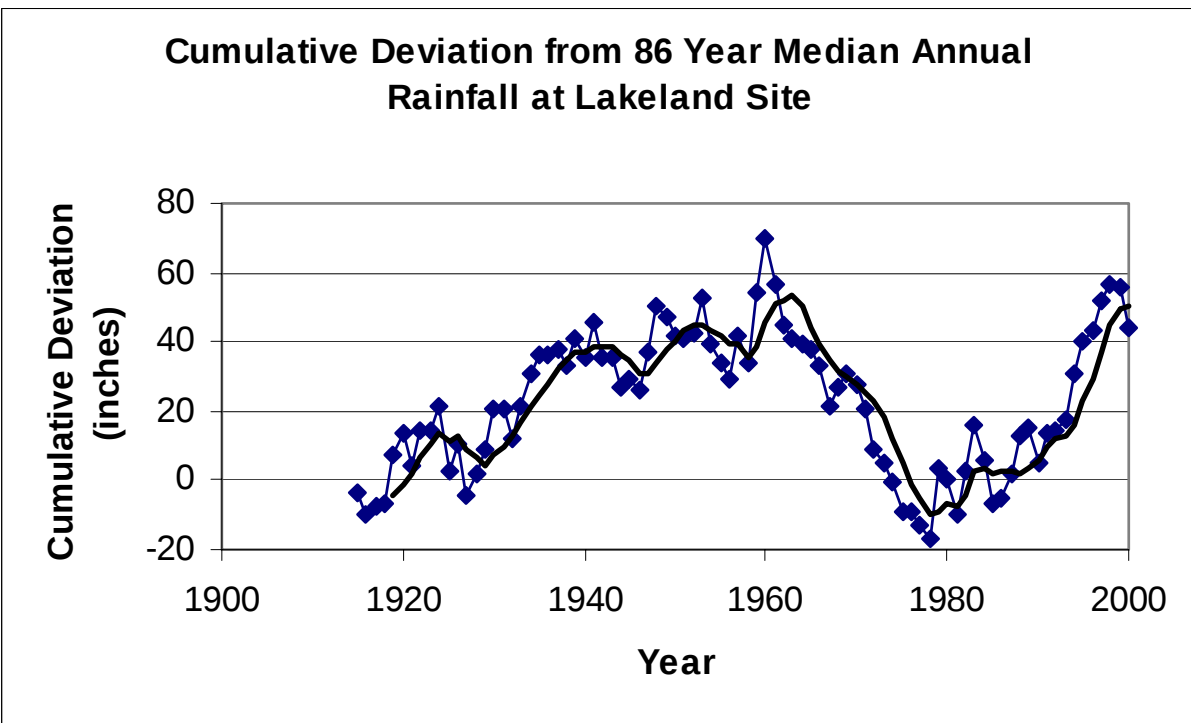
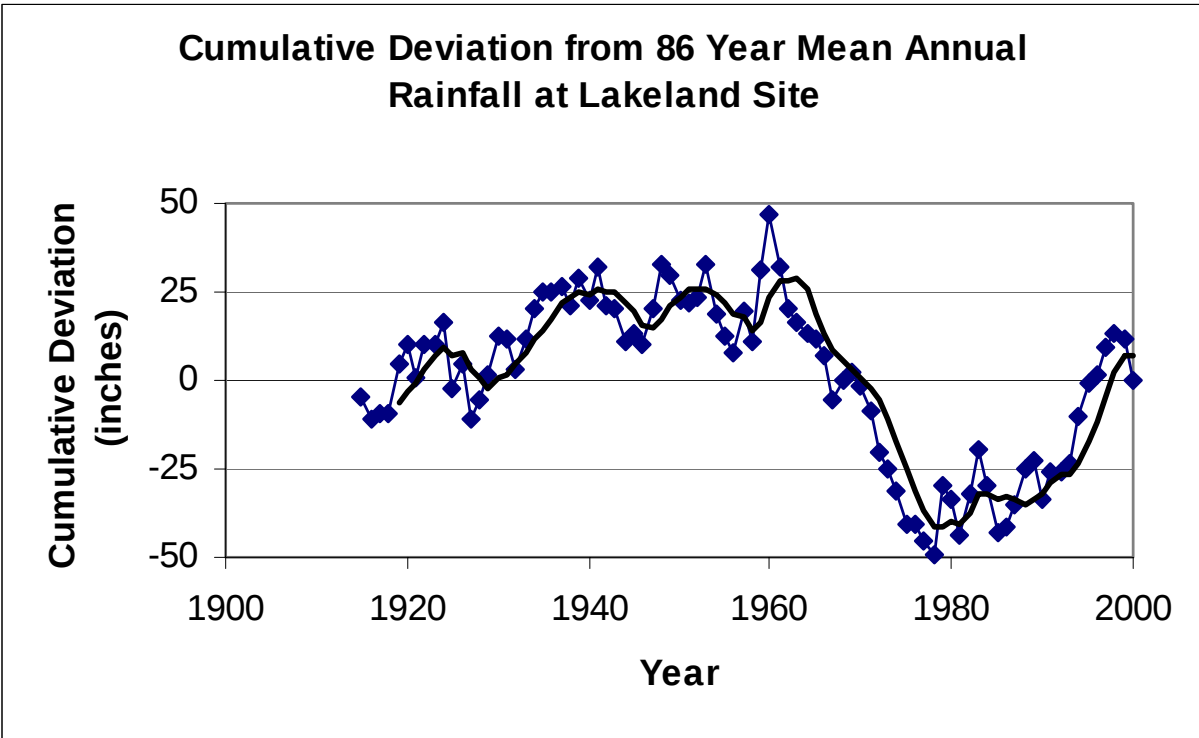
**Cumulative Deviation from 86 Year Mean Annual
Rainfall at Punta Gorda Site**

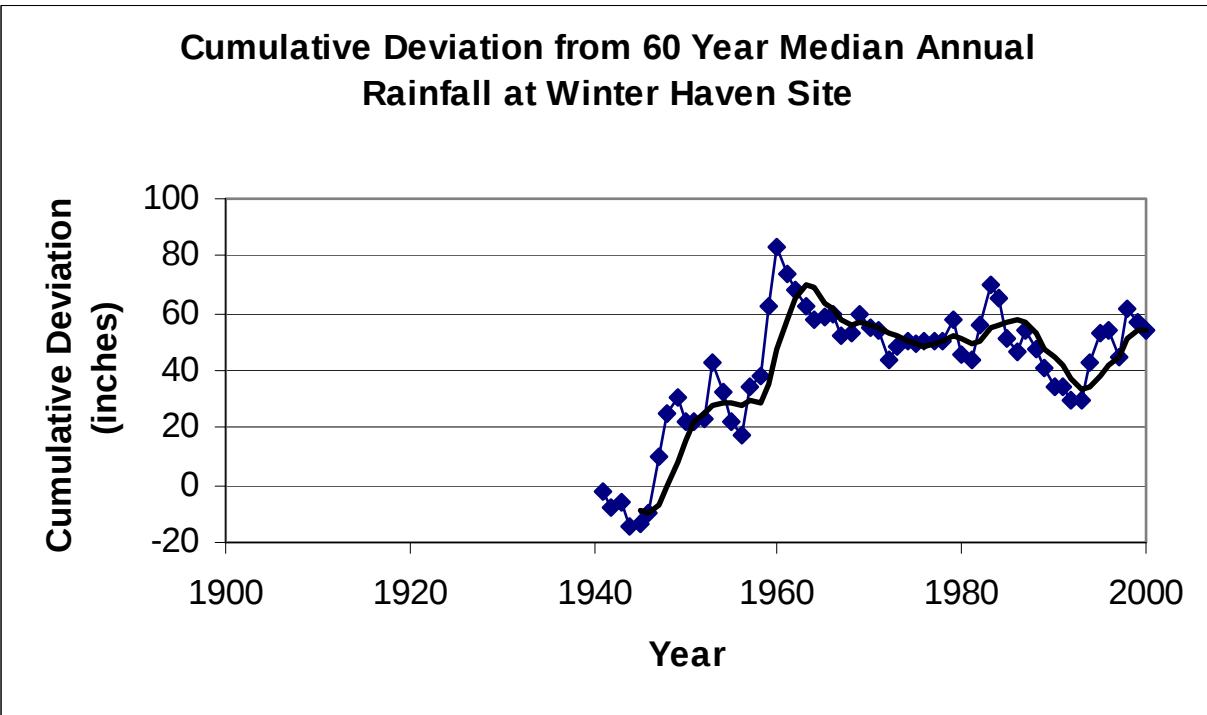
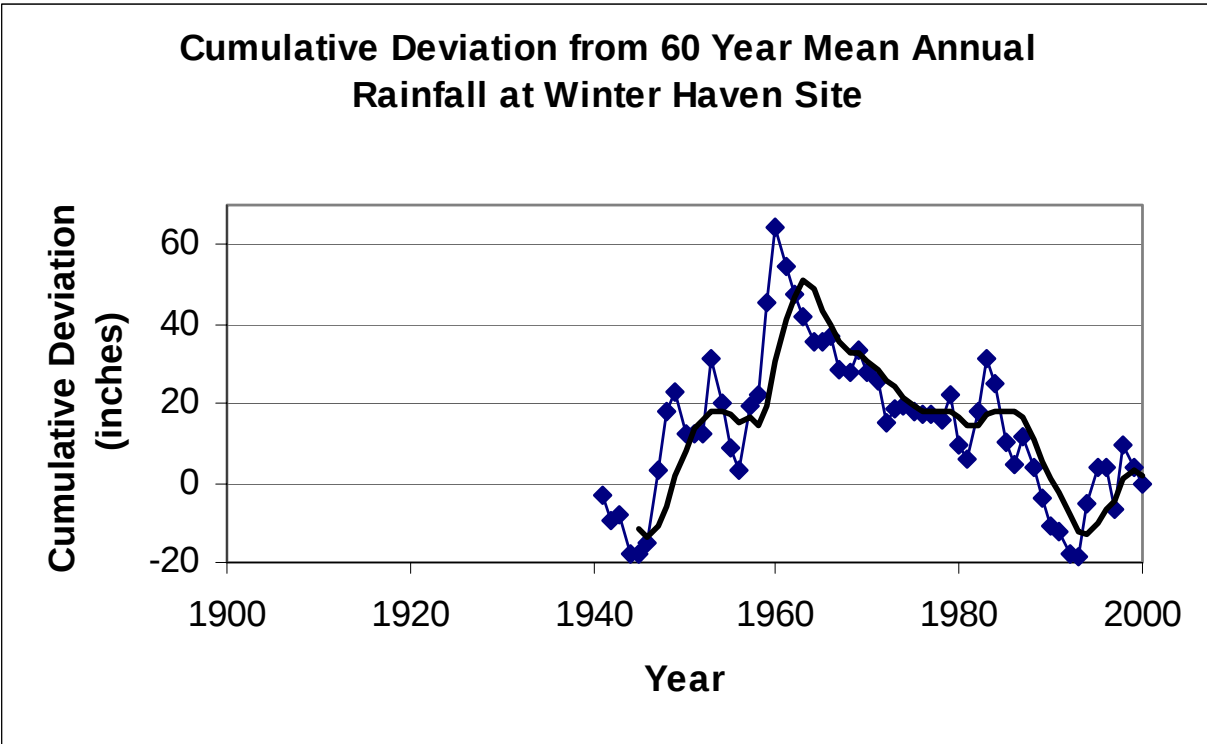


**Cumulative Deviation from 86 Year Median Annual
Rainfall at Punta Gorda Site**









Bartow Station - Average Rainfall (inches) Period of Record (1901-2000)				Wauchula Station - Average Rainfall (inches) Period of Record (1933-2000)			
Month	Mean	Percent	Median	Month	Mean	Percent	Median
JAN	2.4257	4.518815	1.91	JAN	2.20	4.20	1.75
FEB	2.84	5.28	2.34	FEB	2.78	5.31	2.37
MAR	3.26	6.08	2.65	MAR	3.19	6.09	2.60
APR	2.74	5.11	2.30	APR	2.62	5.00	2.38
MAY	4.51	8.40	3.52	MAY	4.01	7.65	3.24
JUN	7.89	14.70	7.19	JUN	8.61	16.43	8.10
JUL	8.44	15.72	8.37	JUL	8.44	16.10	7.97
AUG	7.48	13.93	6.69	AUG	7.38	14.08	7.26
SEP	7.05	13.13	6.02	SEP	7.14	13.62	7.04
OCT	3.04	5.67	2.24	OCT	2.86	5.47	2.69
NOV	1.88	3.51	1.57	NOV	1.82	3.47	1.20
DEC	2.14	3.99	1.75	DEC	1.79	3.42	1.38
Annual	53.68	100.00	52.42	Annual	52.39	100.85	
Arcadia Station - Average Rainfall (inches) Period of Record (1908-2000)				Punta Gorda Station - Average Rainfall (inches) Period of Record (1915-2000)			
Month	Average	Percent	Median	Month	Mean	Percent	Median
JAN	2.03	3.96	1.63	JAN	2.02	3.98	1.44
FEB	2.42	4.73	2.02	FEB	2.31	4.55	1.98
MAR	2.72	5.31	1.84	MAR	2.55	5.03	1.96
APR	2.32	4.54	2.08	APR	2.12	4.18	1.68
MAY	4.04	7.89	3.44	MAY	3.51	6.91	2.96
JUN	7.97	15.57	6.64	JUN	8.36	16.48	7.46
JUL	7.82	15.28	7.37	JUL	7.68	15.13	7.62
AUG	7.57	14.78	7.08	AUG	7.68	15.14	7.36
SEP	7.34	14.35	6.95	SEP	7.78	15.34	6.98
OCT	3.54	6.92	2.68	OCT	3.49	6.87	2.87
NOV	1.72	3.37	1.32	NOV	1.61	3.17	1.26
DEC	1.69	3.31	1.23	DEC	1.69	3.32	1.26
Annual	51.18	100.00		Annual	50.73	100.12	

Lake Alfred Station - Average Rainfall (inches) Period of Record (1925-2000)				Lakeland Station - Average Rainfall (inches) Period of Record (1916-2000)			
Month	Mean	Percent	Median	Month	Average	Percent	Median
JAN	2.35	4.62	1.77	JAN	2.27	4.51	1.80
FEB	2.76	5.42	2.48	FEB	2.59	5.16	2.17
MAR	3.55	6.98	3.02	MAR	3.66	7.28	3.17
APR	2.52	4.94	1.87	APR	2.62	5.21	2.08
MAY	4.19	8.23	3.69	MAY	4.09	8.14	3.57
JUN	7.60	14.94	7.35	JUN	7.20	14.32	6.69
JUL	7.40	14.55	7.10	JUL	7.70	15.33	7.64
AUG	7.13	14.00	6.70	AUG	7.26	14.45	6.95
SEP	6.70	13.17	6.16	SEP	6.44	12.82	6.14
OCT	2.92	5.73	1.96	OCT	2.53	5.03	2.15
NOV	1.85	3.63	1.31	NOV	1.78	3.54	1.14
DEC	2.13	4.19	1.75	DEC	2.11	4.21	1.59
Annual	50.90	100.41		Annual	50.25	100.01	

ps)

Winter Haven Station - Average Rainfall (inches) Period of Record (1941-2000)			
Month	Mean	Percent	Median
JAN	2.34	4.66	1.62
FEB	2.67	5.32	2.27
MAR	3.51	7.00	2.86
APR	2.28	4.55	1.98
MAY	3.87	7.72	3.37
JUN	6.81	13.58	6.01
JUL	8.25	16.47	8.10
AUG	6.97	13.90	7.05
SEP	6.46	12.89	5.96
OCT	2.96	5.92	2.42
NOV	2.05	4.09	1.47
DEC	1.99	3.97	1.76
Annual	50.12	100.07	

APPENDIX RH

Riparian Habitats - RH

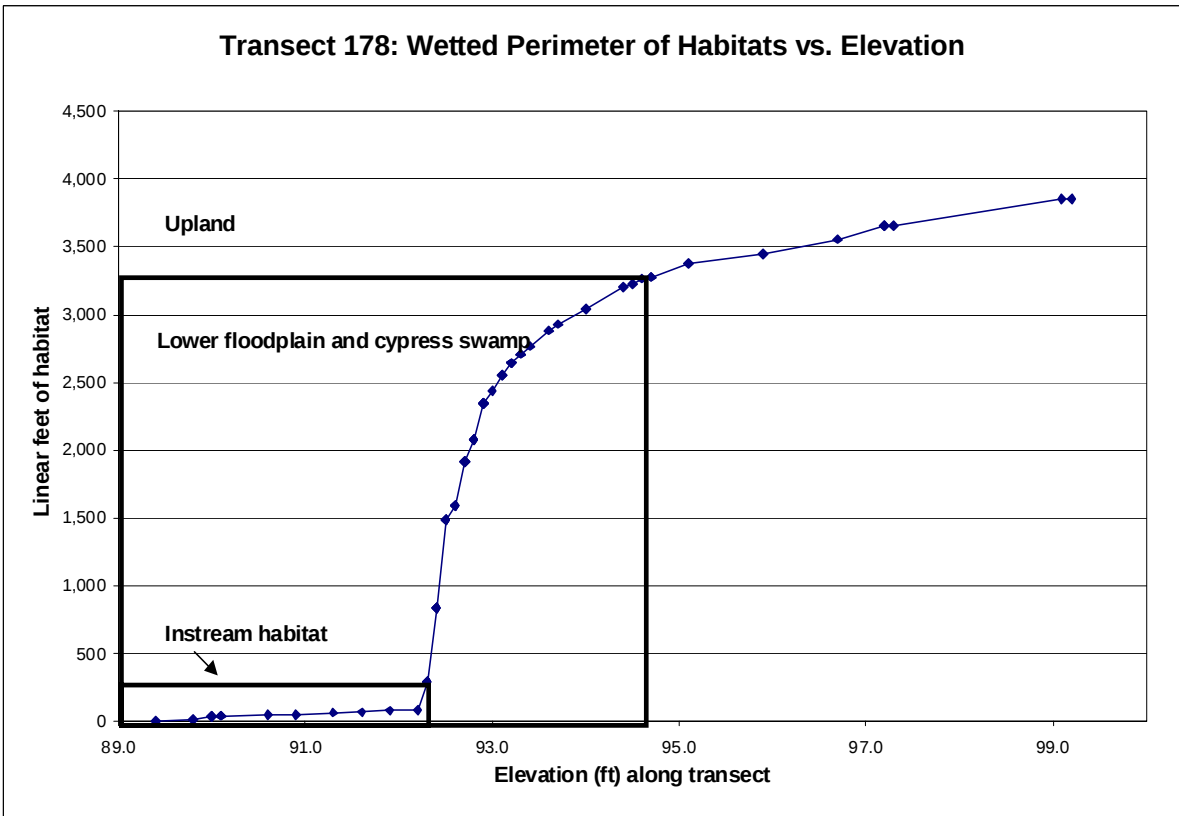
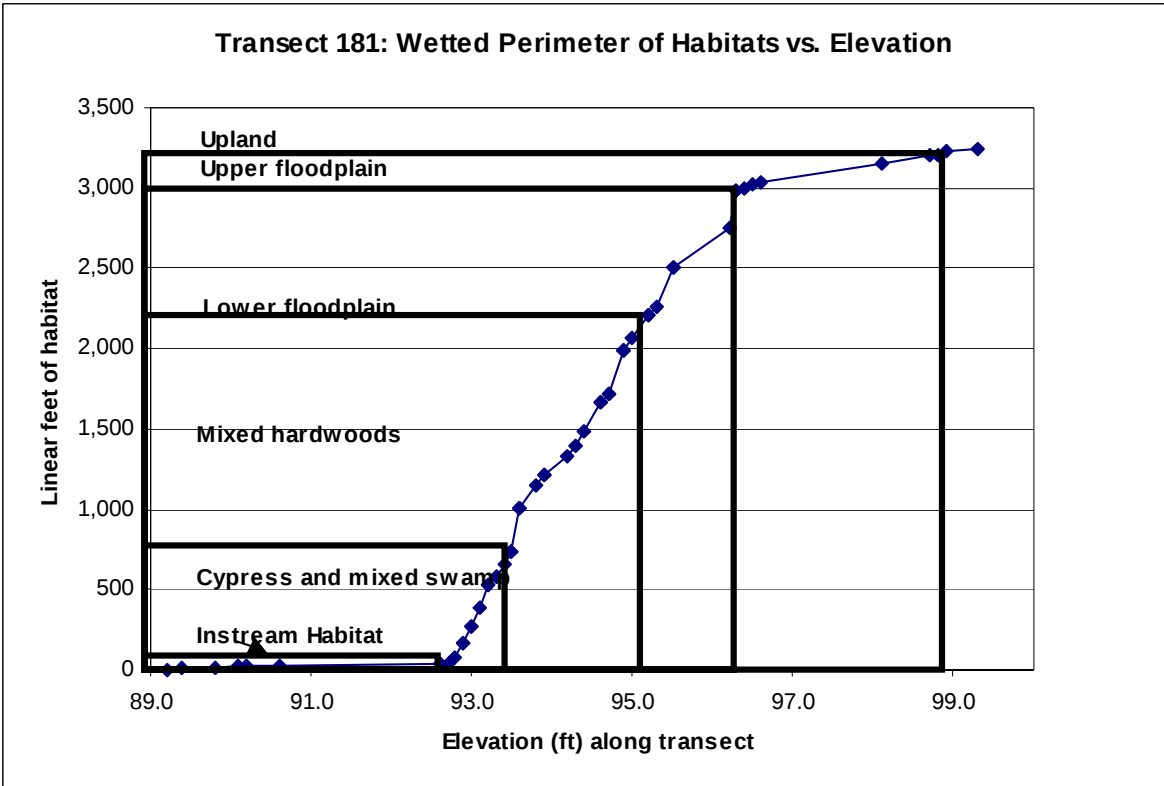
This appendix contains two types of plots. For each transect the wetted perimeter of each particular riparian habitat (e.g., cypress swamp, lower floodplain, upper floodplain) is plotted versus elevation. These plots are followed by a series of paired plots of the total and longest consecutive number of days of inundation per year to the median elevation of various riparian habitats (e.g., cypress swamp, mixed hardwood swamp, lower floodplain, upper floodplain) at transect sites on the Upper Peace River.

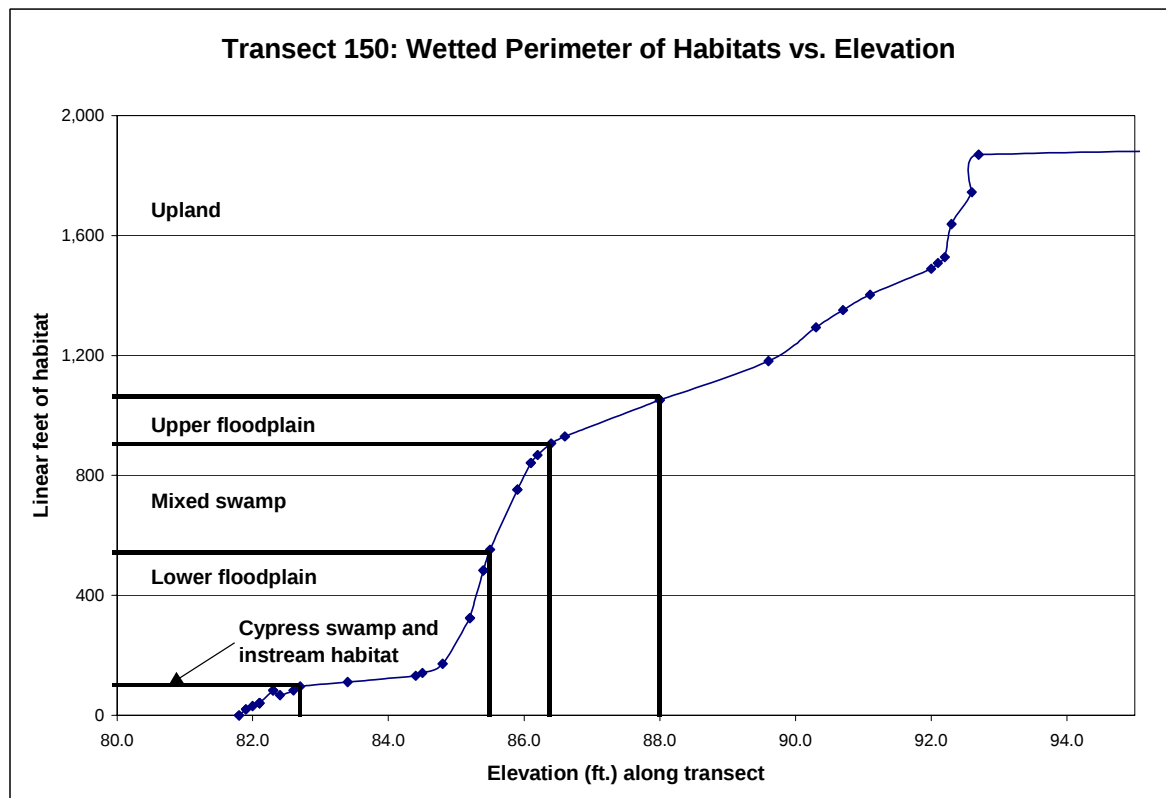
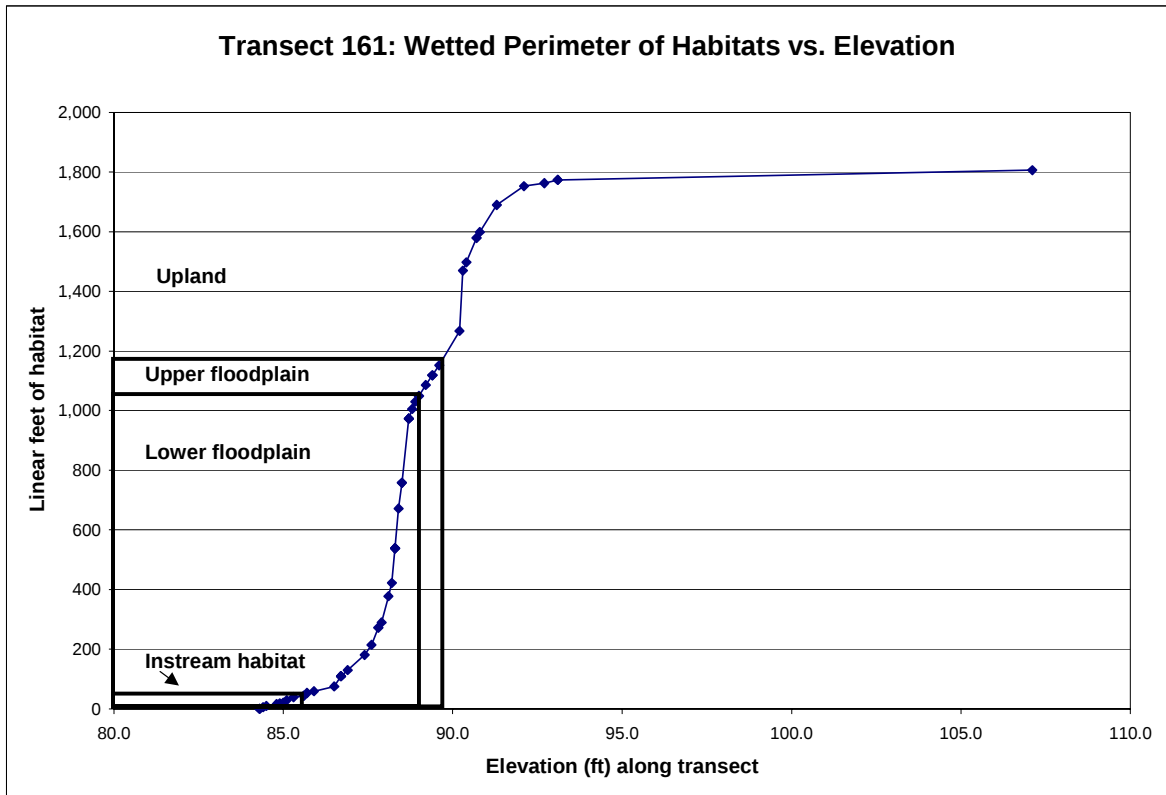
Chart or Table	Page
Transect 181: Wetted perimeter of habitats versus elevation	RH-5
Transect 178: Wetted perimeter of habitats versus elevation	RH-5
Transect 161: Wetted perimeter of habitats versus elevation	RH-6
Transect 150: Wetted perimeter of habitats versus elevation	RH-6
Transect 146: Wetted perimeter of habitats versus elevation	RH-7
Transect 143: Wetted perimeter of habitats versus elevation	RH-7
Transect 134: Wetted perimeter of habitats versus elevation	RH-8
Transect 119: Wetted perimeter of habitats versus elevation	RH-8
Transect 106: Wetted perimeter of habitats versus elevation	RH-9
Transect 99: Wetted perimeter of habitats versus elevation	RH-9
Transect 91: Wetted perimeter of habitats versus elevation	RH-10
Transect 83: Wetted perimeter of habitats versus elevation	RH-10
Transect 79: Wetted perimeter of habitats versus elevation	RH-11
Transect 49: Wetted perimeter of habitats versus elevation	RH-11
Transect 48: Wetted perimeter of habitats versus elevation	RH-12
Transect 33: Wetted perimeter of habitats versus elevation	RH-12
Transect 15: Wetted perimeter of habitats versus elevation	RH-13
Transect 181 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-14
Transect 178 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-15
Transect 161 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-16
Transect 150 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-17
Transect 146 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-18
Transect 143 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-19
Transect 134 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-20

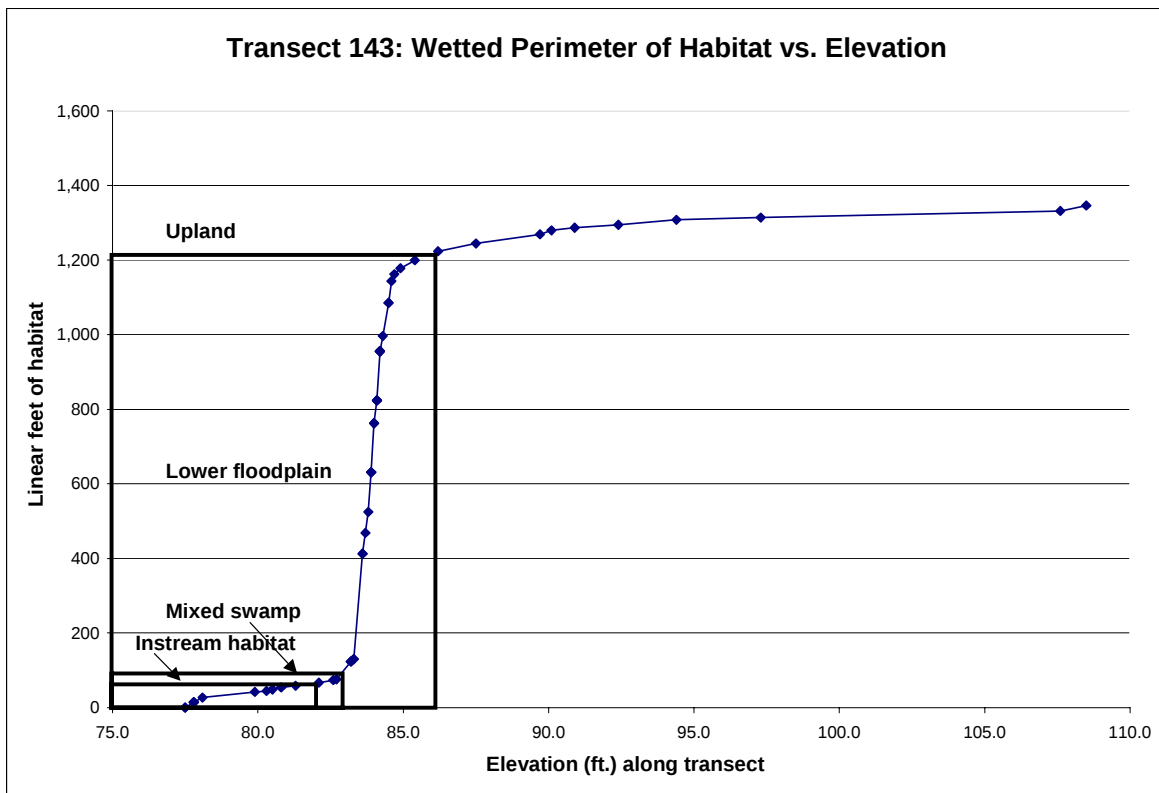
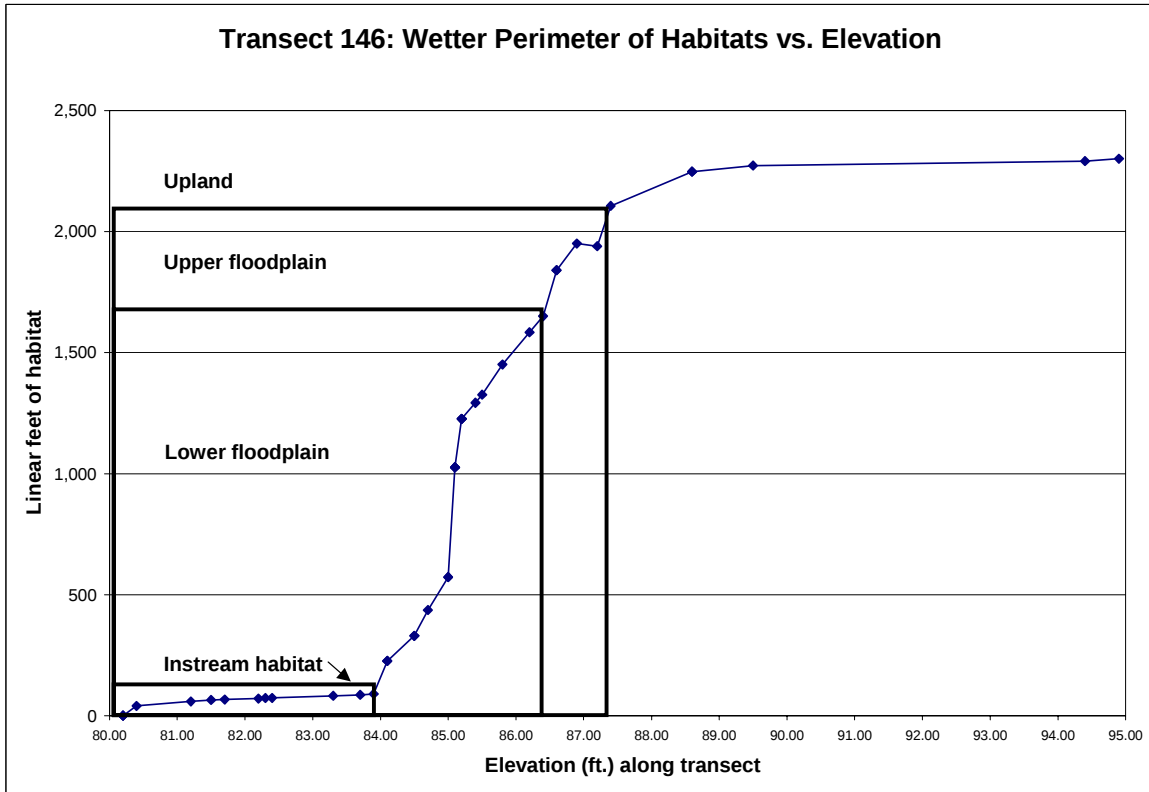
Transect 119 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-21
Transect 106 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-22
Transect 99 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-23
Transect 91 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-24
Transect 79 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-25
Transect 49 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-26
Transect 48 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-27
Transect 15 - Total and longest consecutive number of days of of inundation to median elevation of lower floodplain	RH-28
Transect 181 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-29
Transect 161 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-30
Transect 150 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-31
Transect 146 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-32
Transect 134 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-33
Transect 119 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-34
Transect 106 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-35
Transect 99 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-36
Transect 91 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-37
Transect 49 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-38
Transect 33 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-39
Transect 15 - Total and longest consecutive number of days of of inundation to median elevation of upper floodplain	RH-40
Transect 181 - Total and longest consecutive number of days of of inundation to median elevation of cypress swamp	RH-41

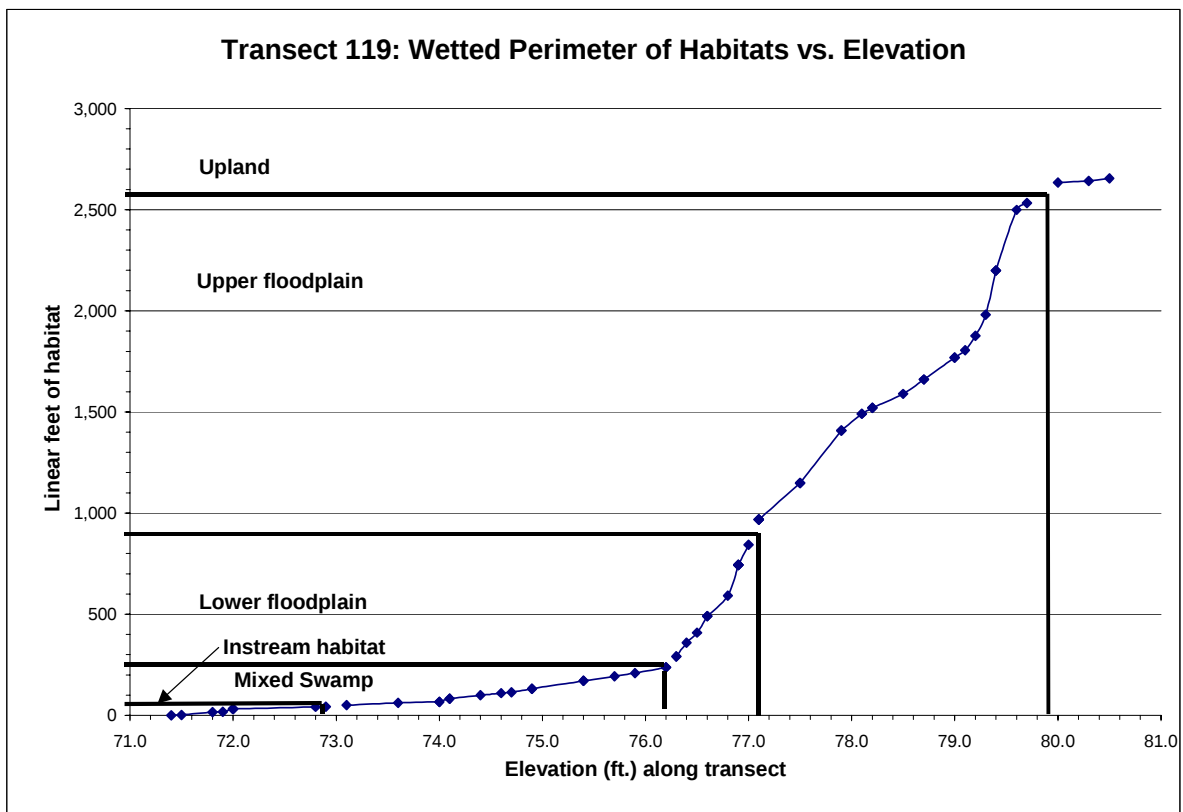
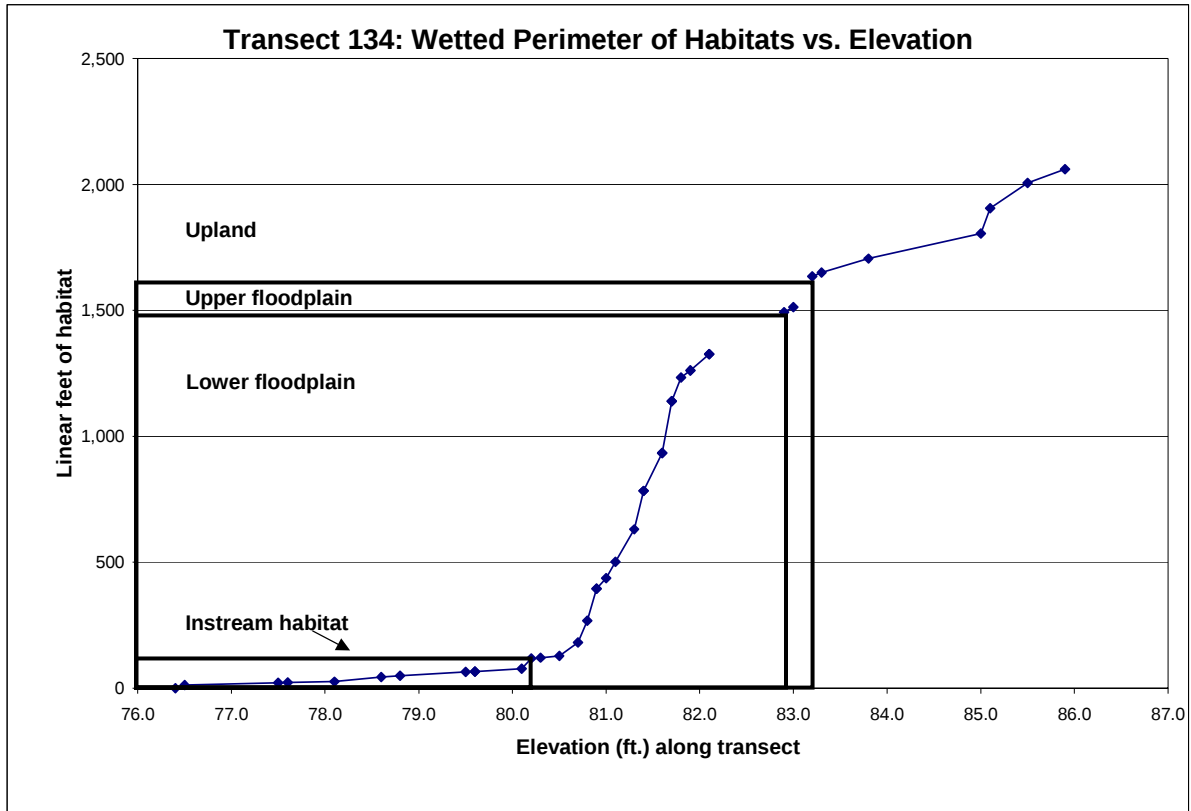
Transect 178 - Total and longest consecutive number of days of of inundation to median elevation of cypress swamp	RH-42
Transect 181 - Total and longest consecutive number of days of of inundation to median elevation of mixed swamp	RH-43
Transect 150 - Total and longest consecutive number of days of of inundation to median elevation of mixed swamp	RH-44
Transect 143 - Total and longest consecutive number of days of of inundation to median elevation of mixed swamp	RH-45
Transect 119 - Total and longest consecutive number of days of of inundation to median elevation of mixed swamp	RH-46
Transect 181 - Total and longest consecutive number of days of of inundation to minimum elevation of cypress swamp	RH-47
Transect 178 - Total and longest consecutive number of days of of inundation to minimum elevation of cypress swamp	RH-48
Transect 178 - Total and longest consecutive number of days of of inundation to minimum elevation of mixed swamp	RH-49
Transect 150 - Total and longest consecutive number of days of of inundation to minimum elevation of mixed swamp	RH-50
Transect 143 - Total and longest consecutive number of days of of inundation to minimum elevation of mixed swamp	RH-51
Transect 119 - Total and longest consecutive number of days of of inundation to minimum elevation of mixed swamp	RH-52
Transect 181 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-53
Transect 178 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-54
Transect 161 - Total number of days of minimum elevation of of lower floodplain	RH-55
Transect 150 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-56
Transect 146 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-57
Transect 143 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-58
Transect 134 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-59
Transect 119 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-60
Transect 106 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-61
Transect 99 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-62

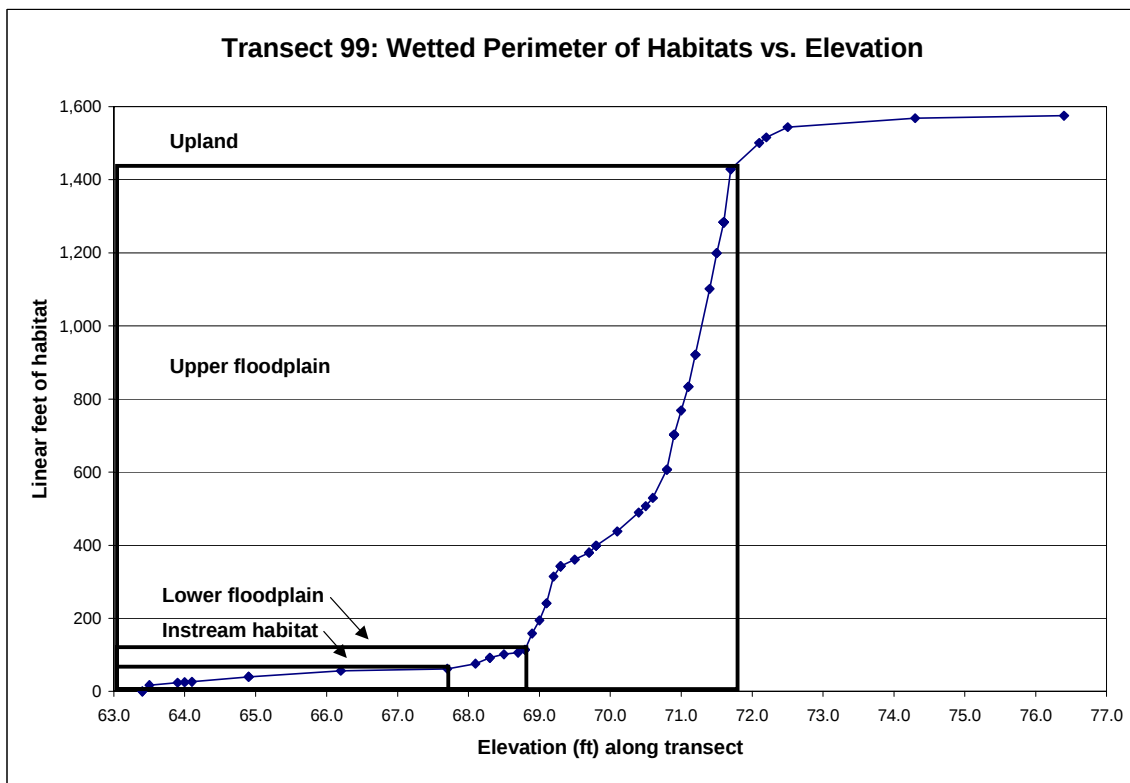
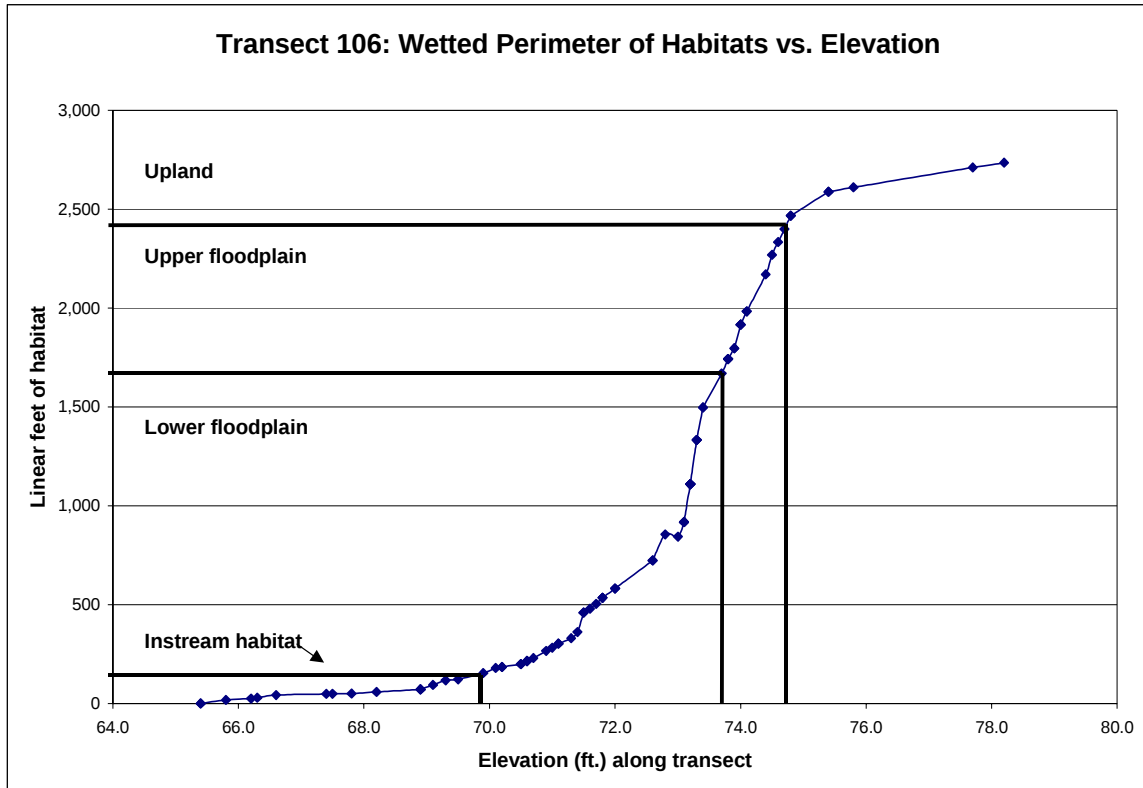
Transect 91 - Total number of days of minimum elevation of of lower floodplain	RH-63
Transect 79 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-64
Transect 49 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-65
Transect 48 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-66
Transect 15 - Total and longest consecutive number of days of of inundation to minimum elevation of lower floodplain	RH-67
Transect 181 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-68
Transect 178 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-69
Transect 150 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-70
Transect 146 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-71
Transect 143 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-72
Transect 134 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-73
Transect 119 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-74
Transect 106 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-75
Transect 99 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-76
Transect 91 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-77
Transect 79 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-78
Transect 49 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-78
Transect 48 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-79
Transect 33 - Total and longest consecutive number of days of of inundation to minimum elevation of the upland zone	RH-80

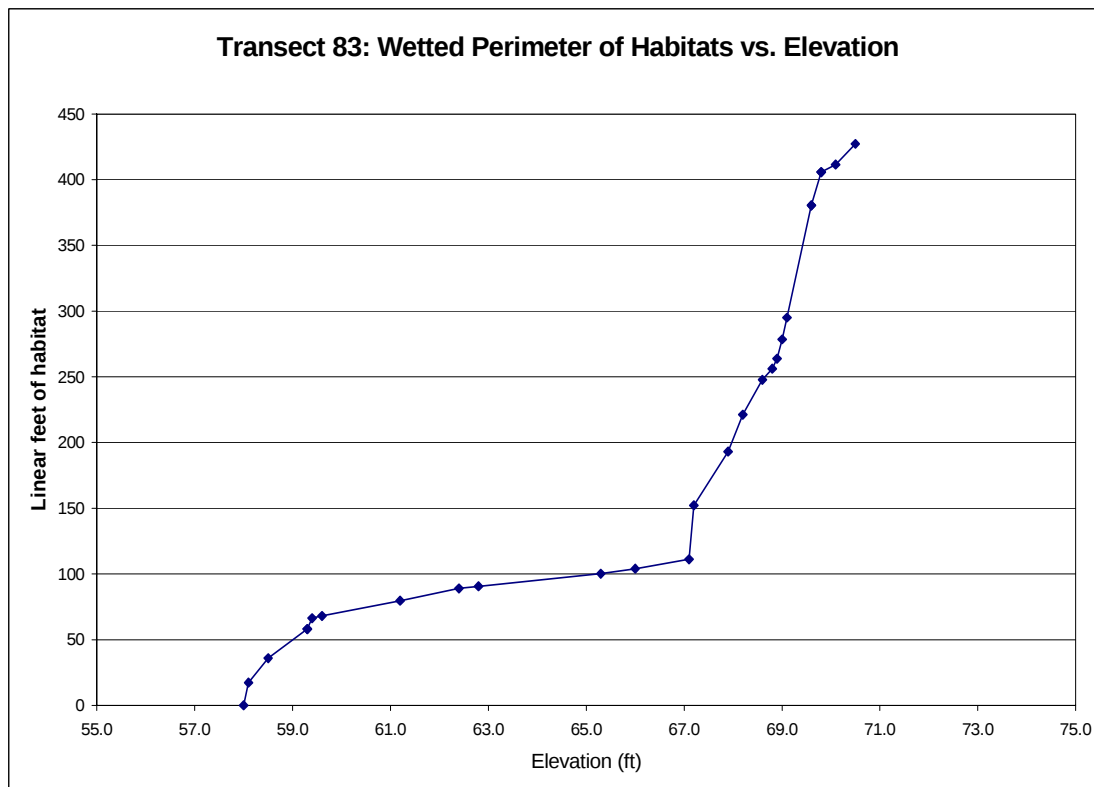
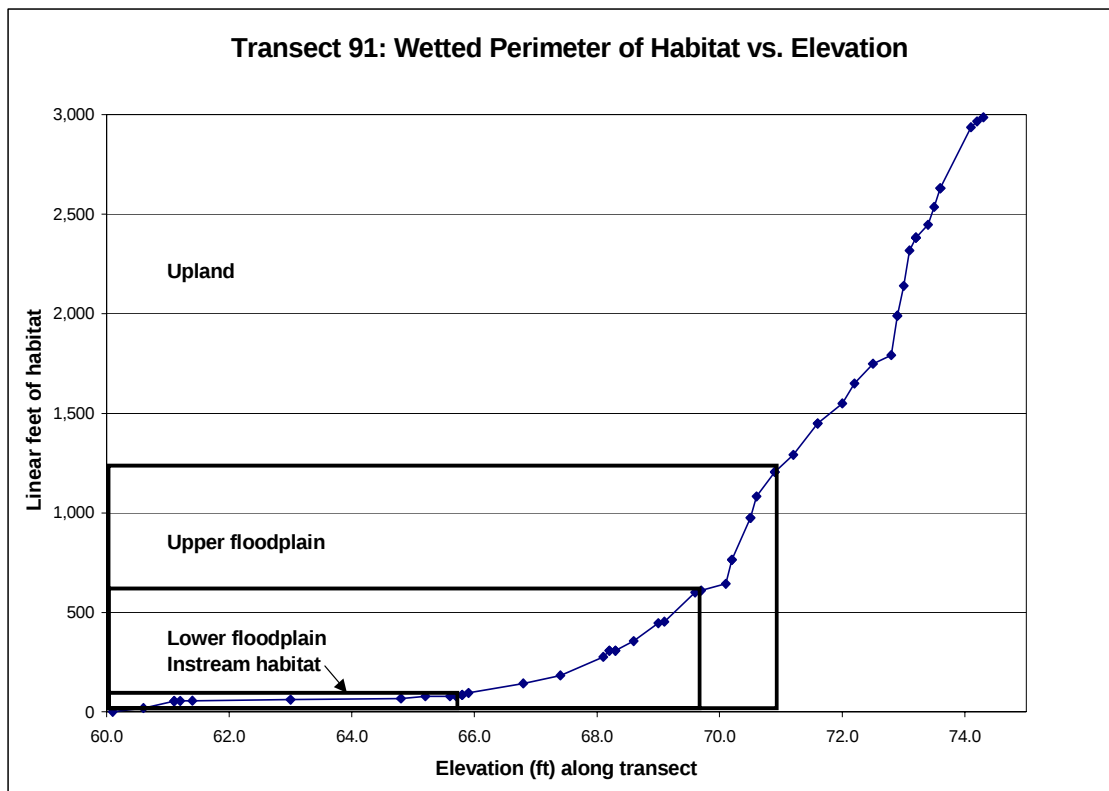




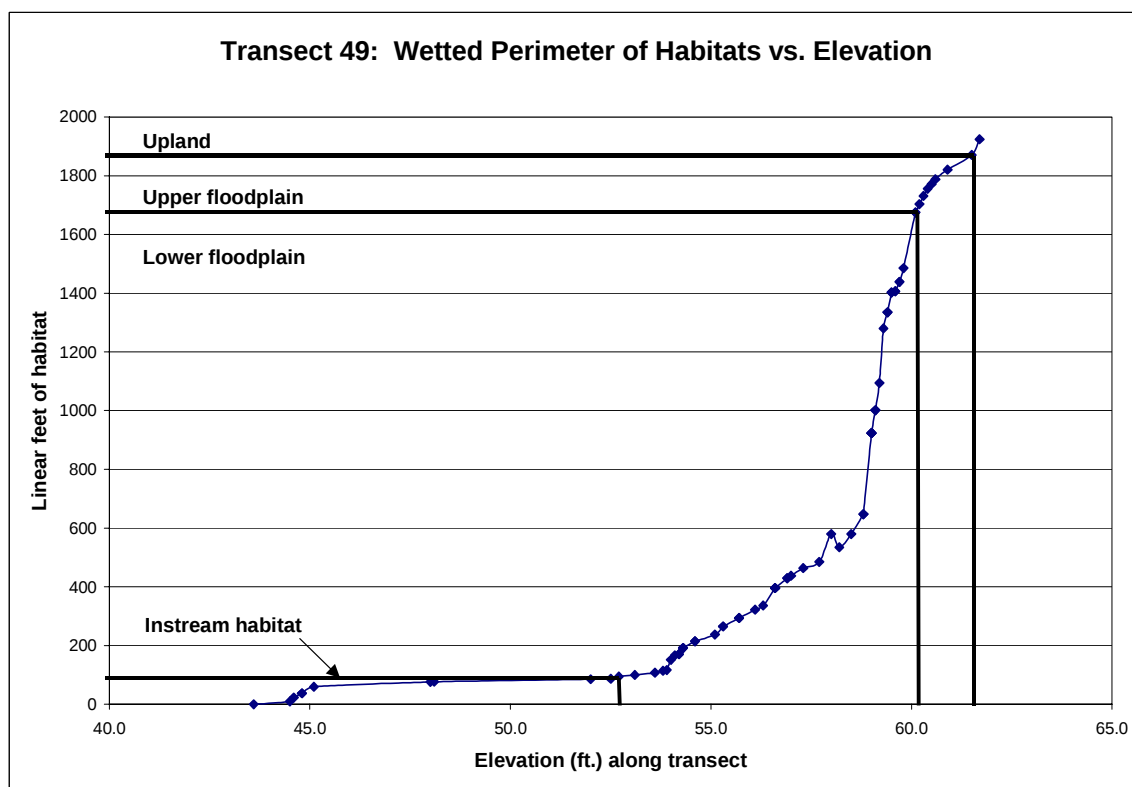
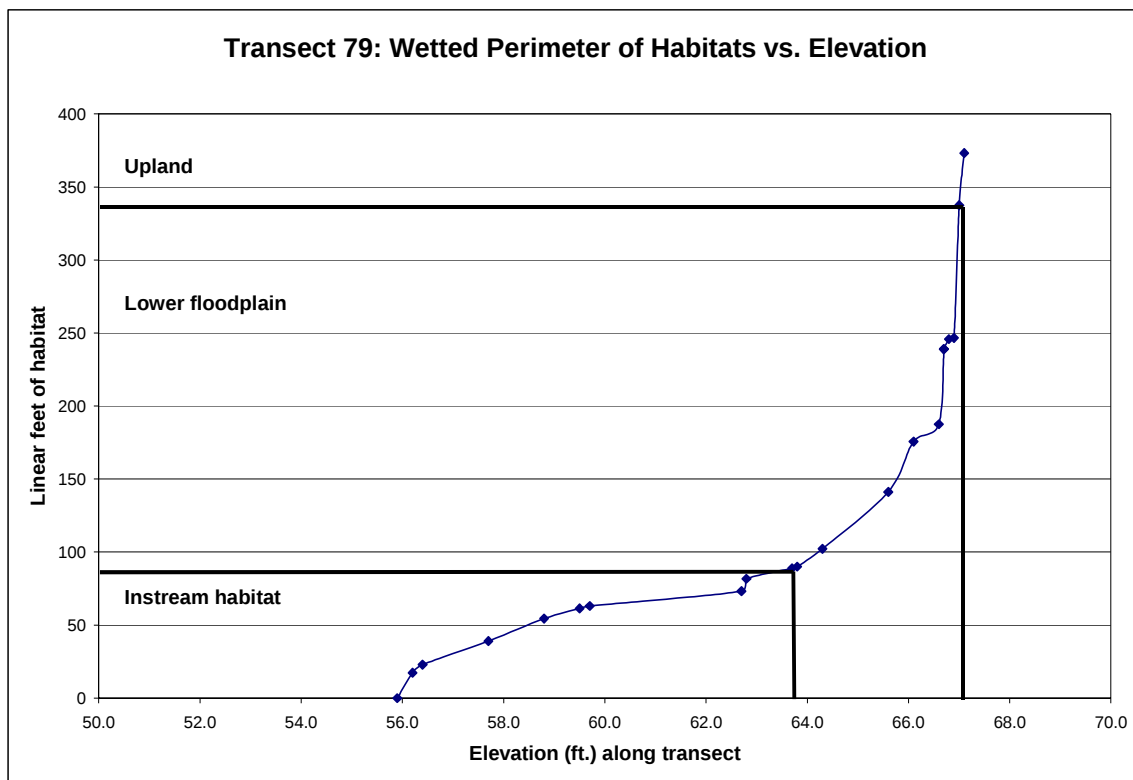


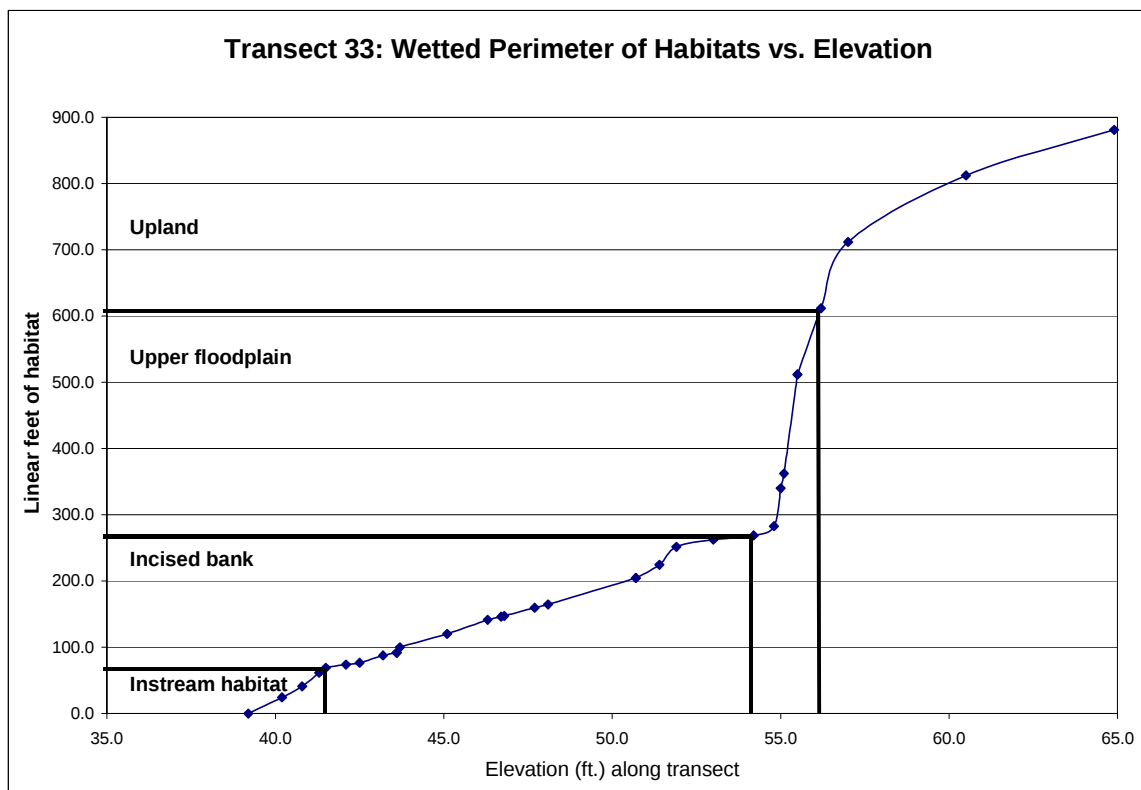
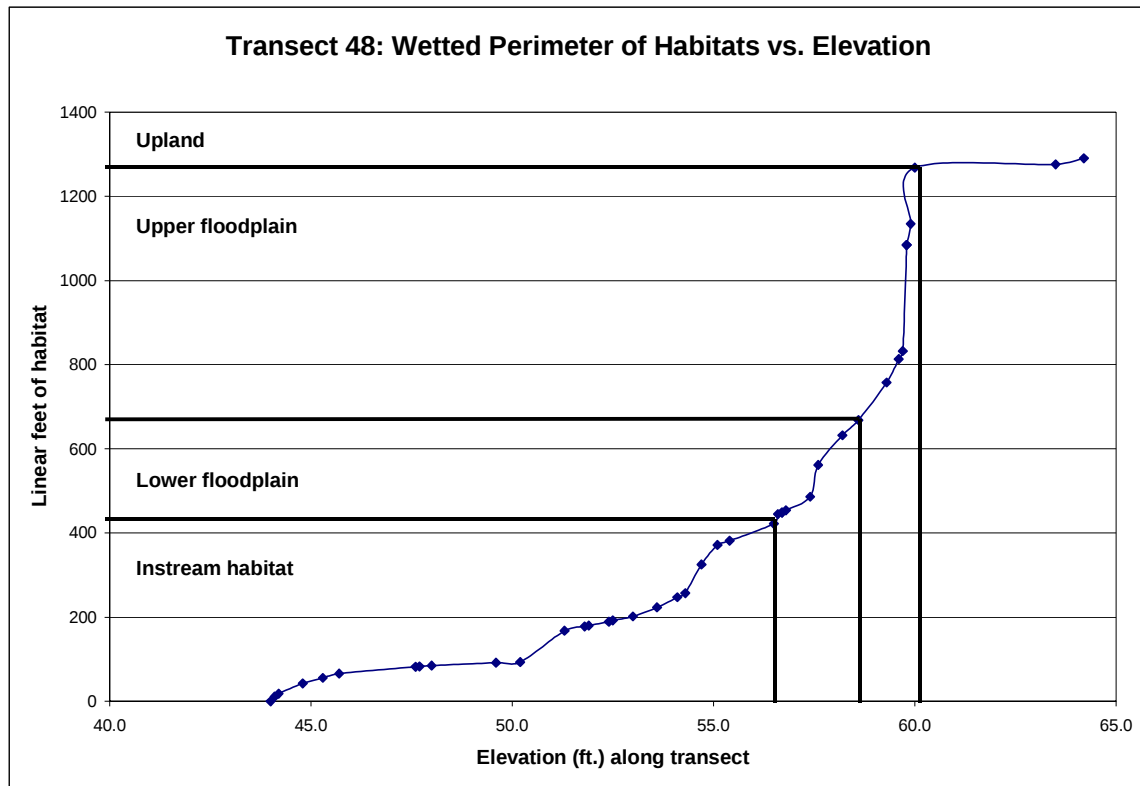


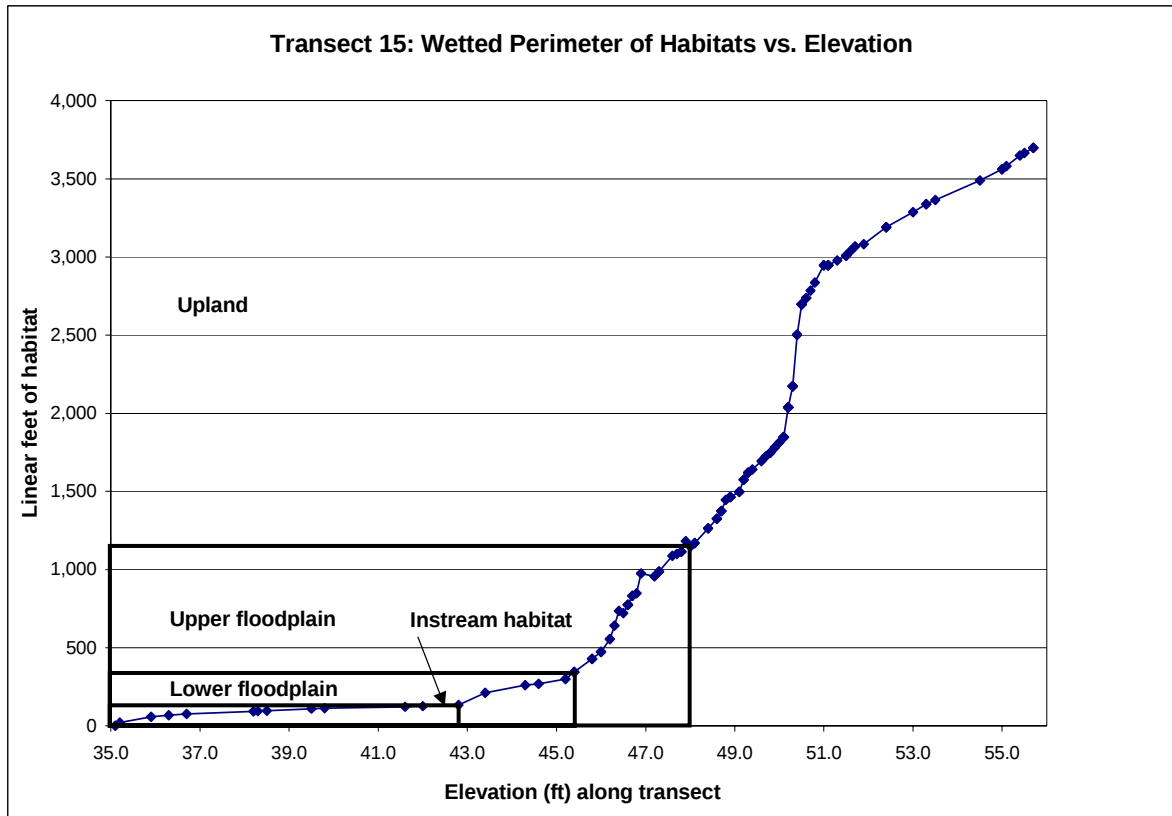


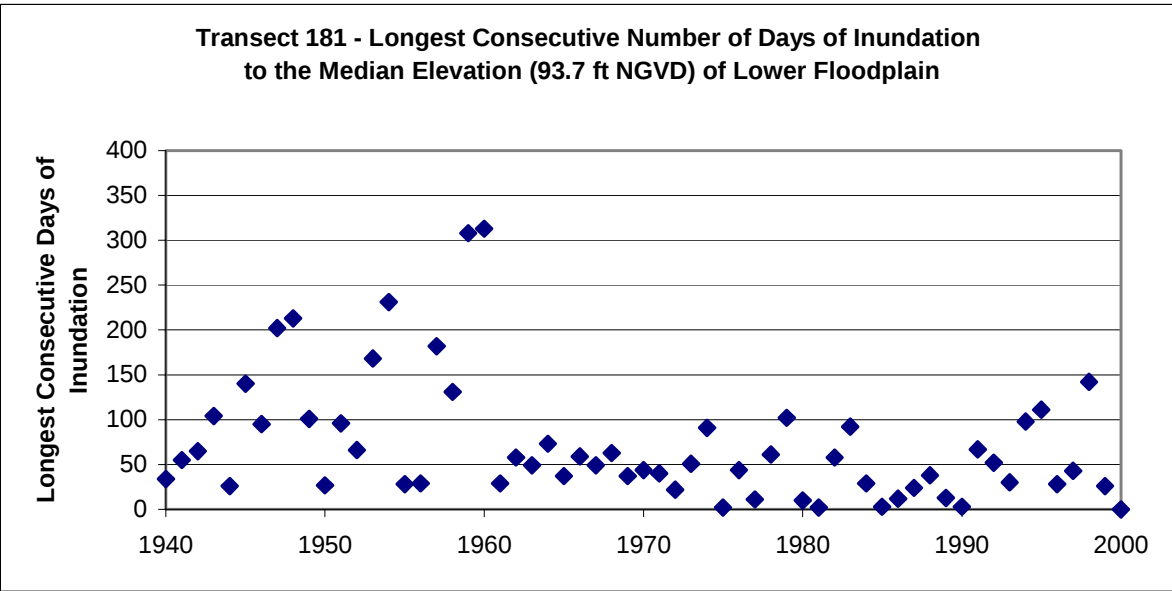
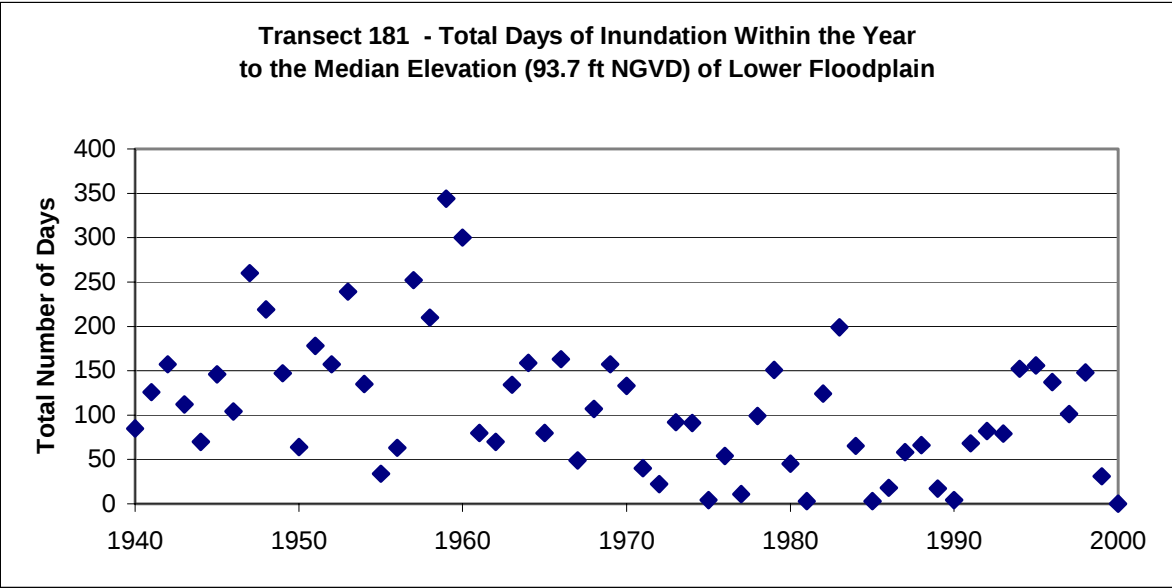


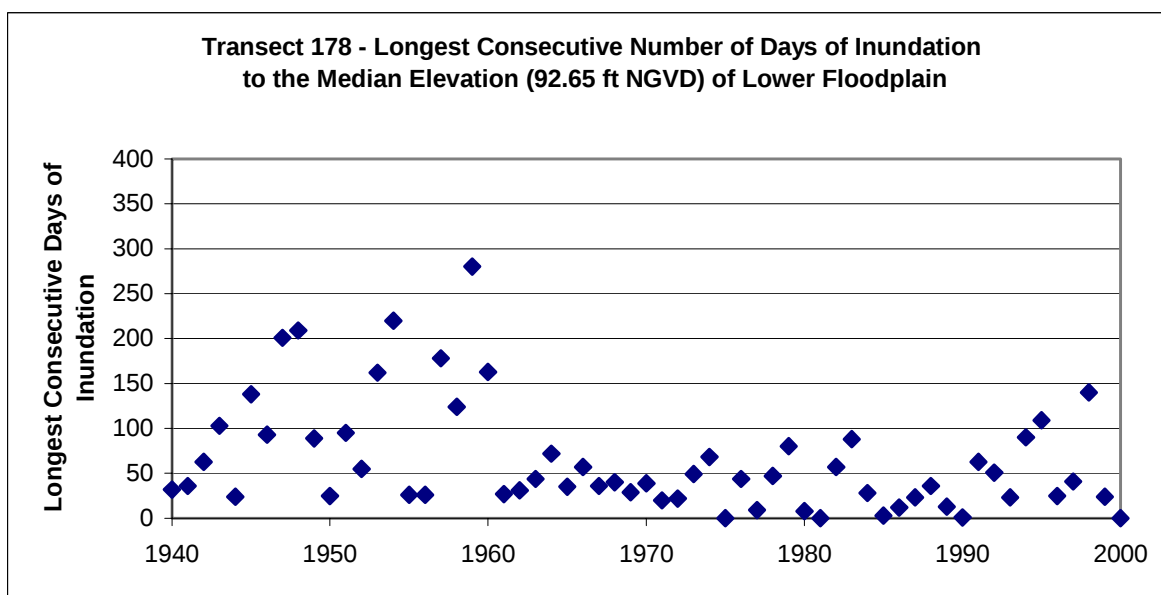
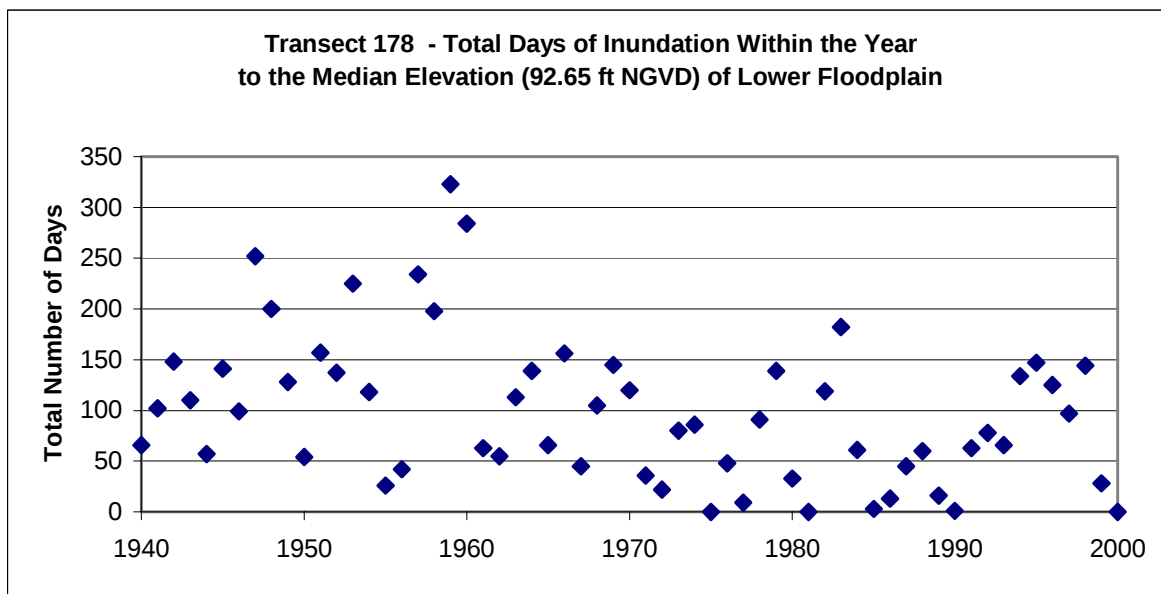
* please note that transect 83 was only used for instream habitat analysis - it was designated as a backup riparian habitat site but was not used

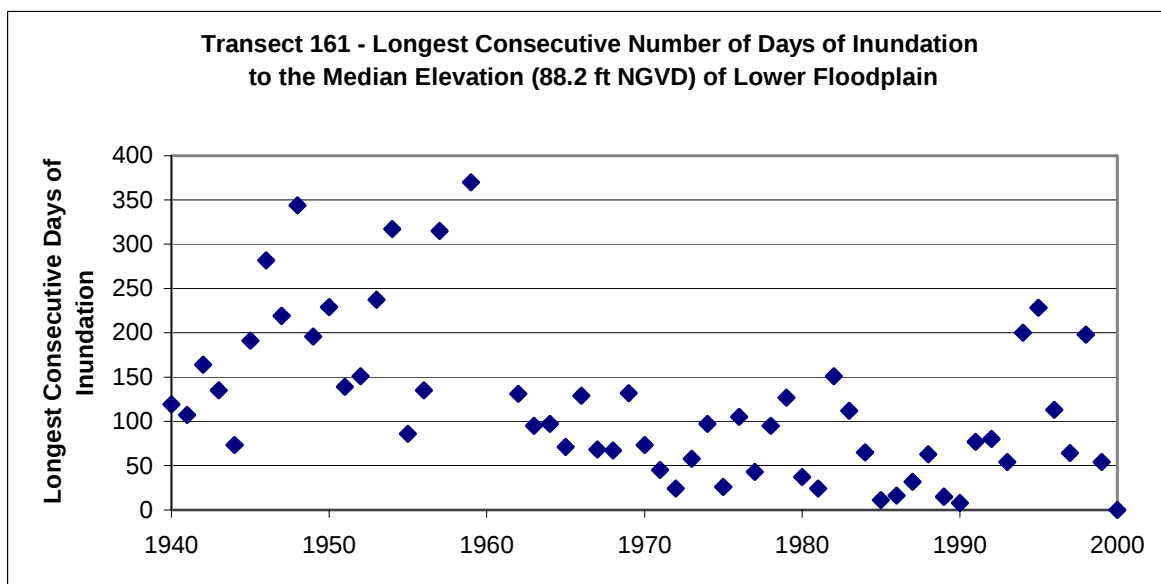
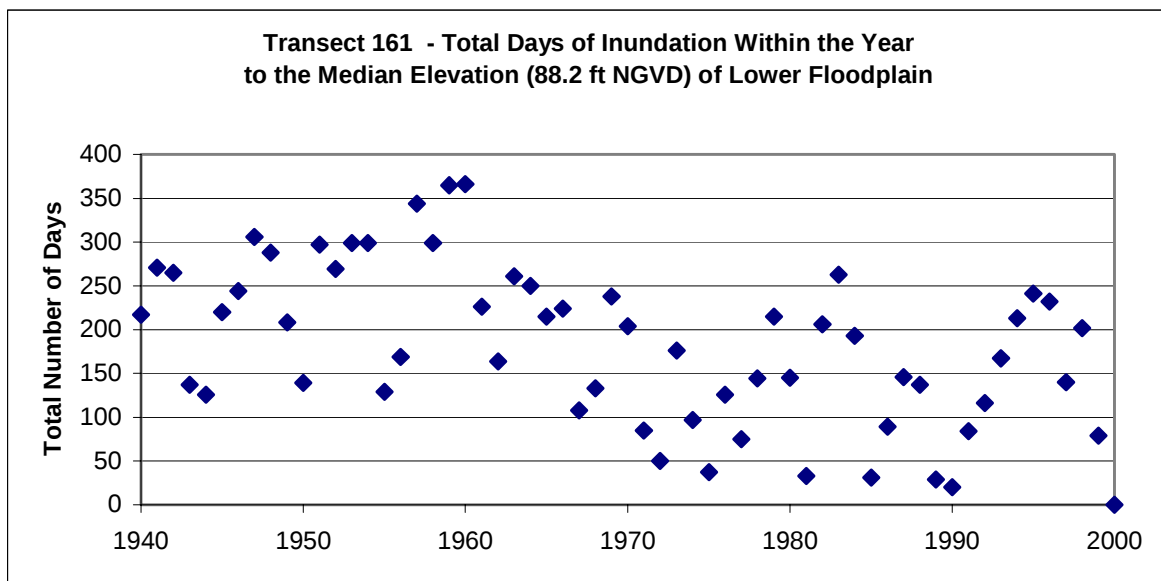


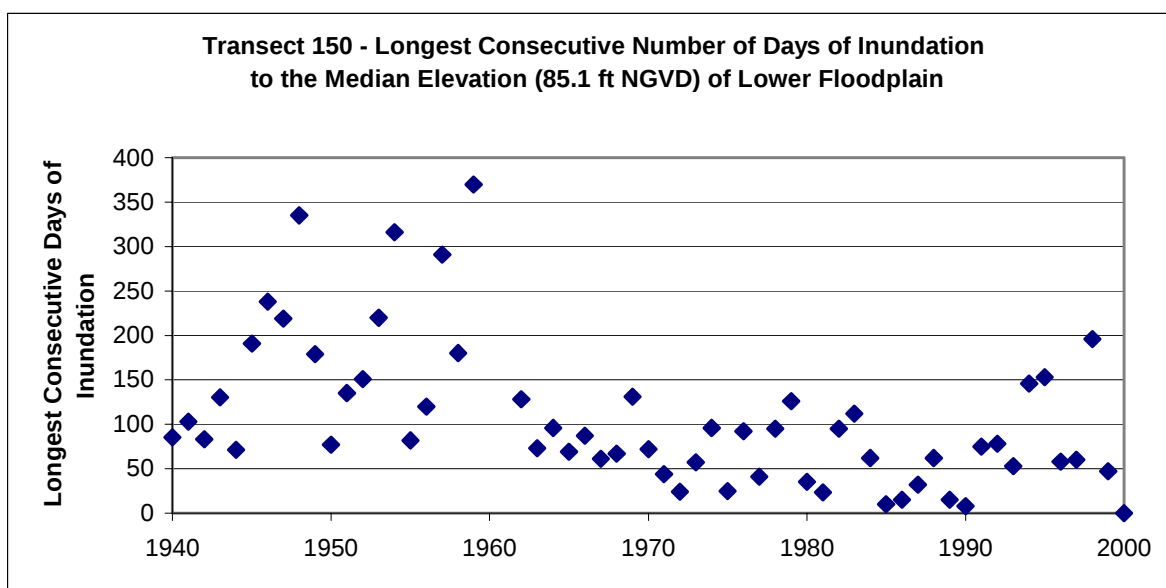
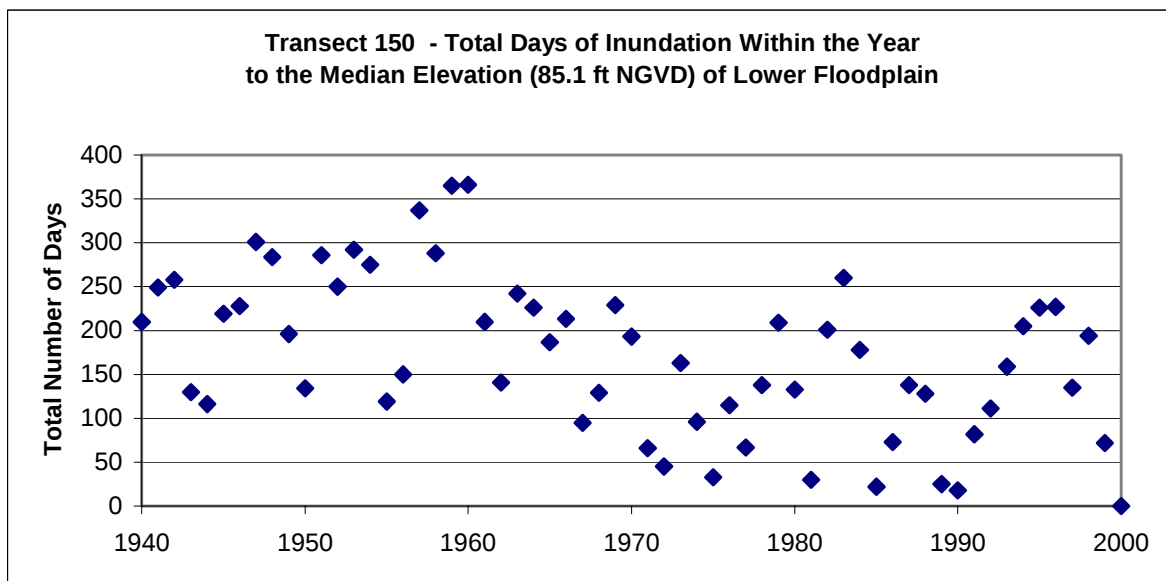


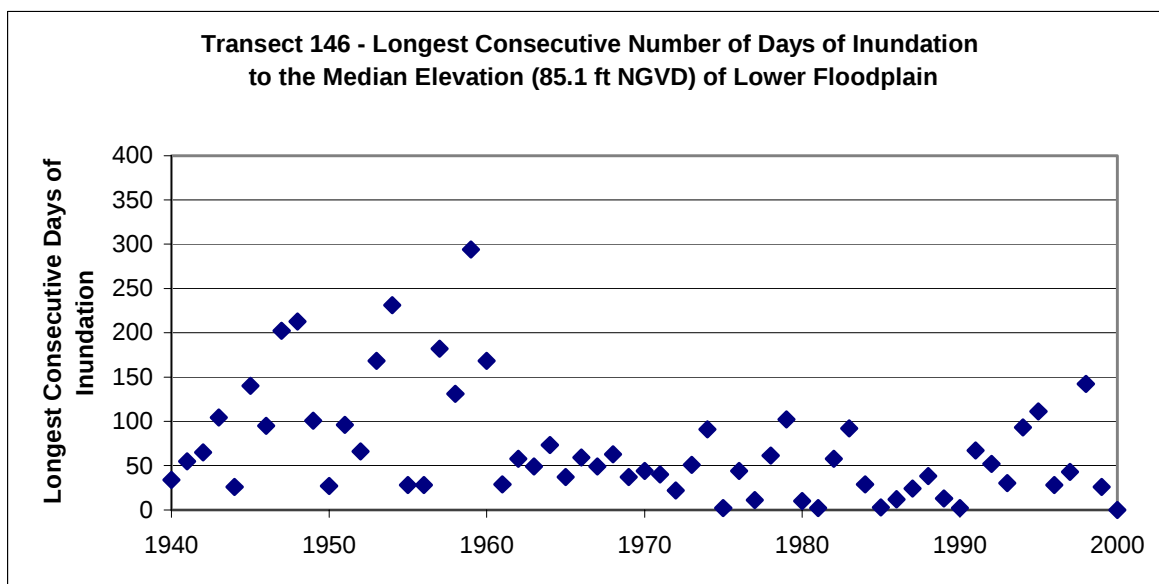
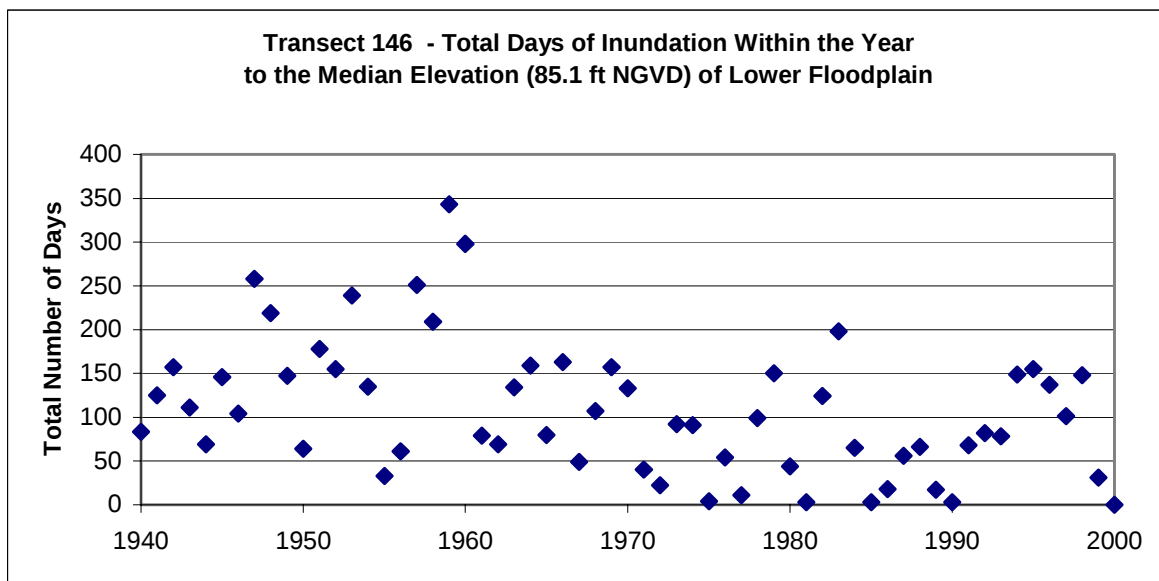


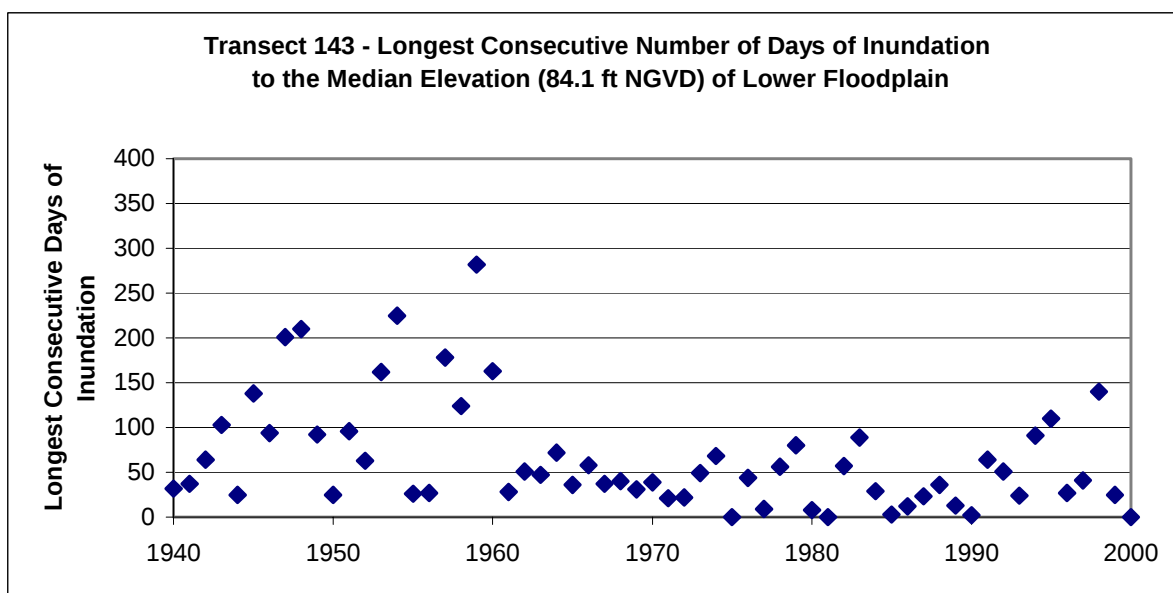
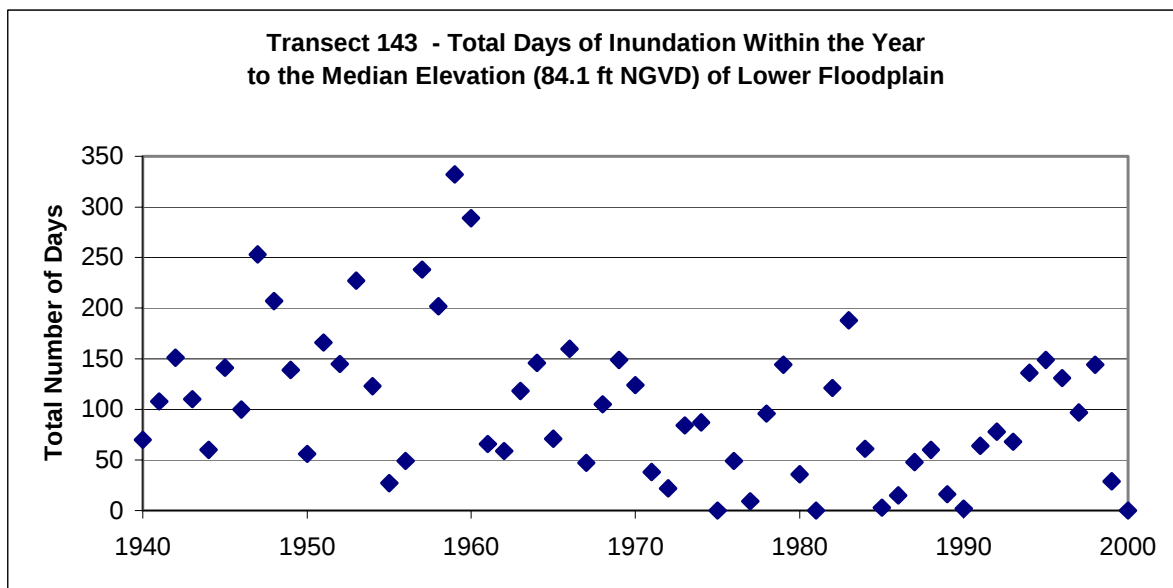


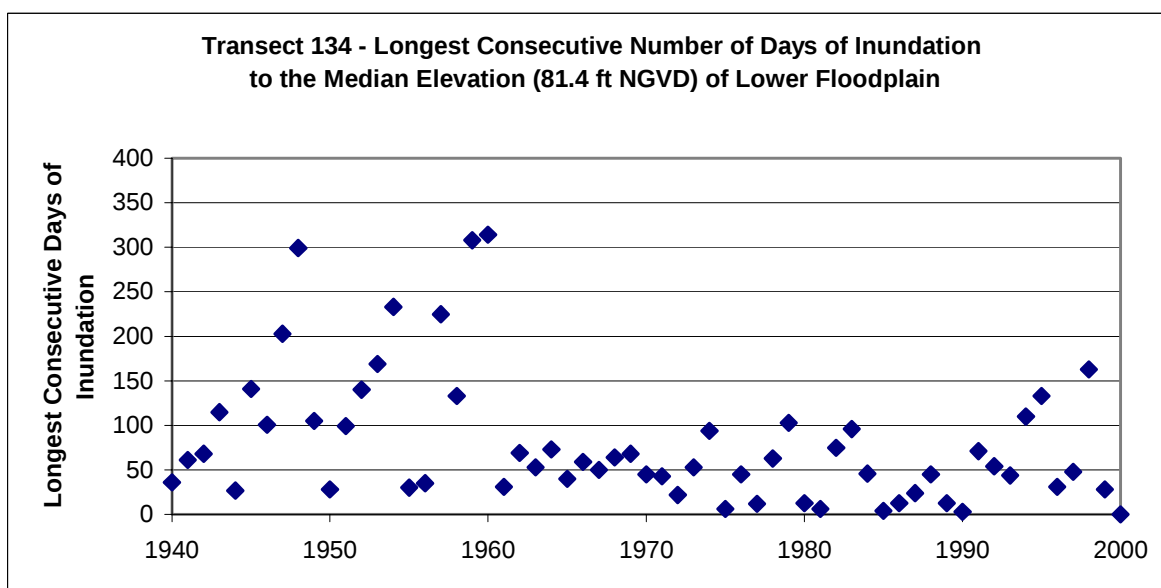
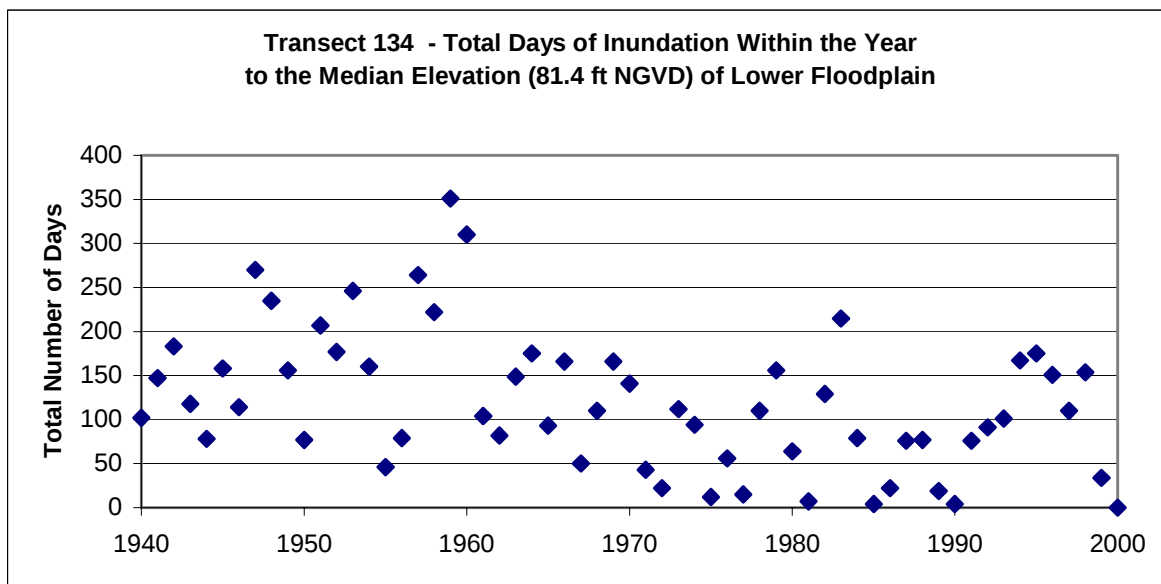


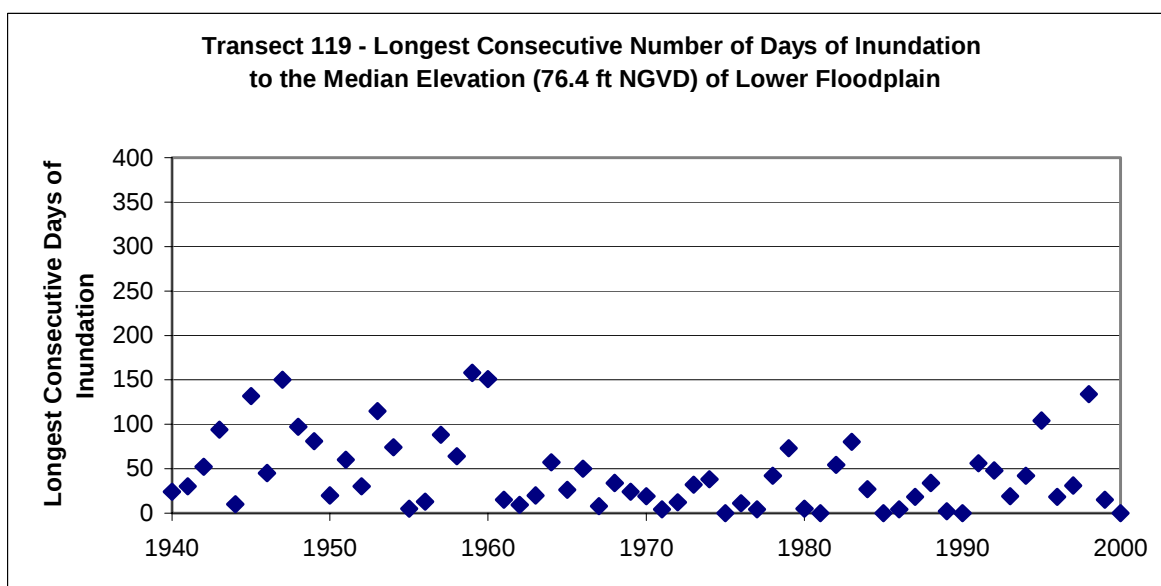
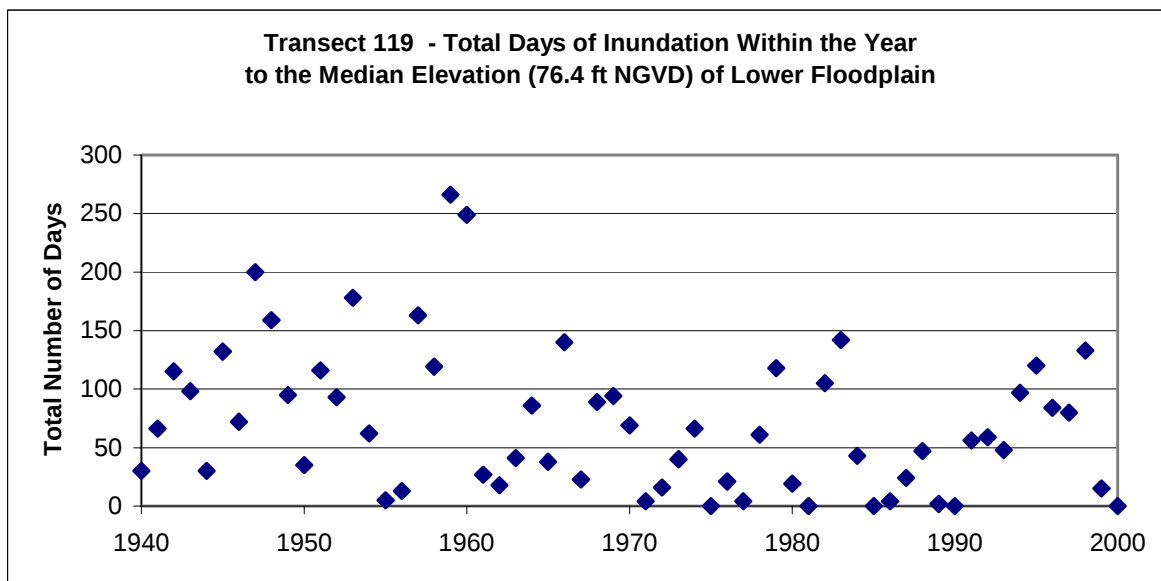


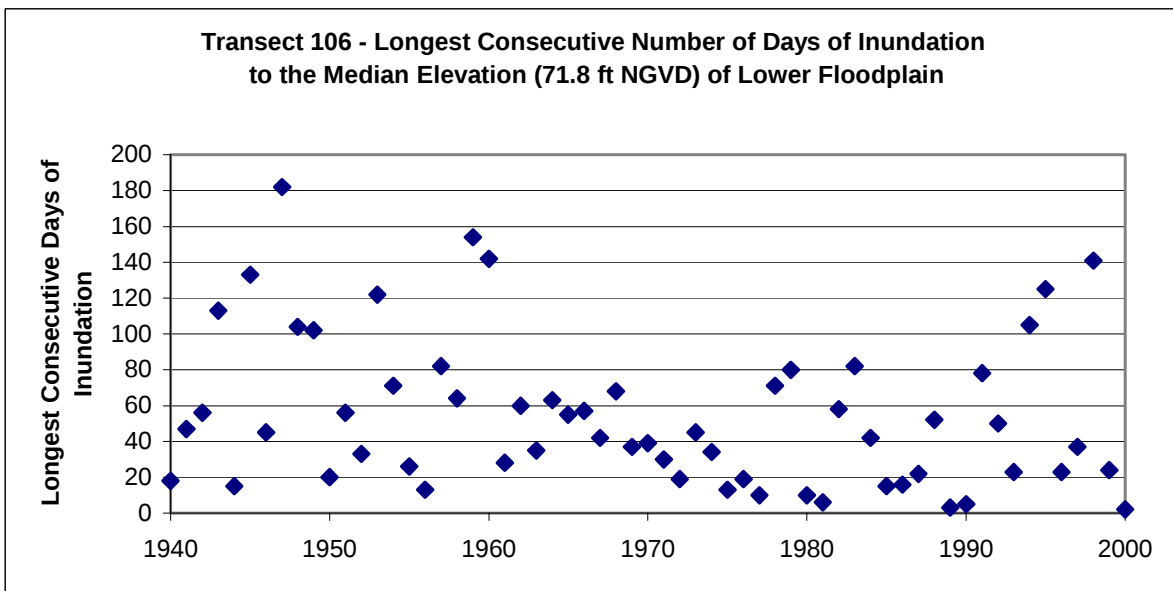
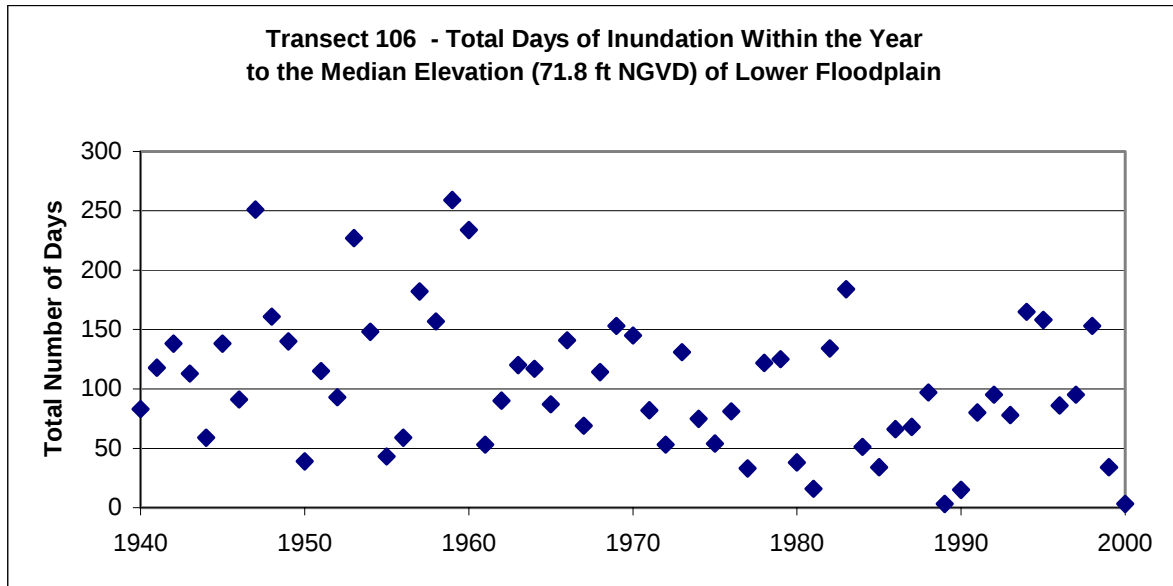


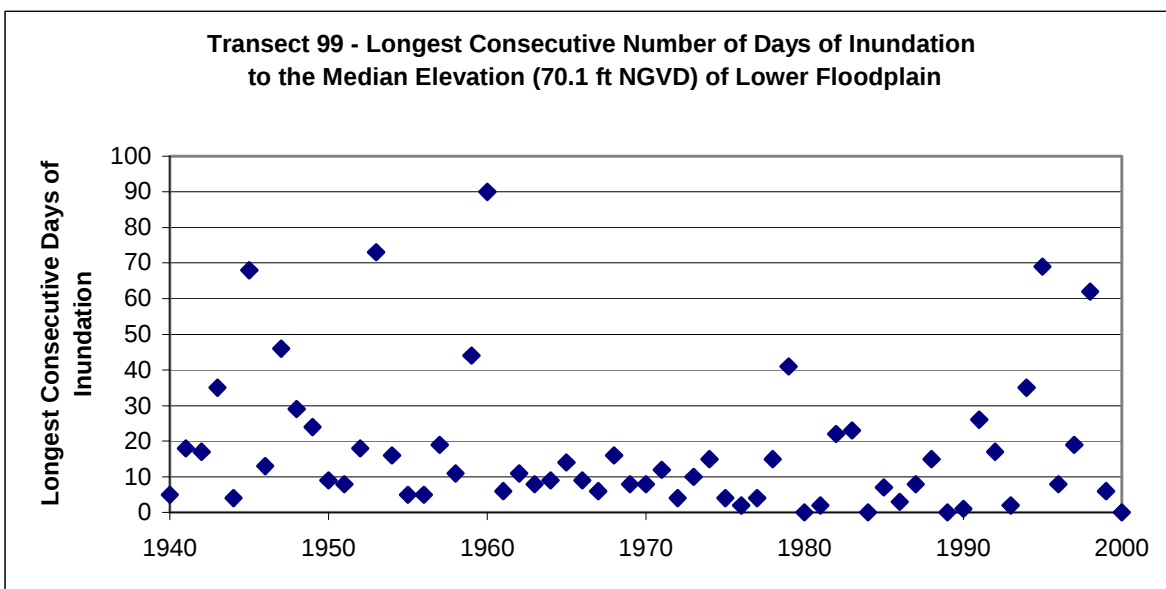
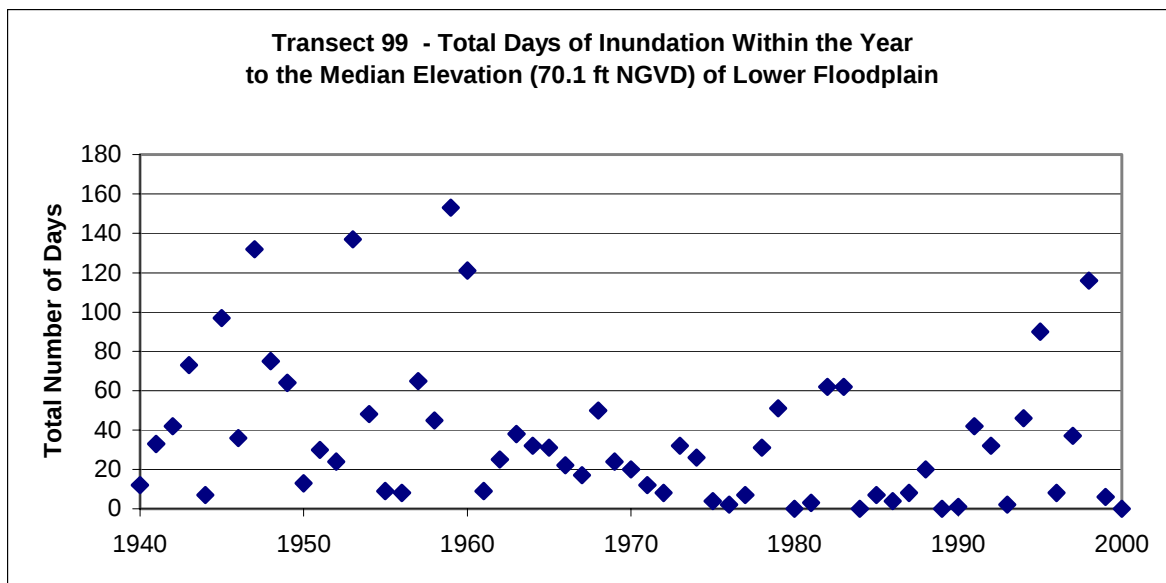


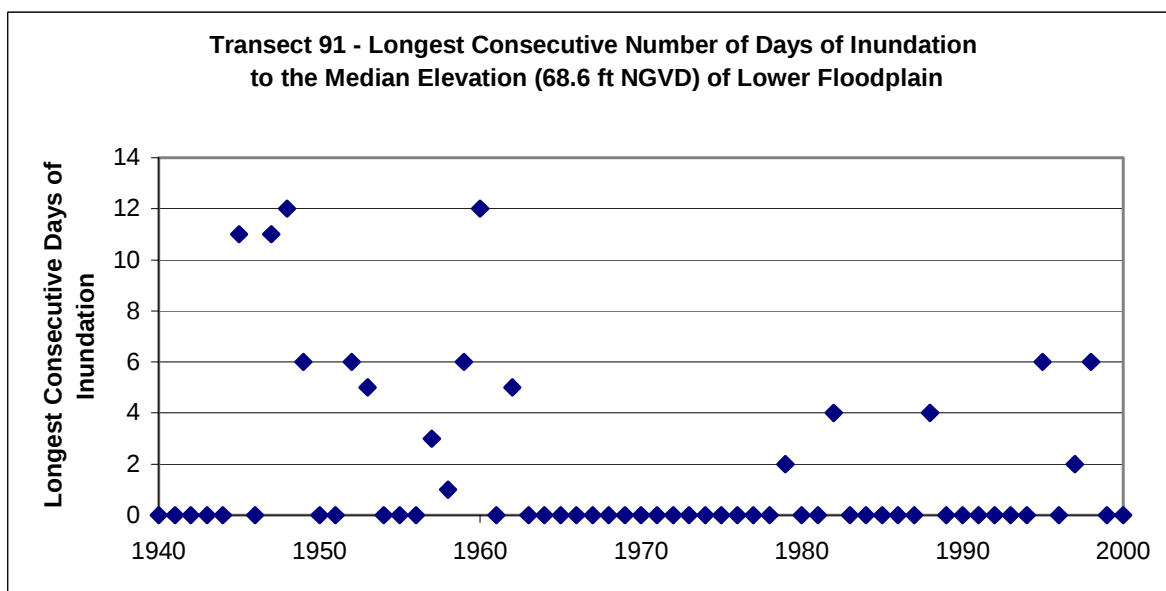
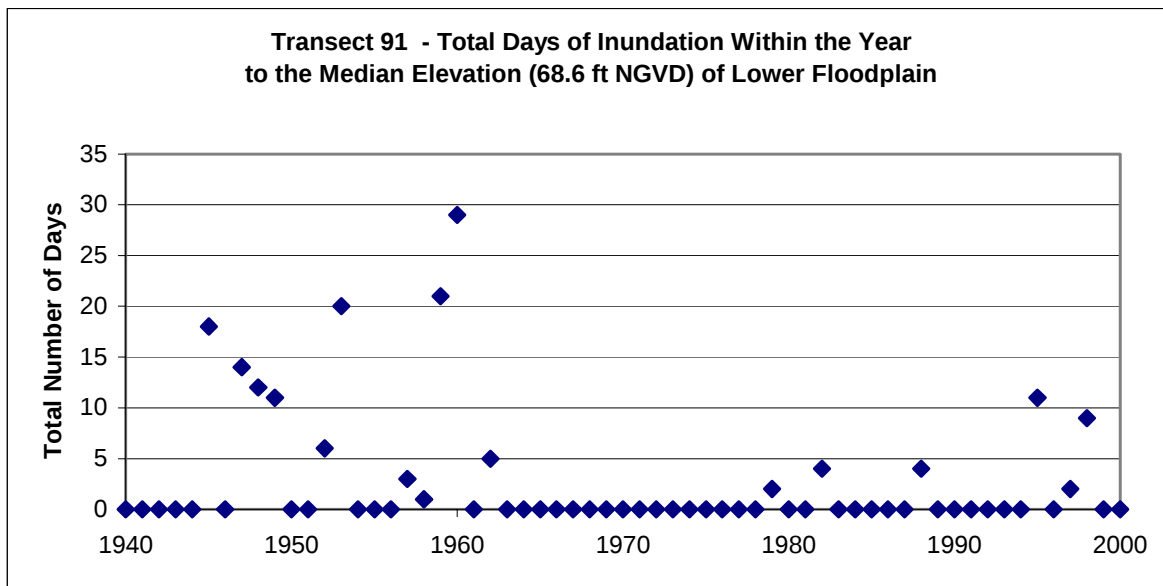


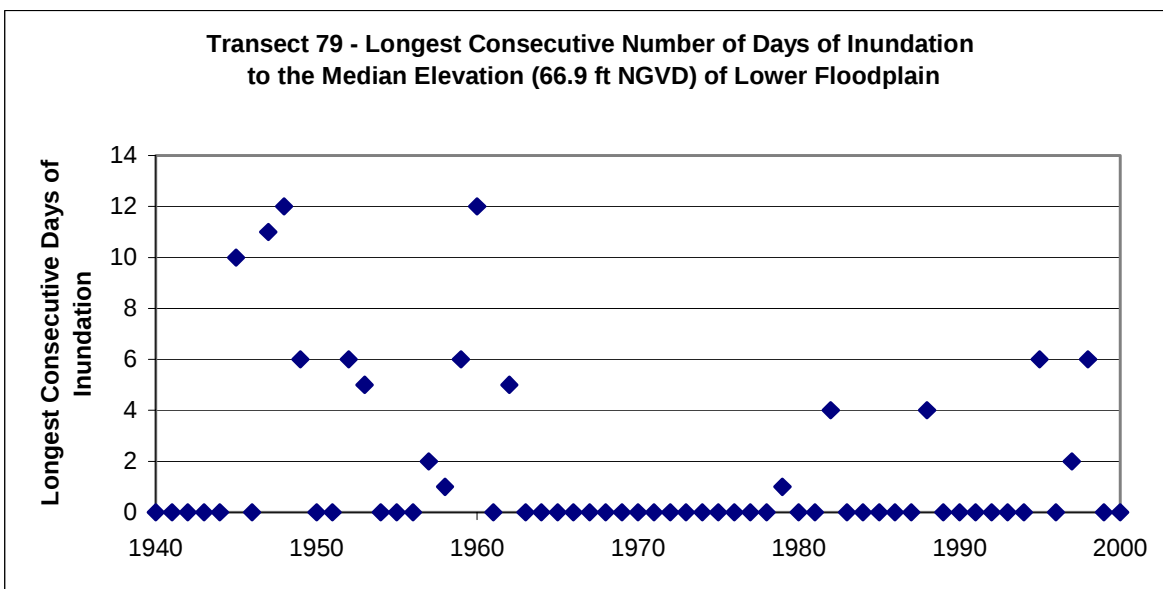
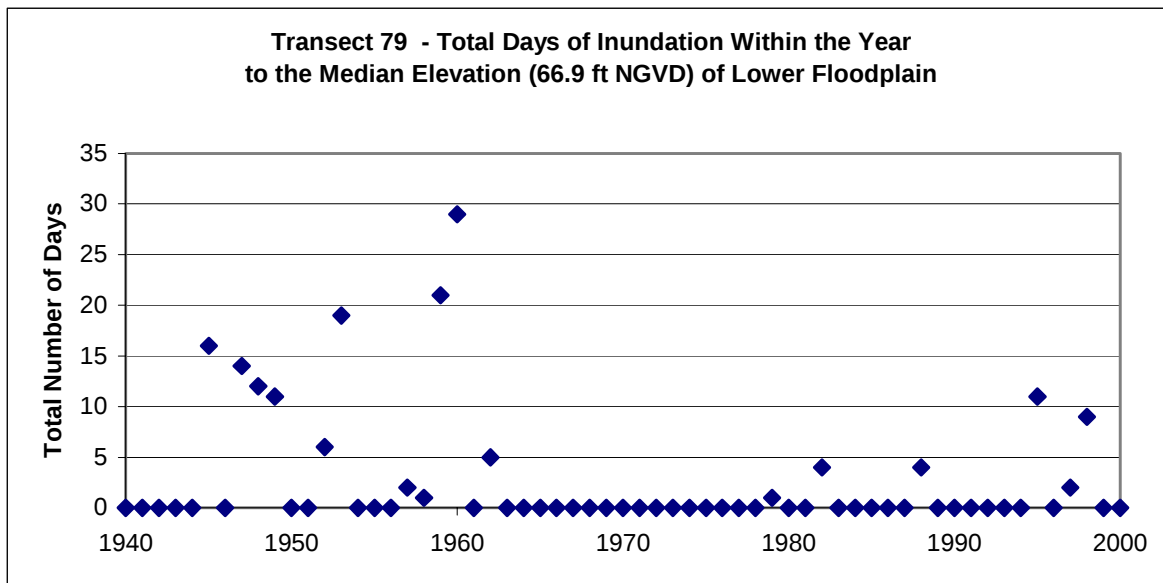


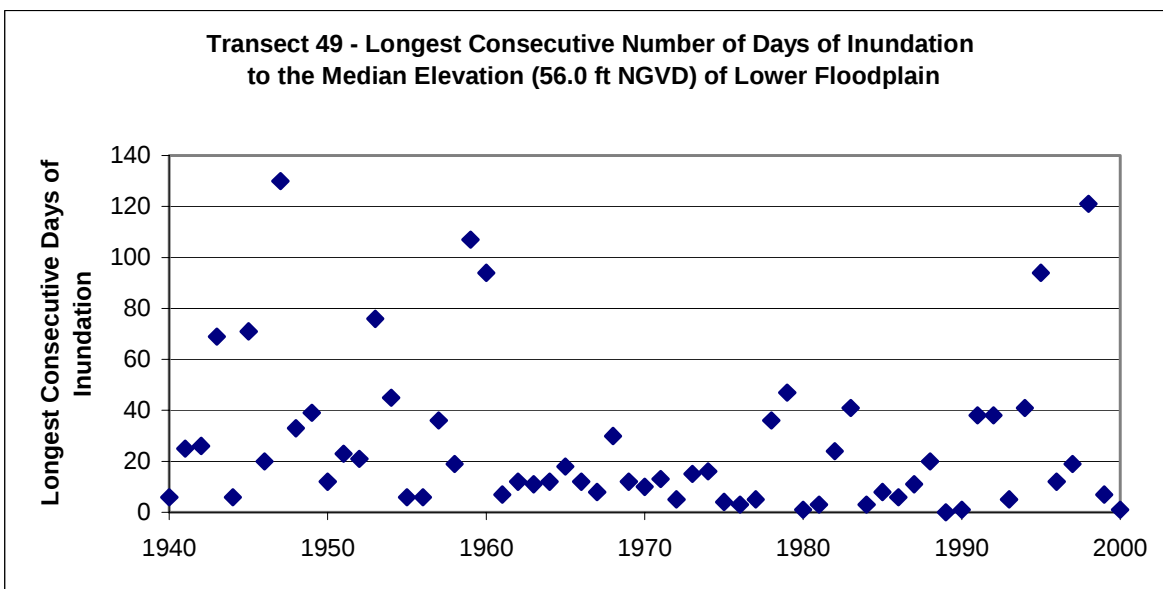
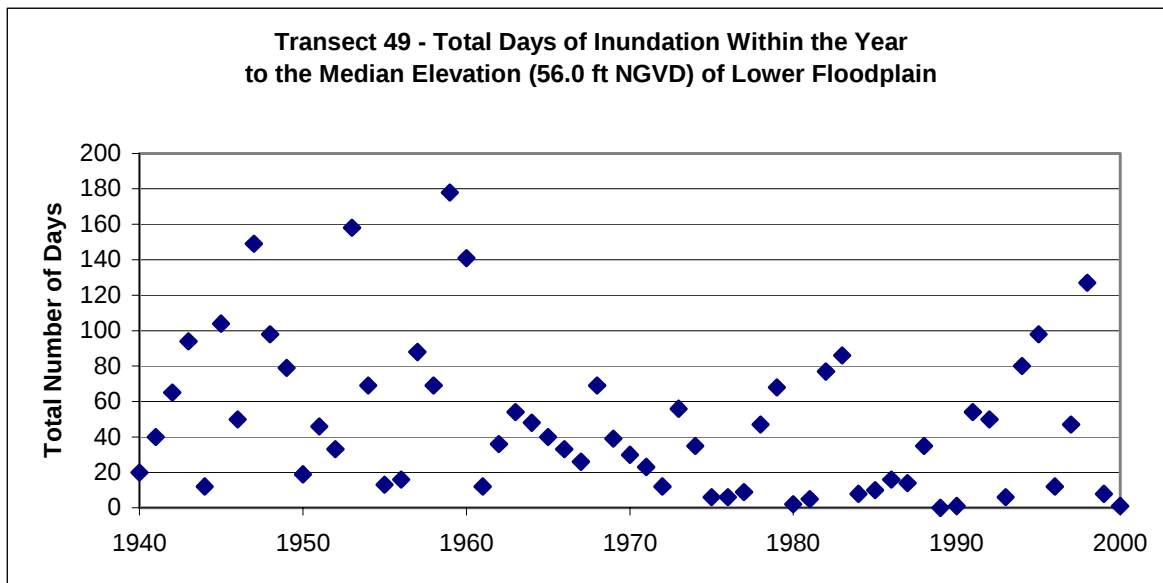


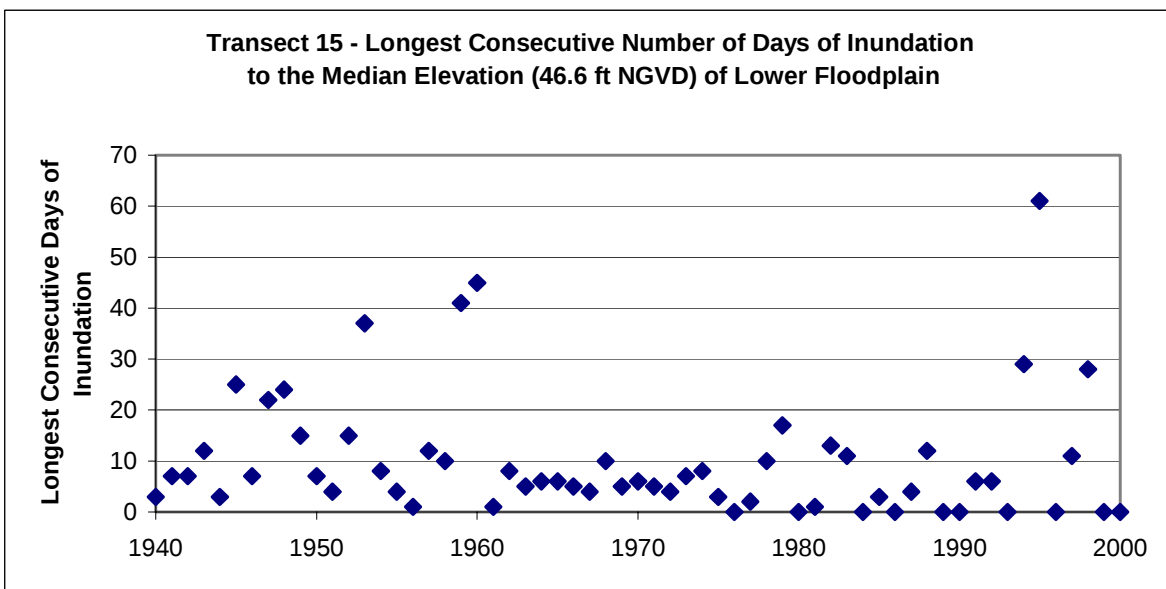
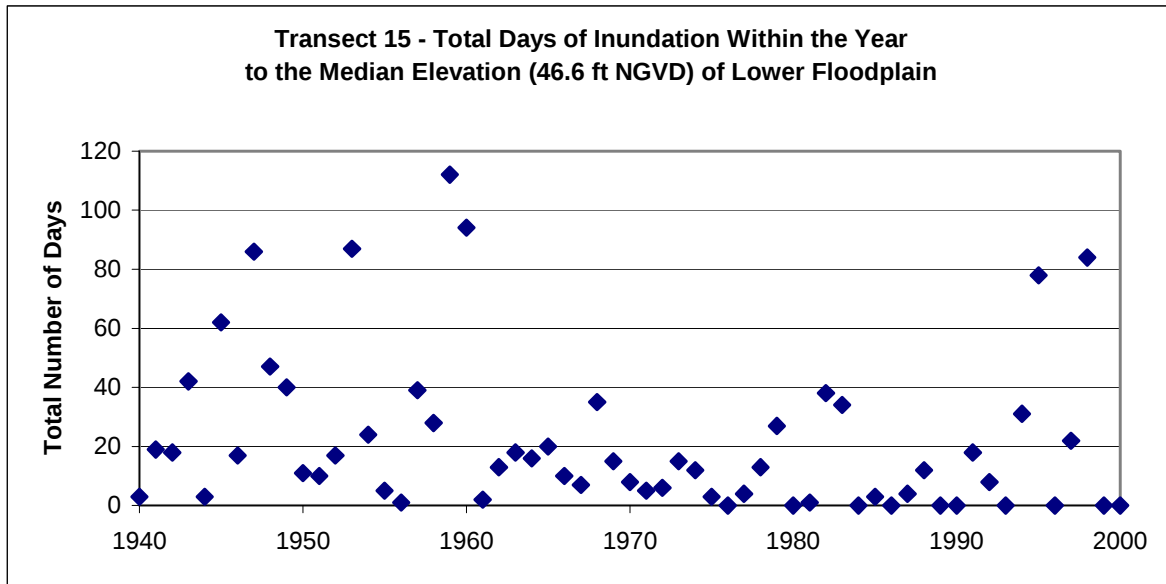


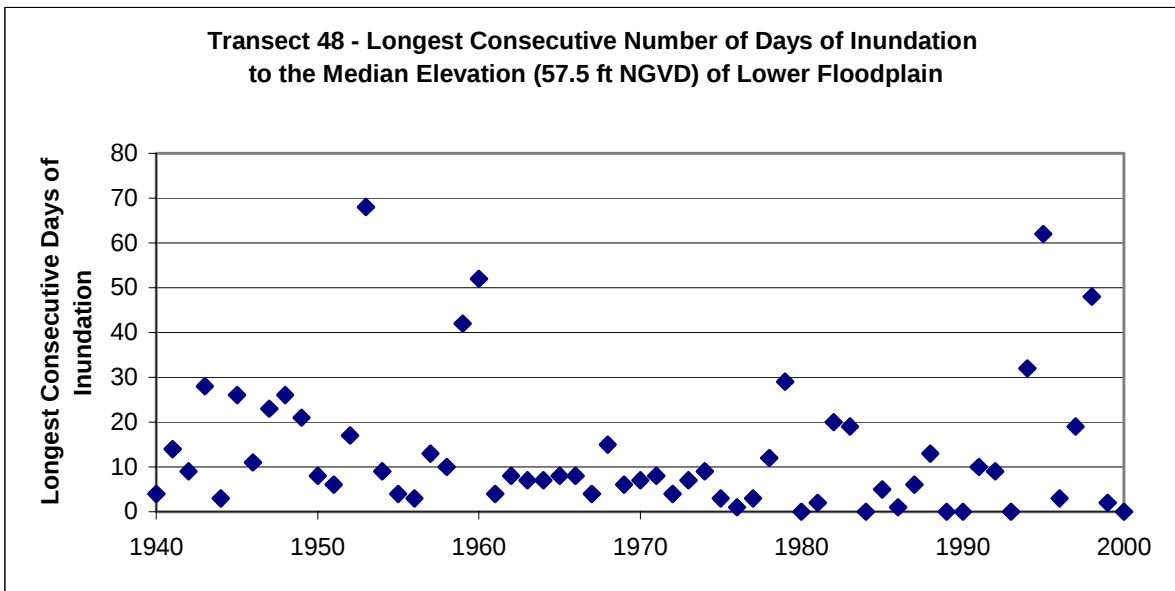
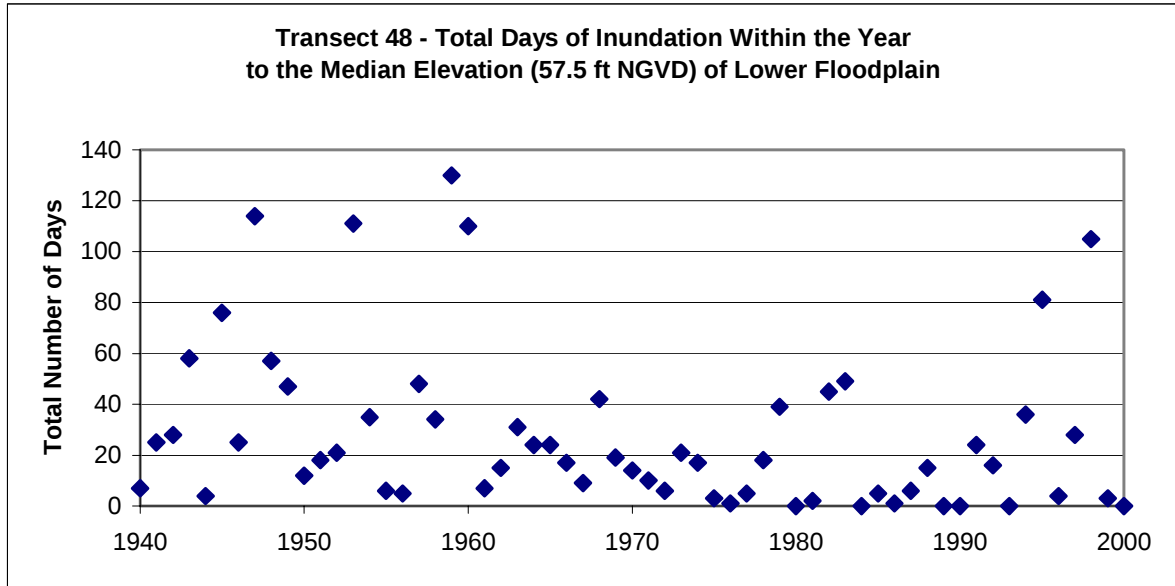


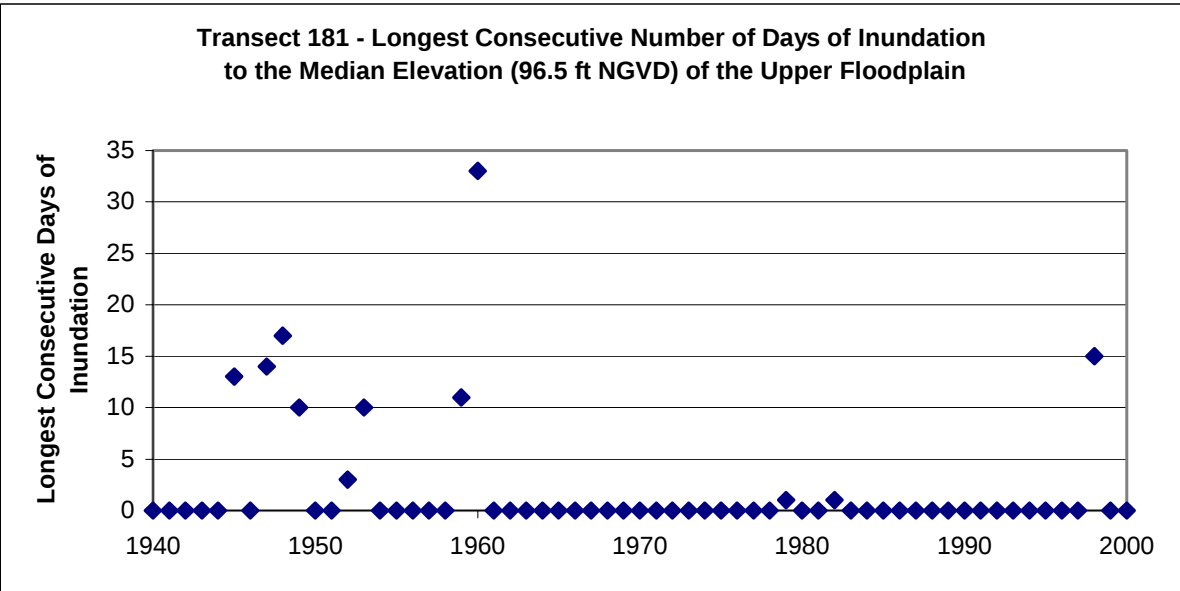
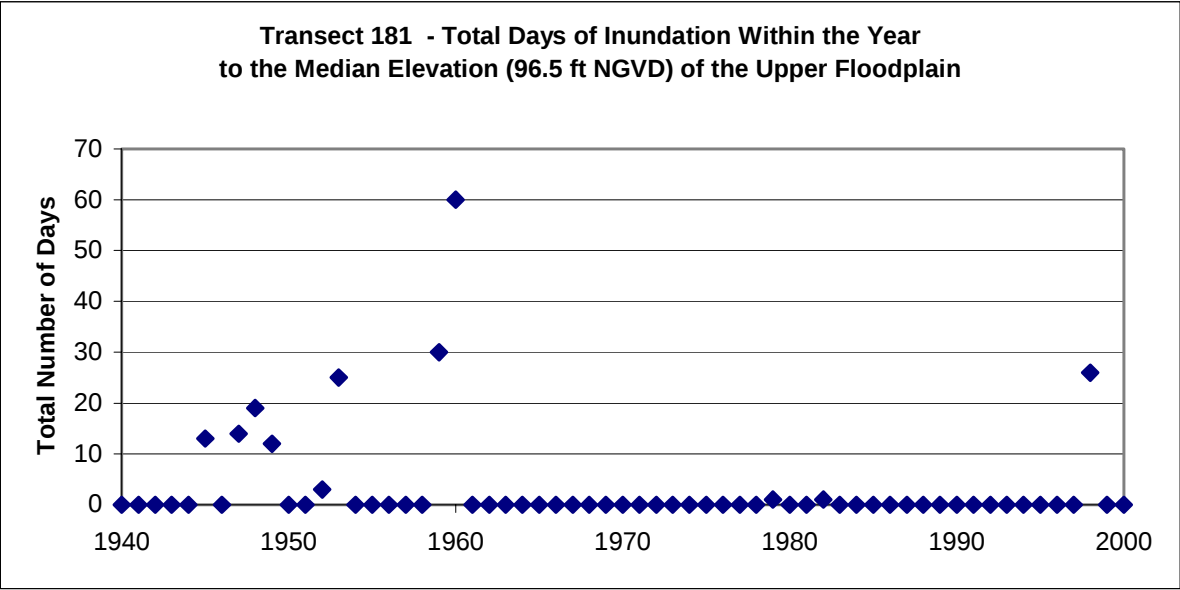


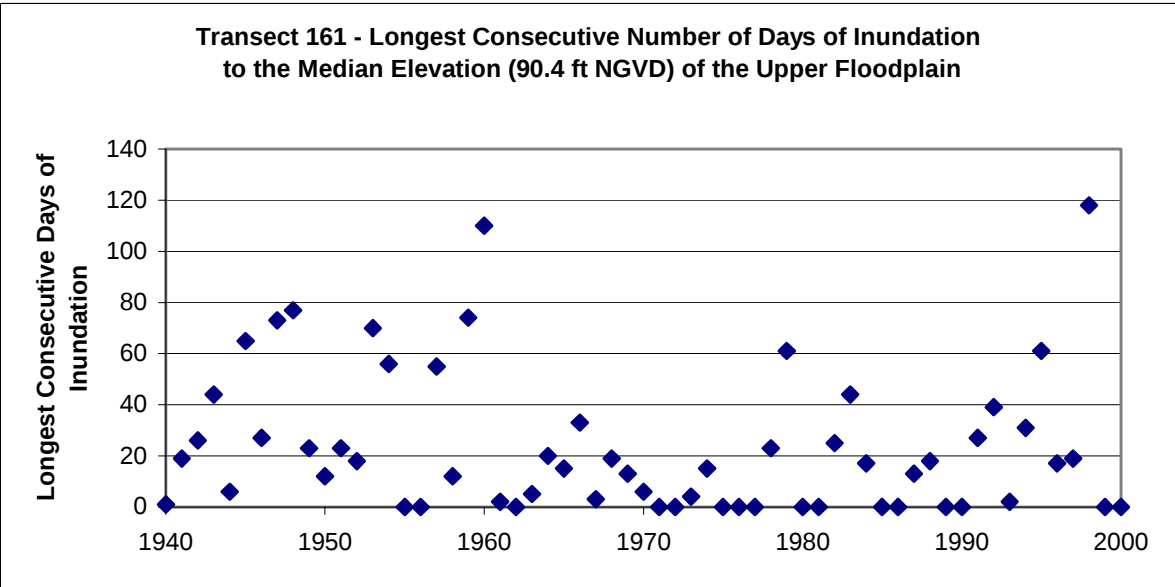
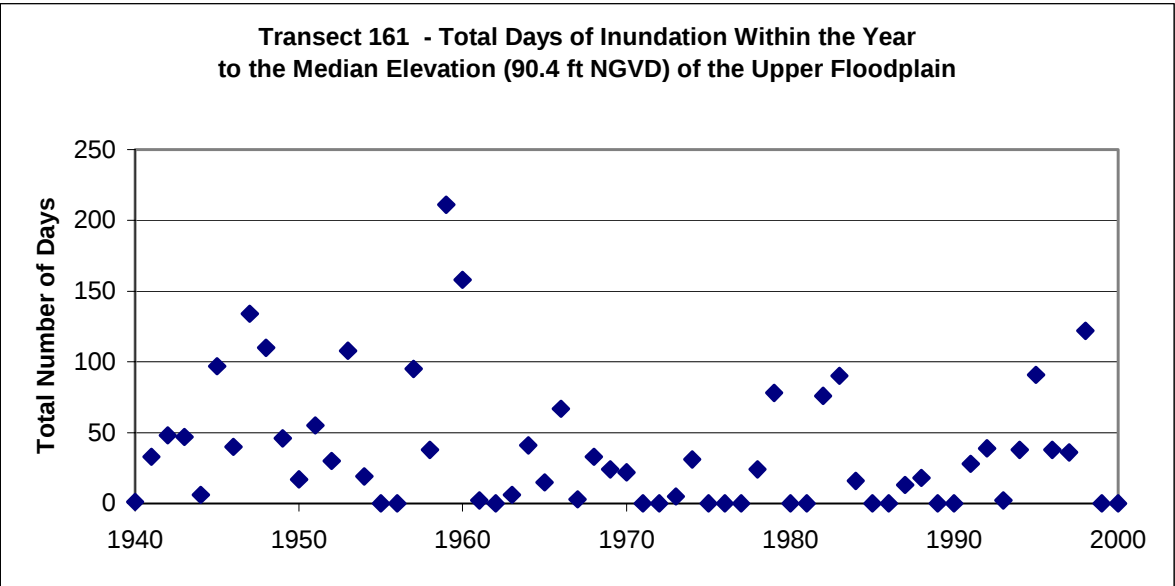


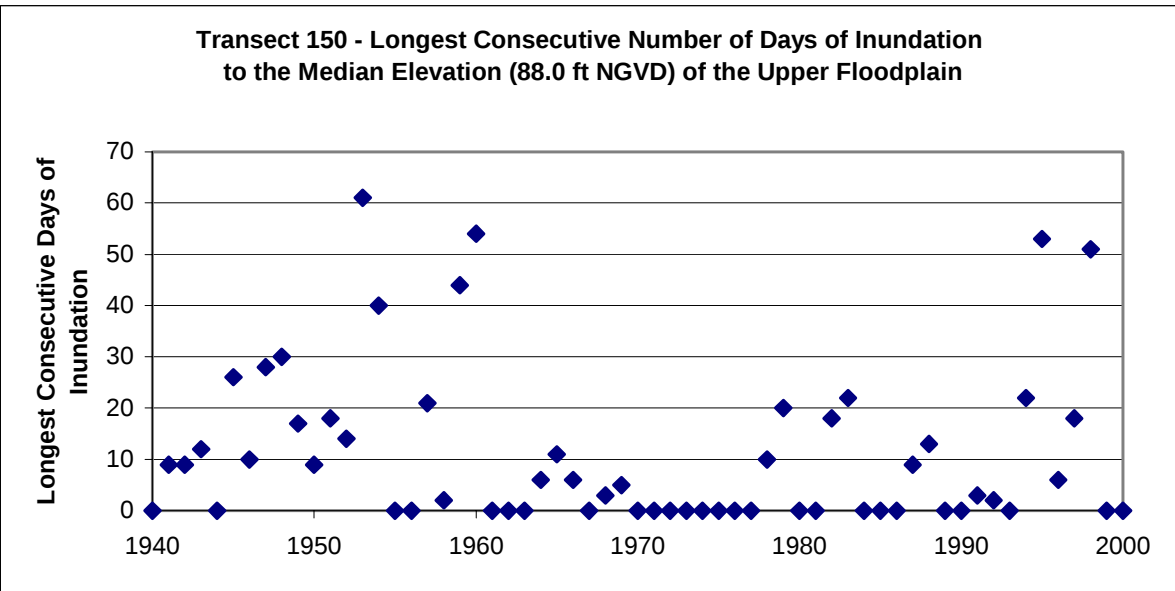
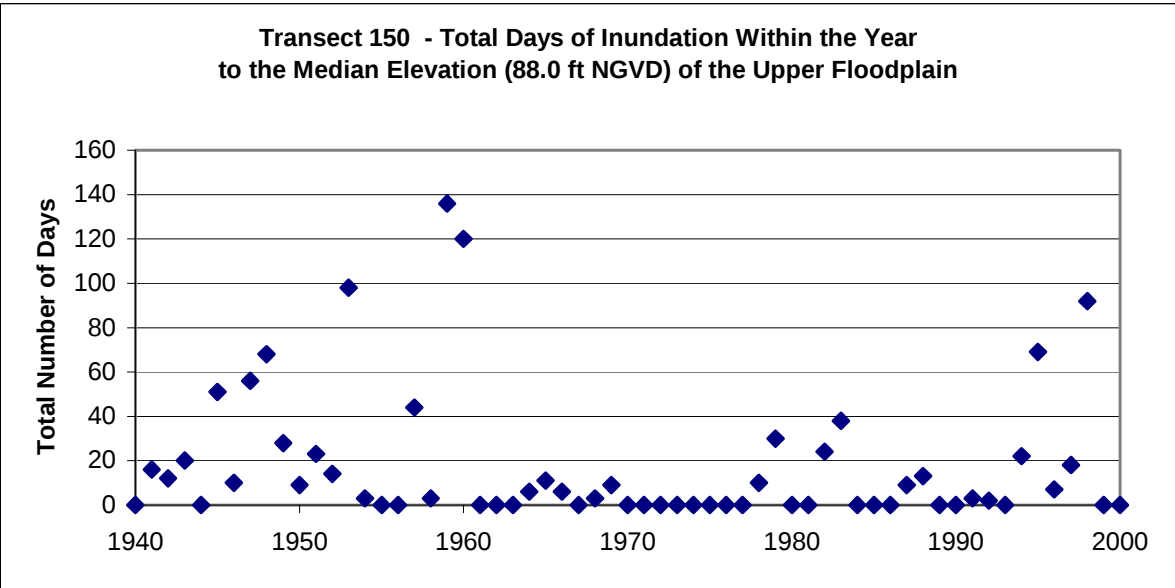


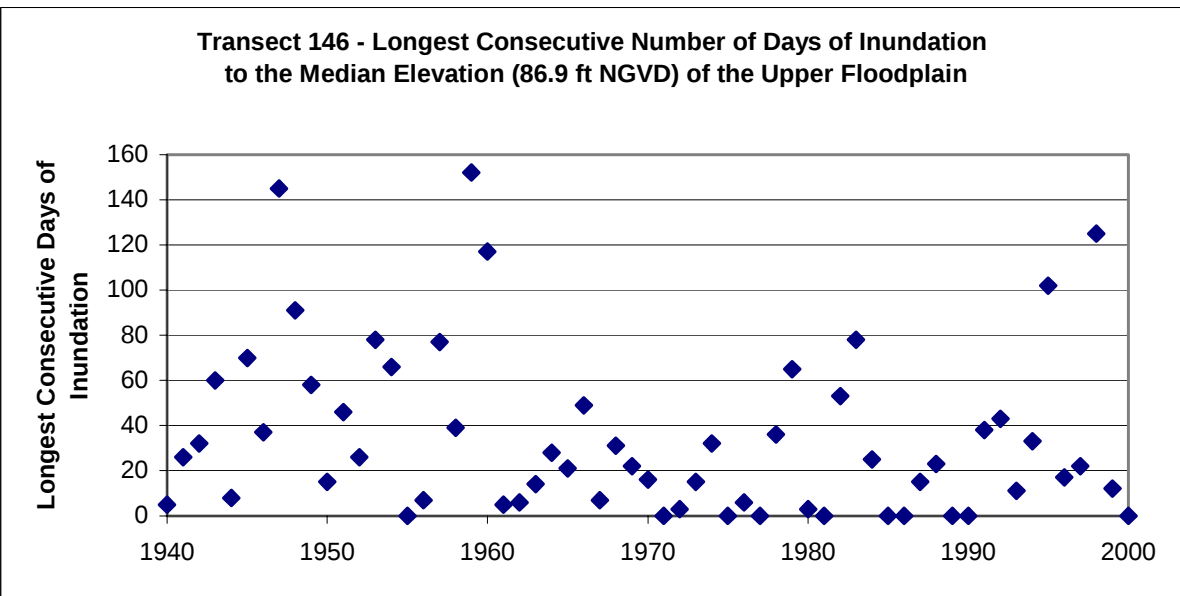
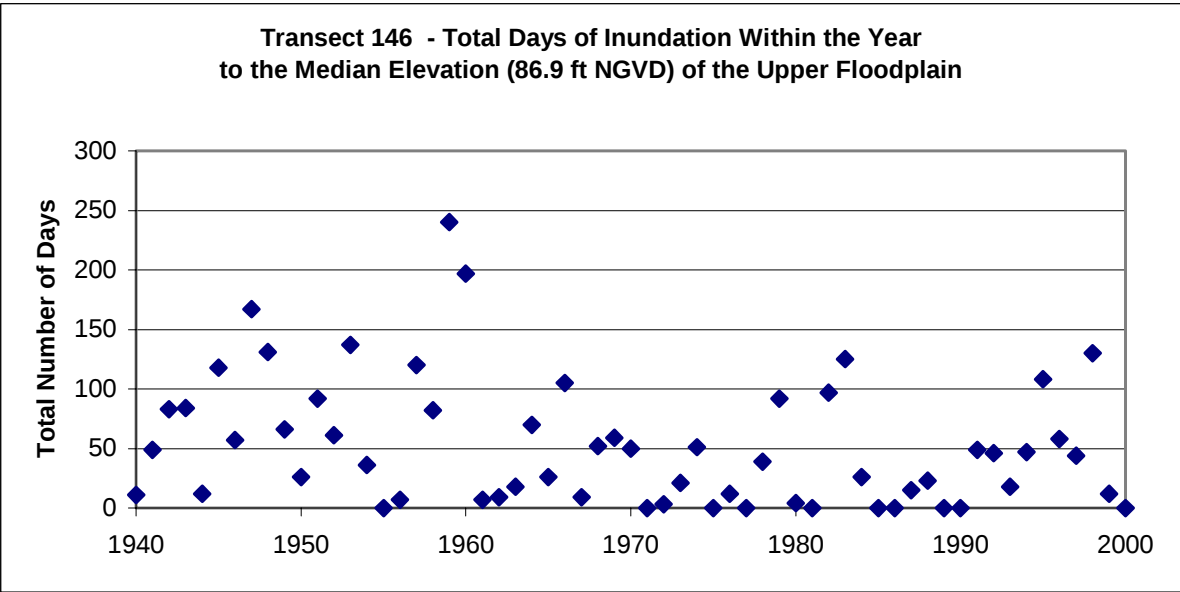


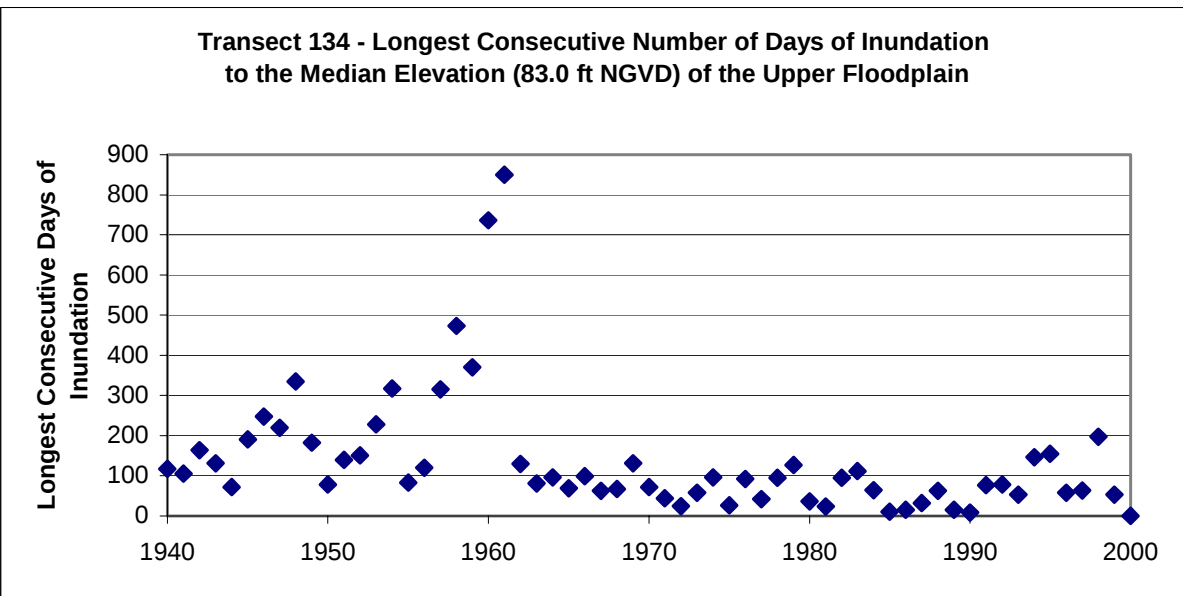
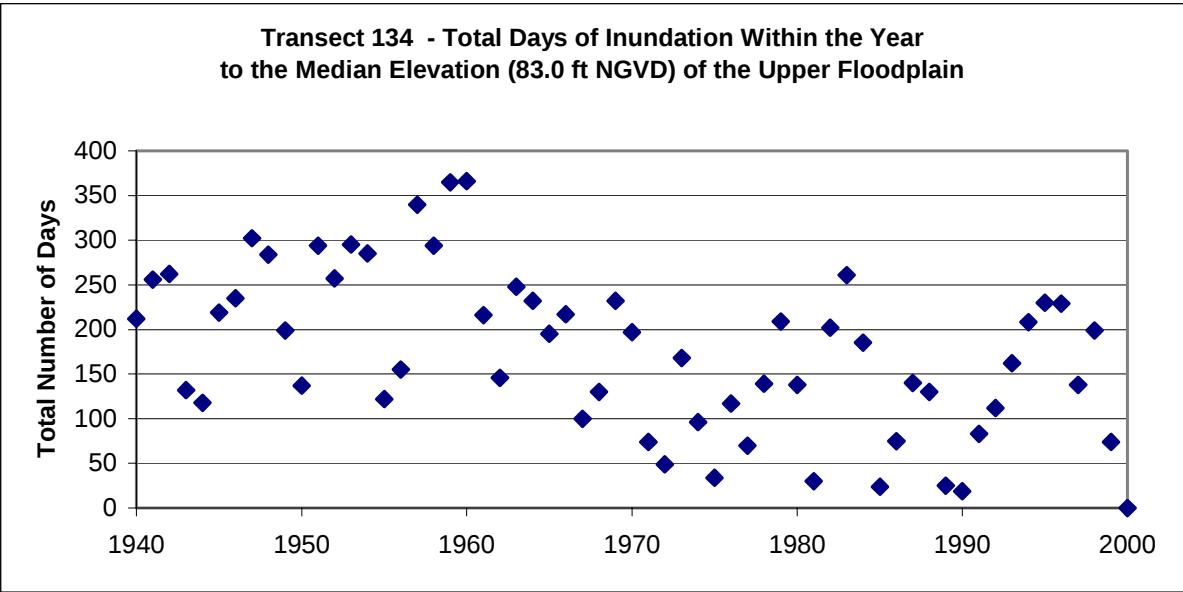


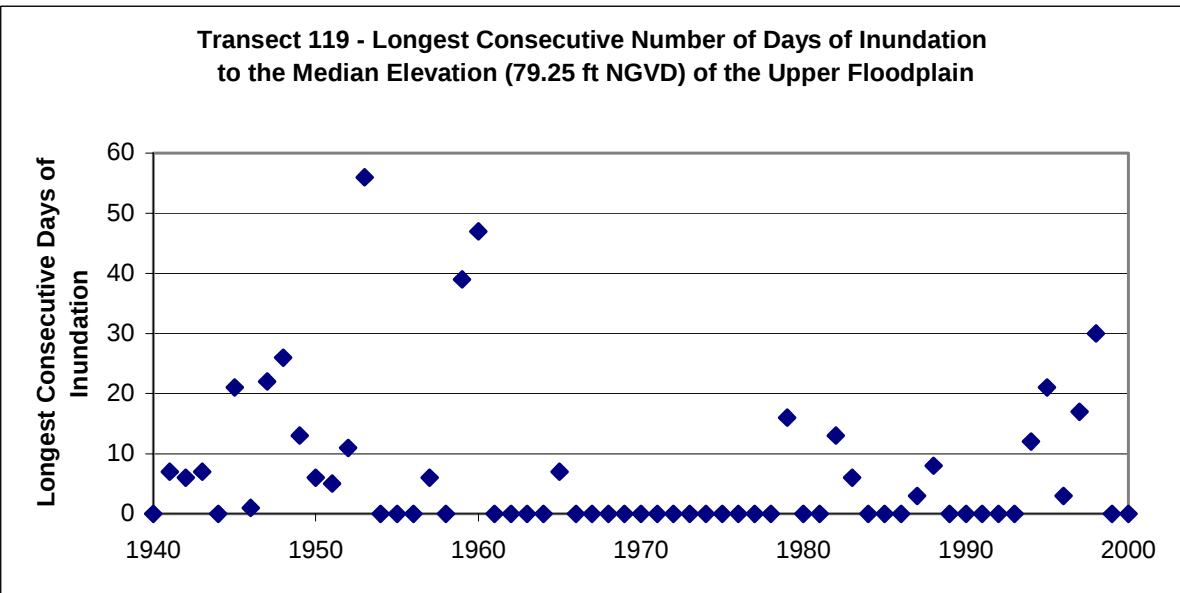
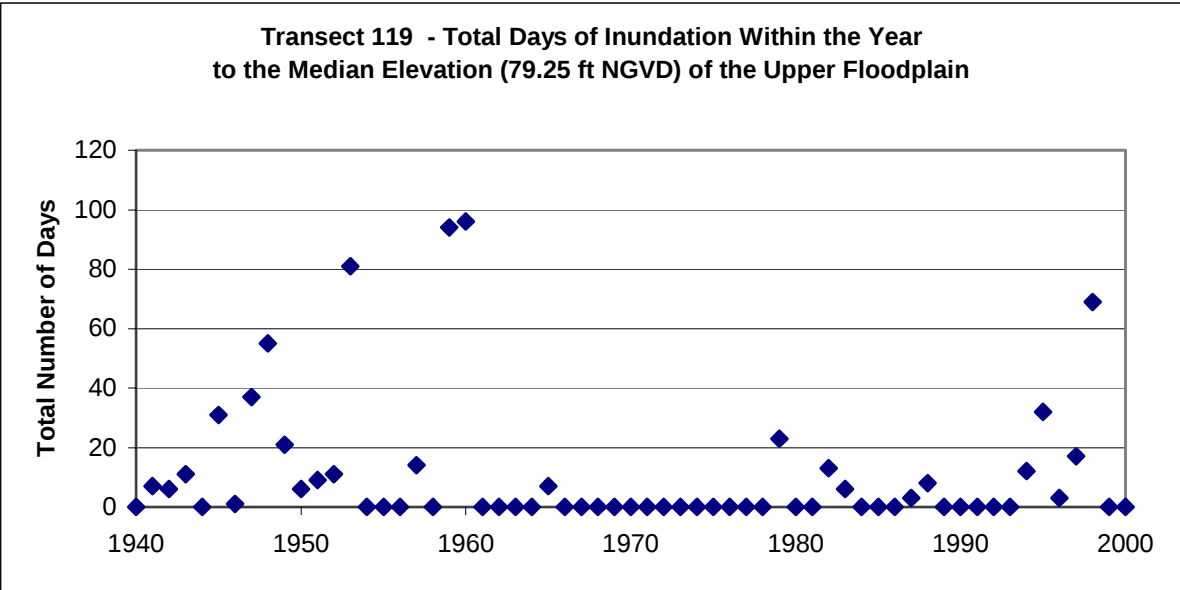


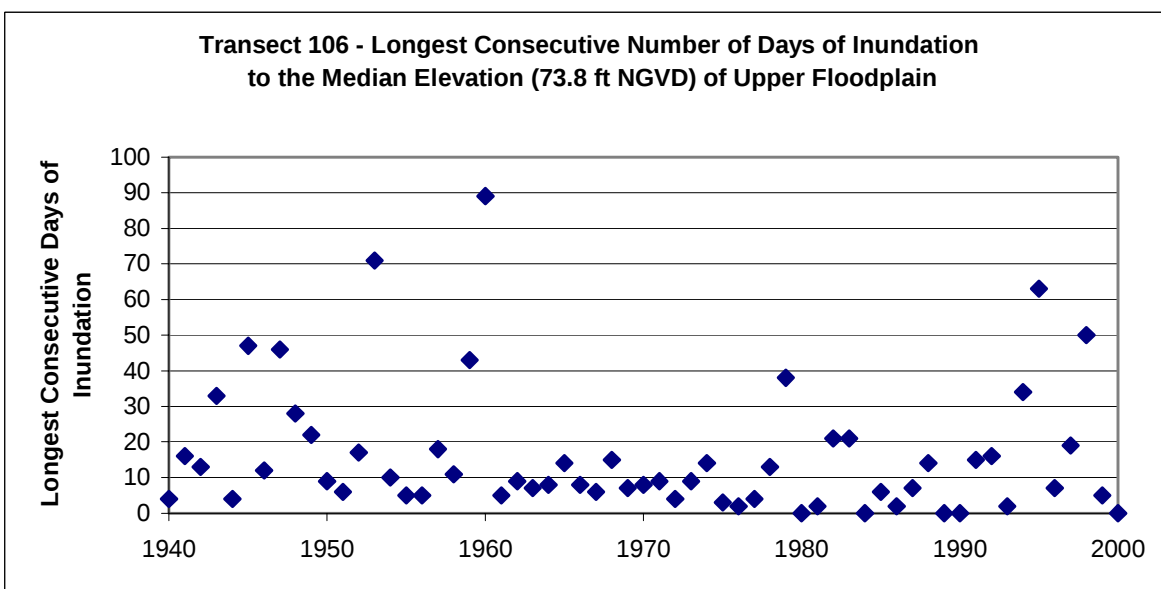
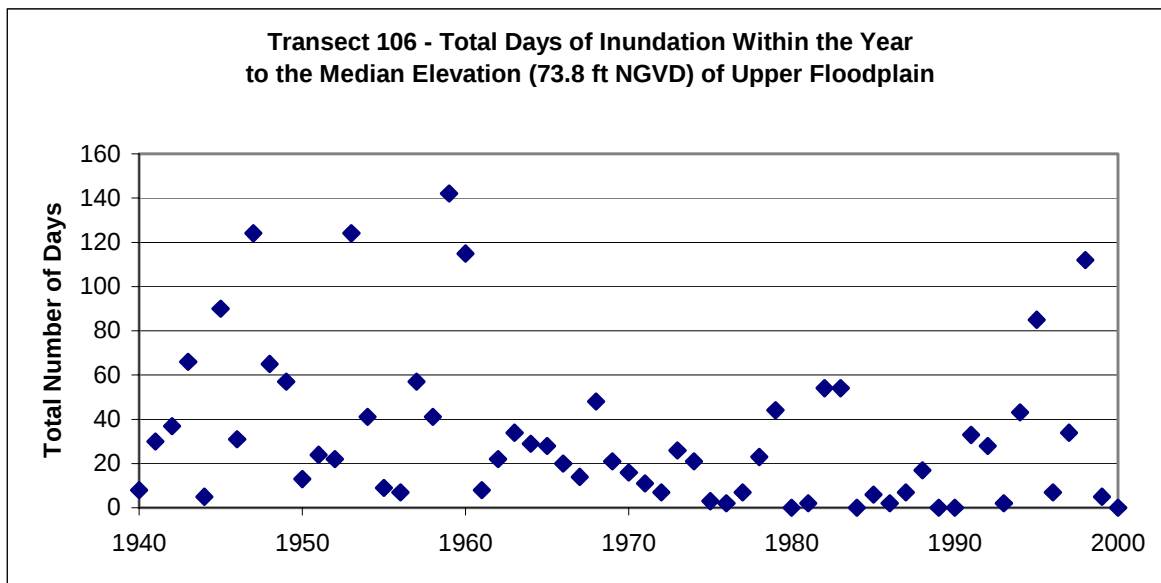


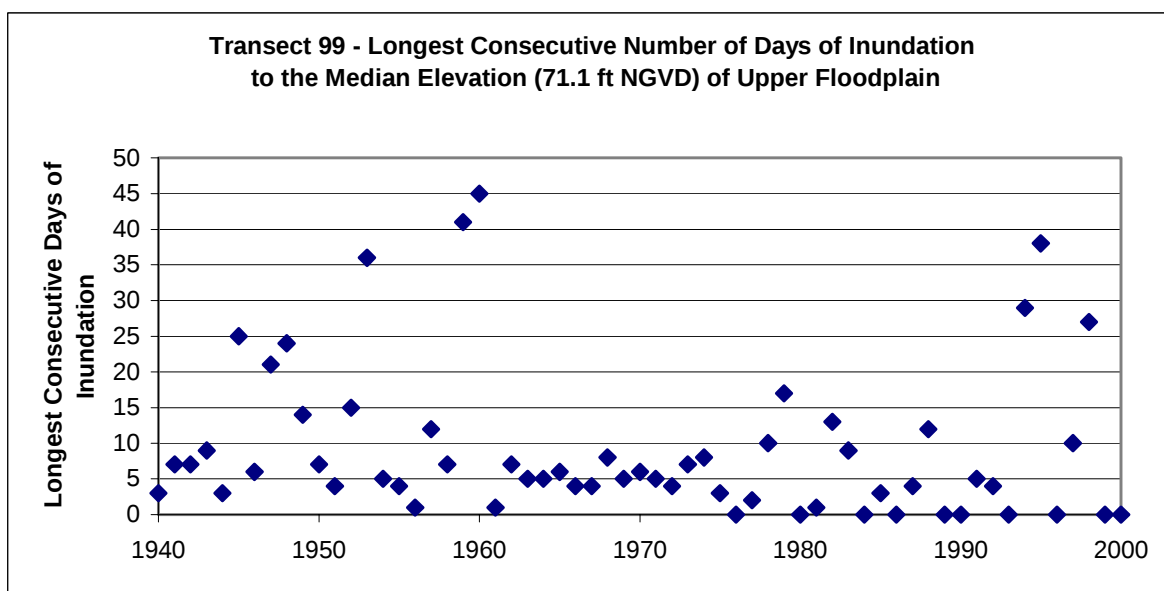
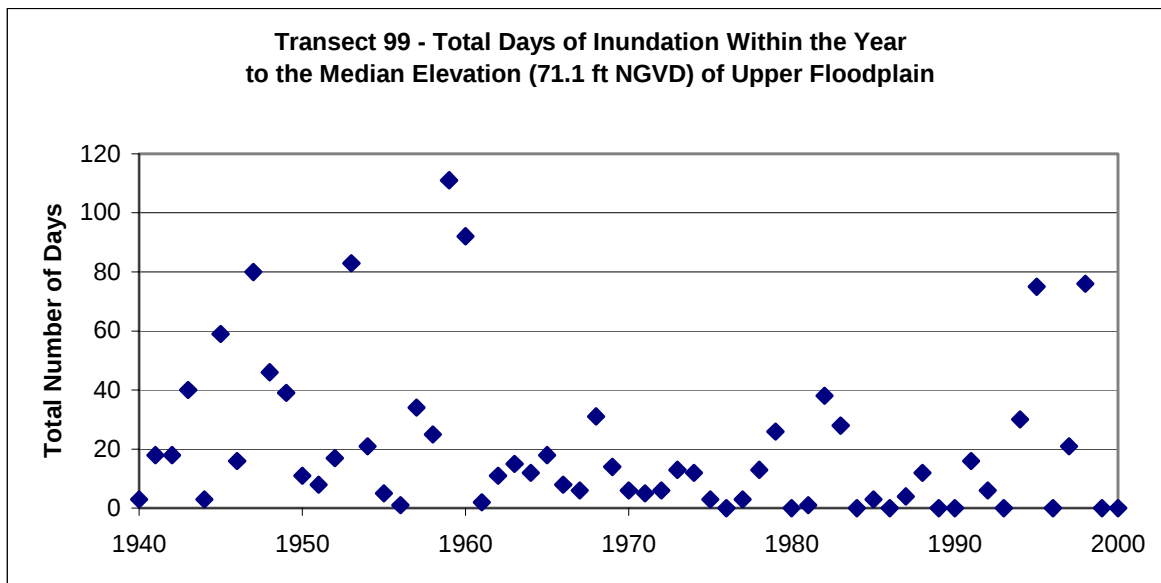


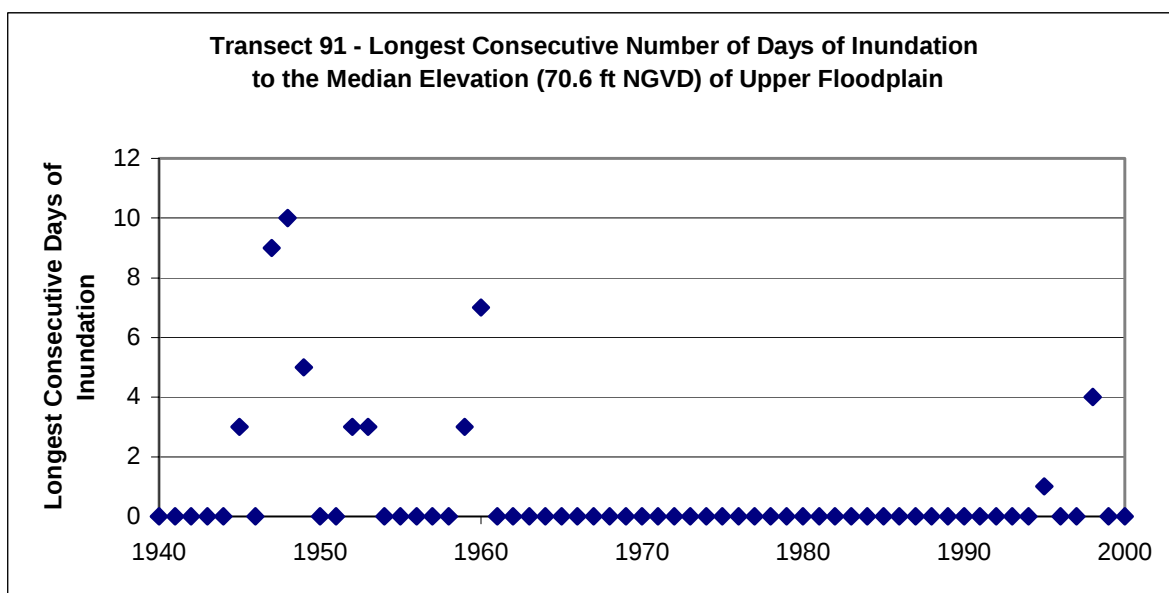
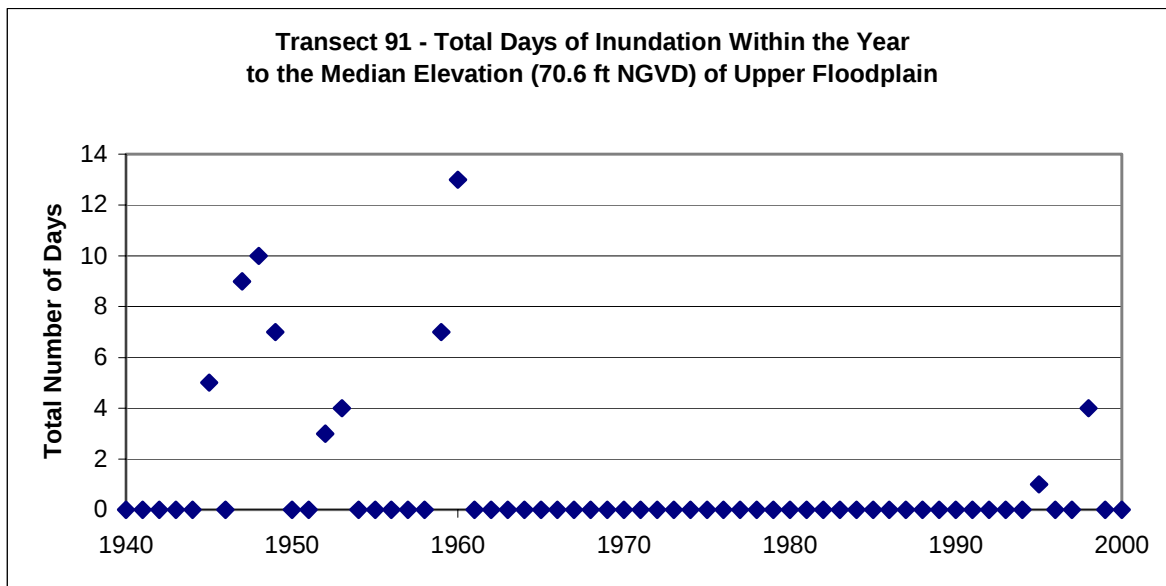


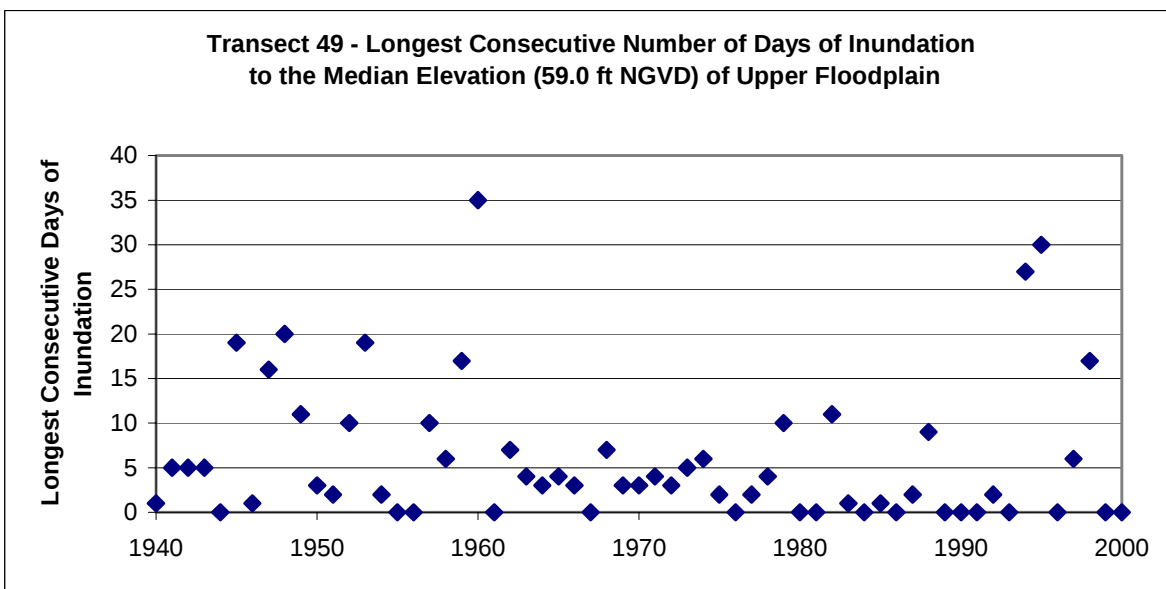
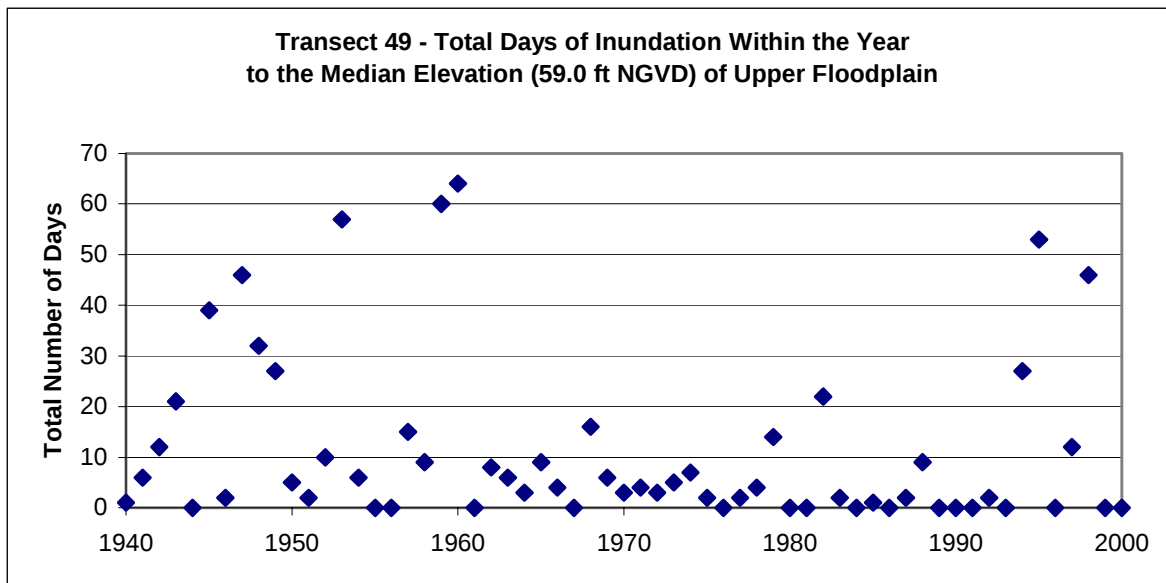


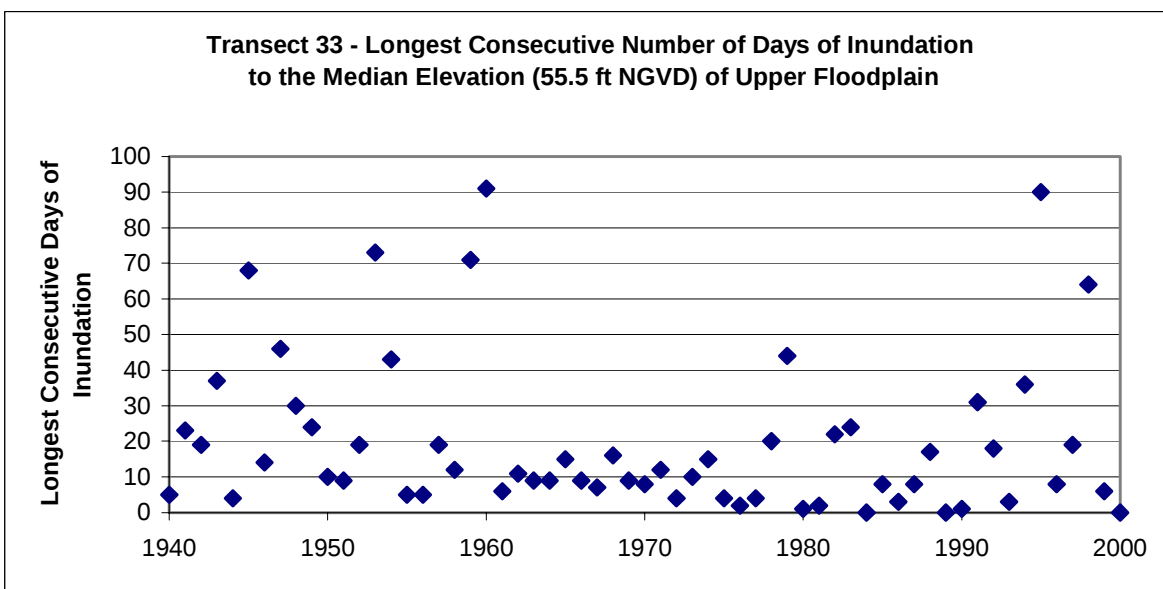
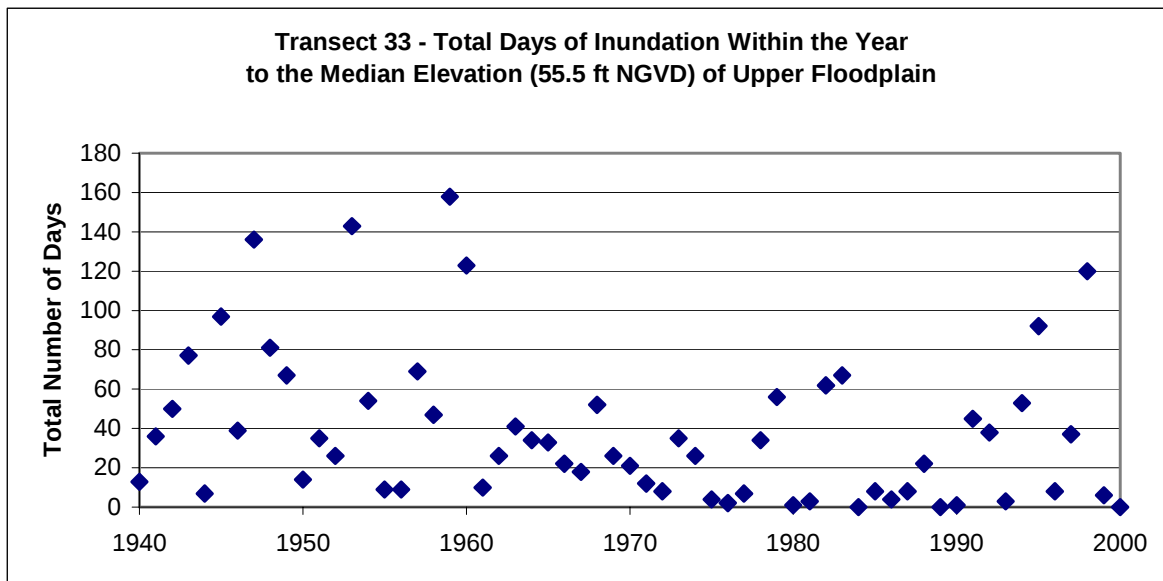


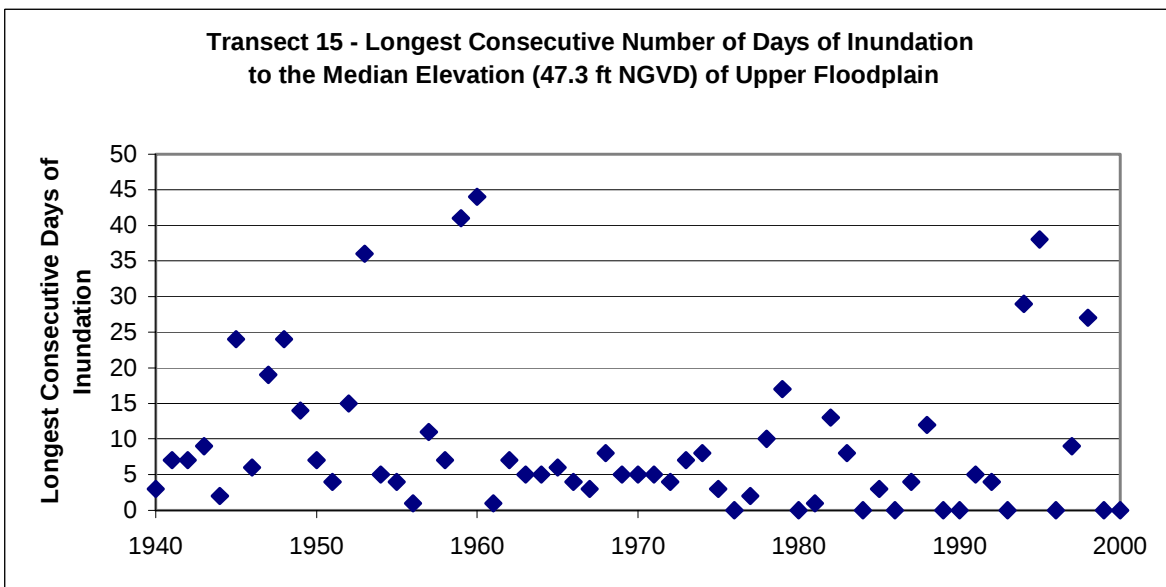
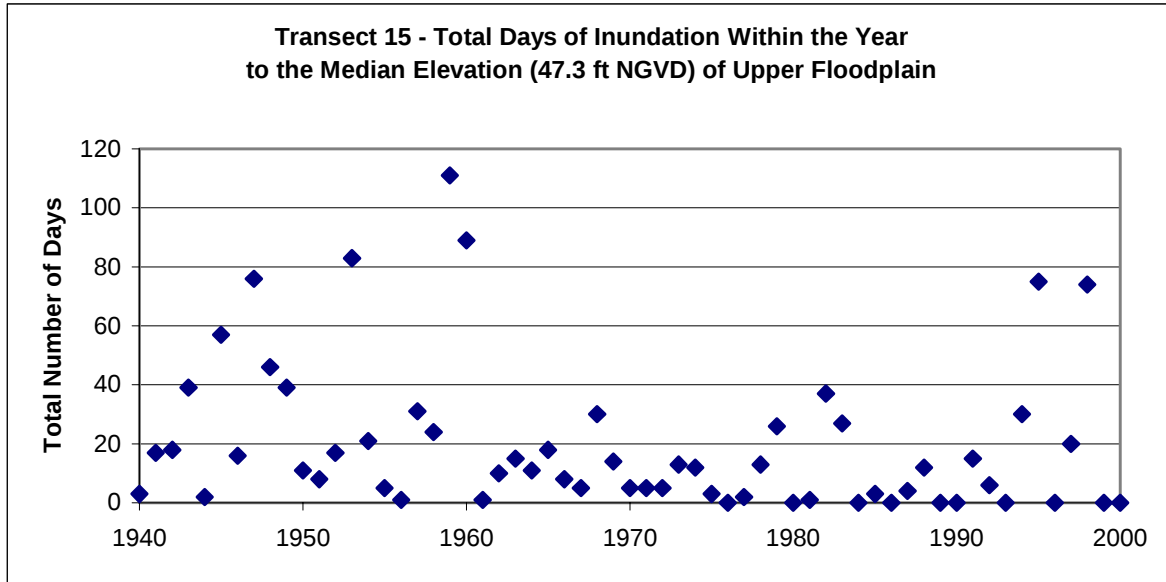


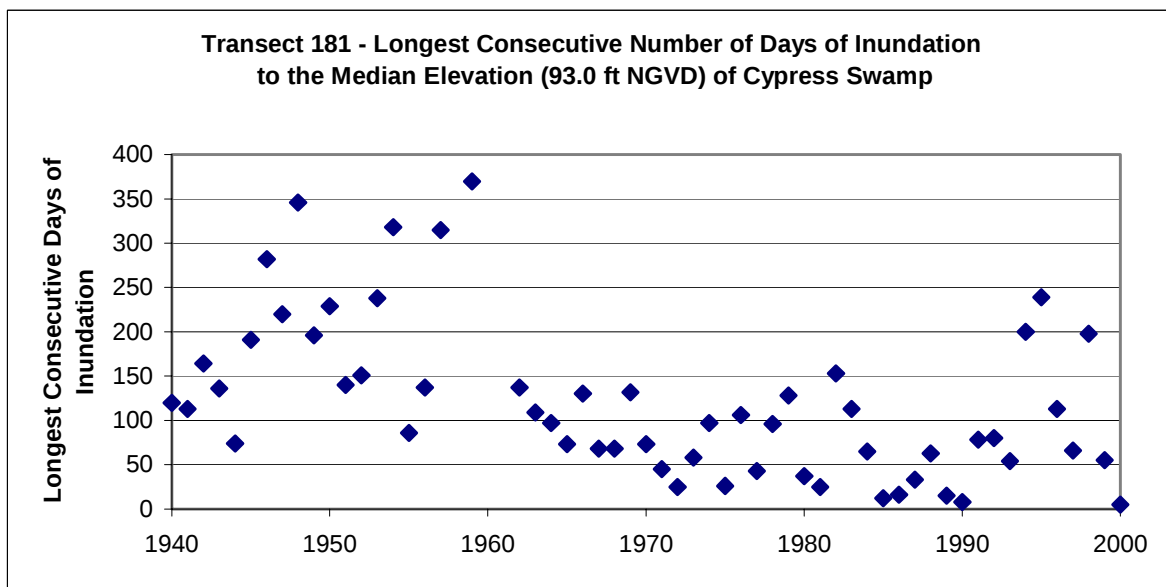
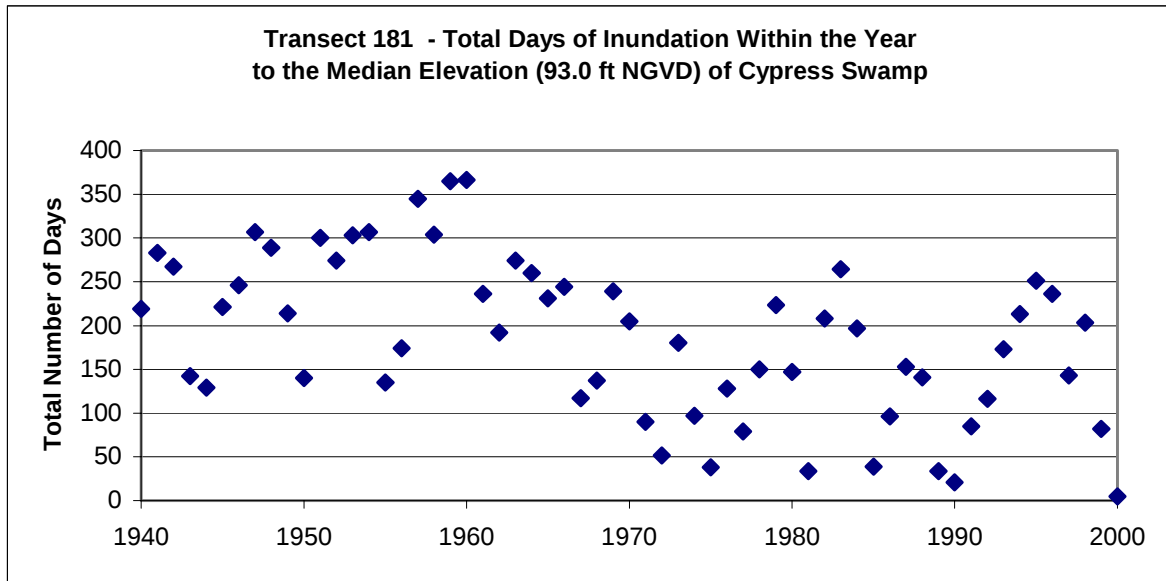


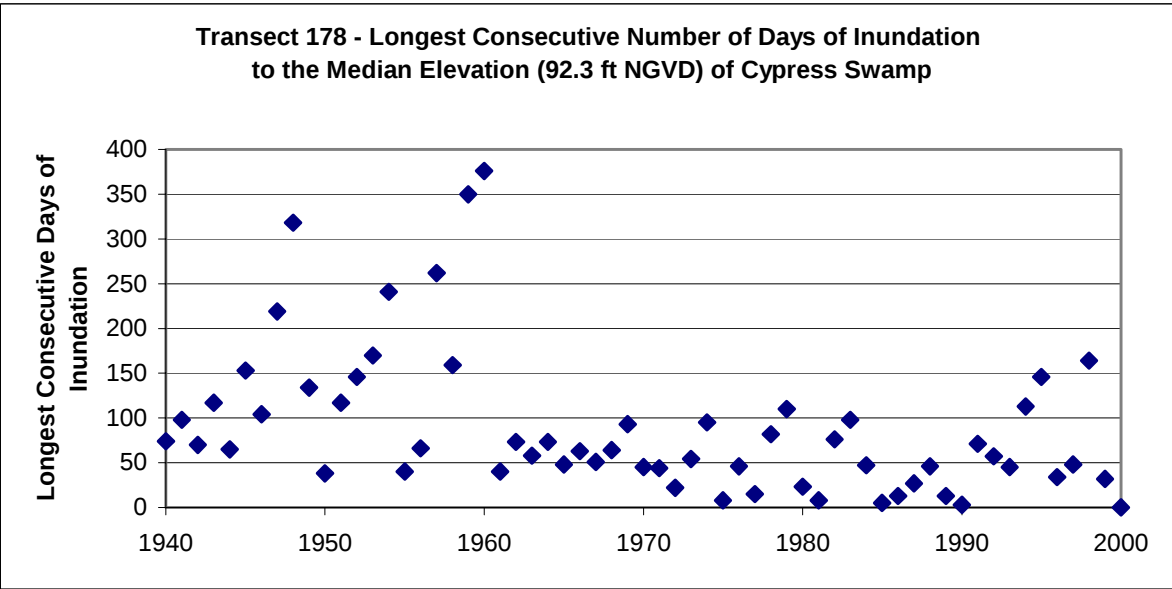
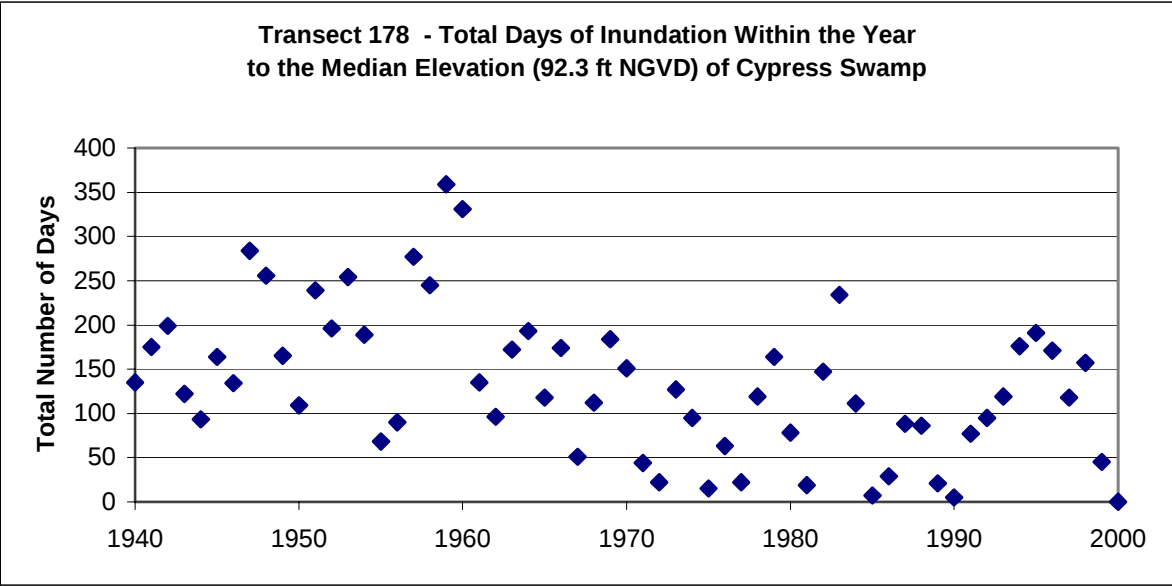


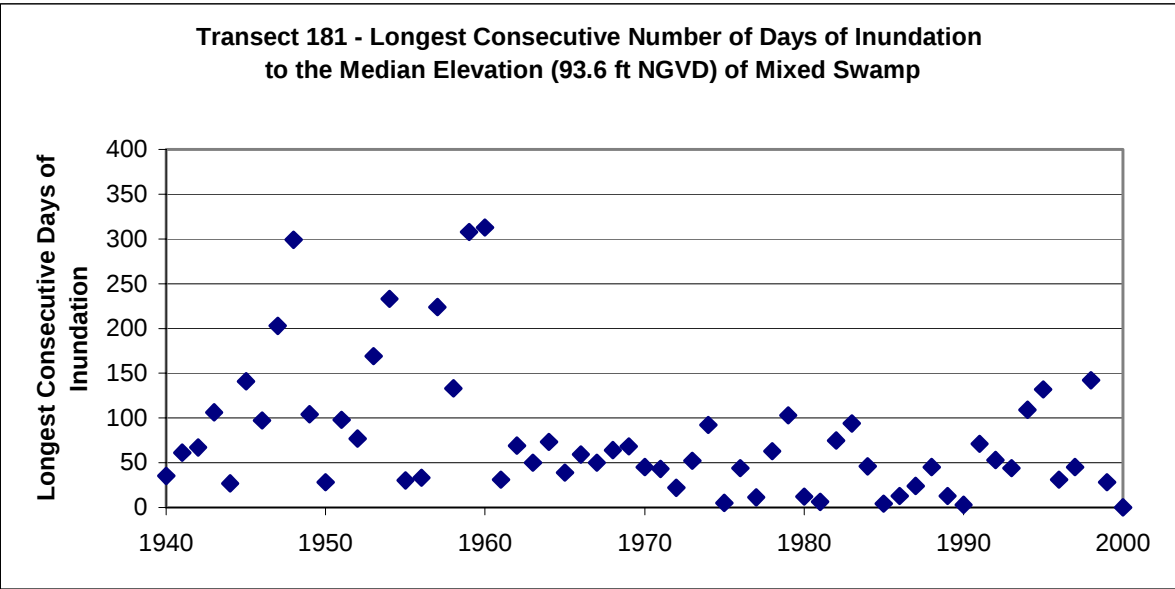
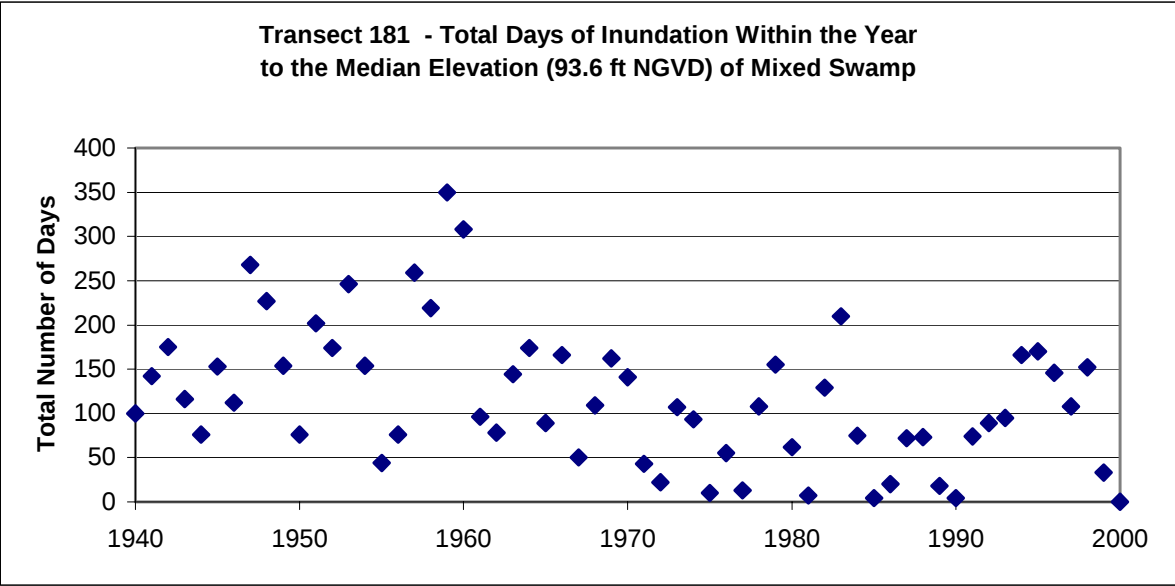


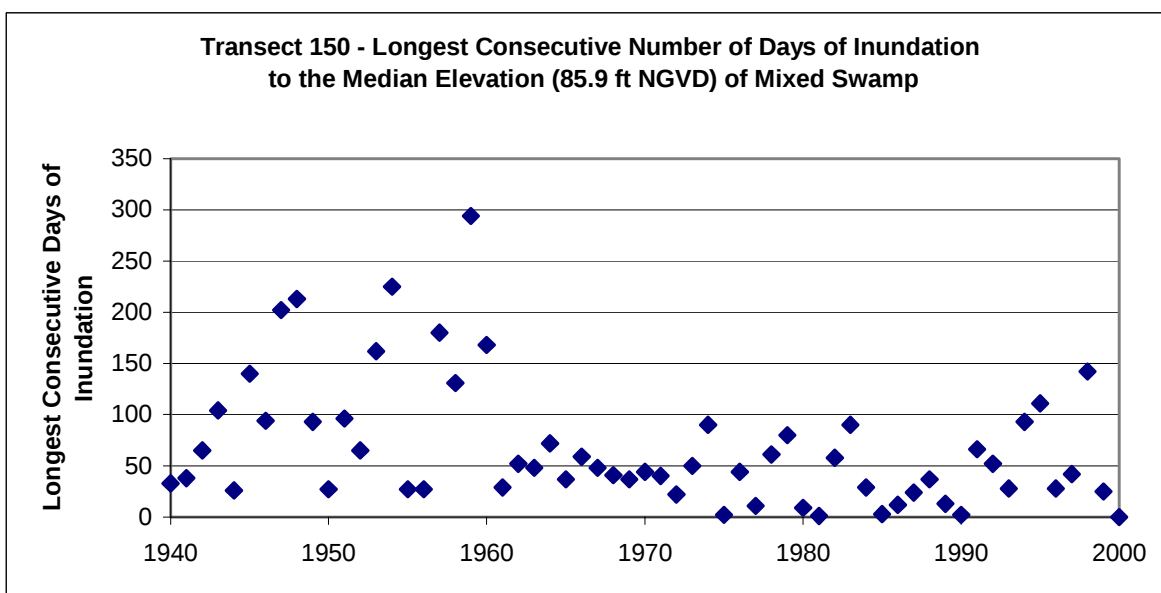
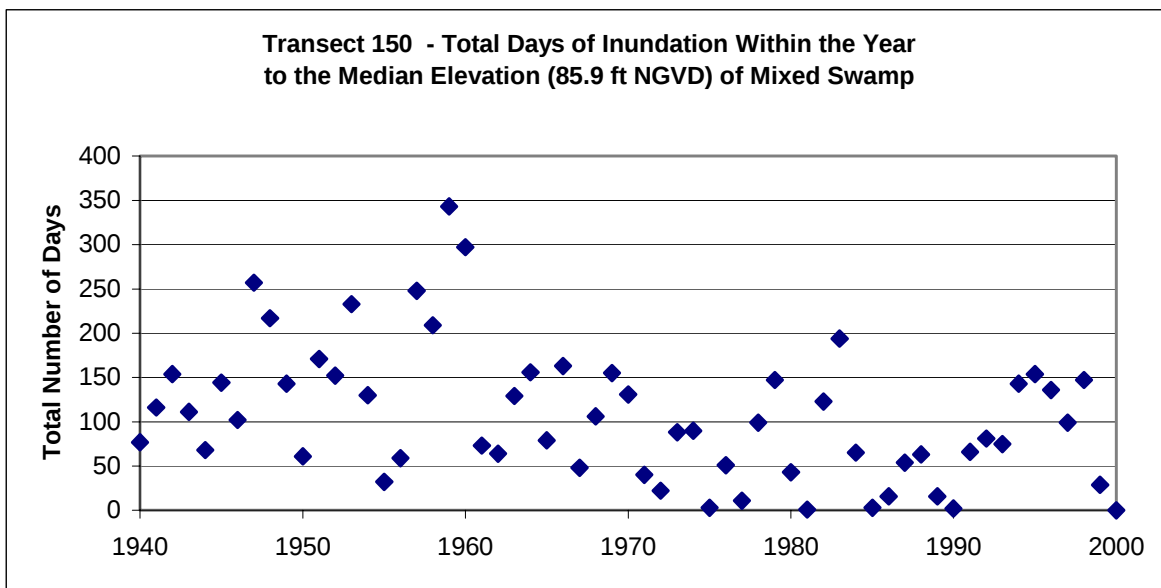


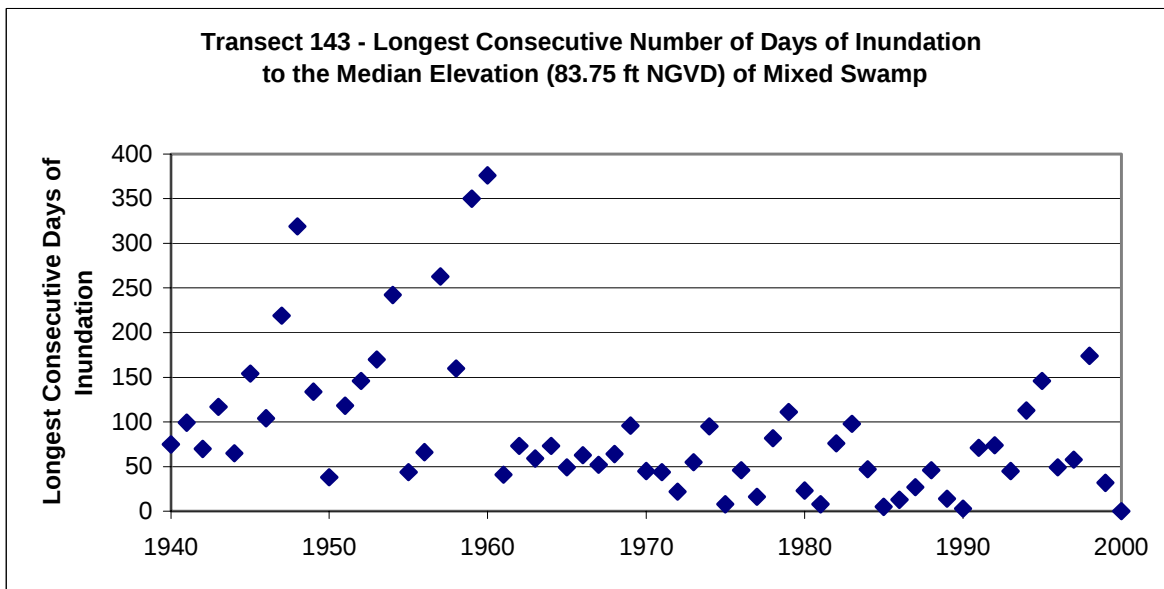
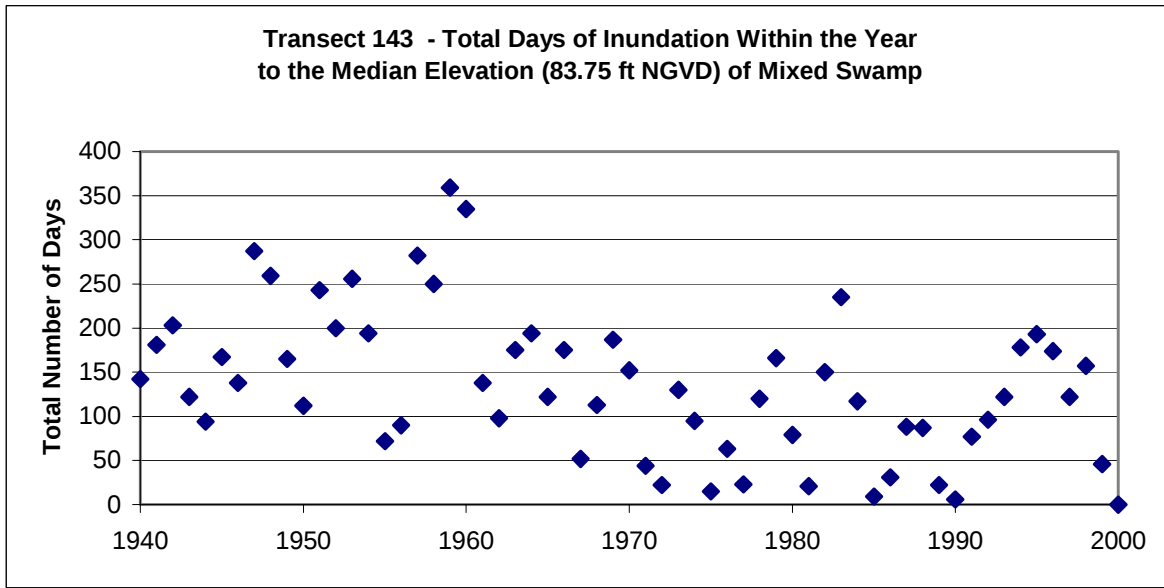


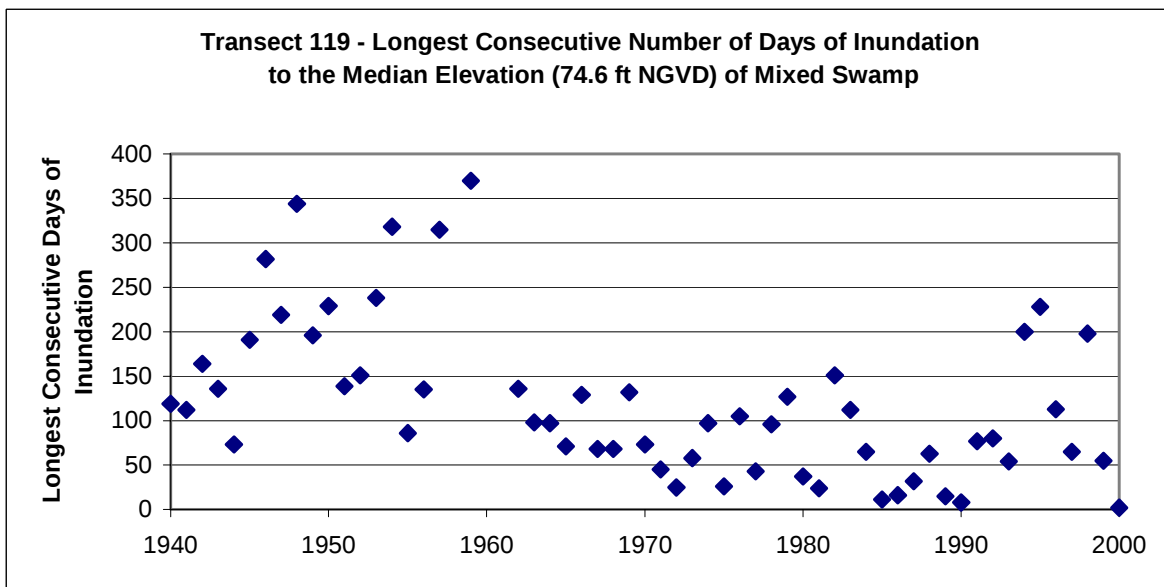
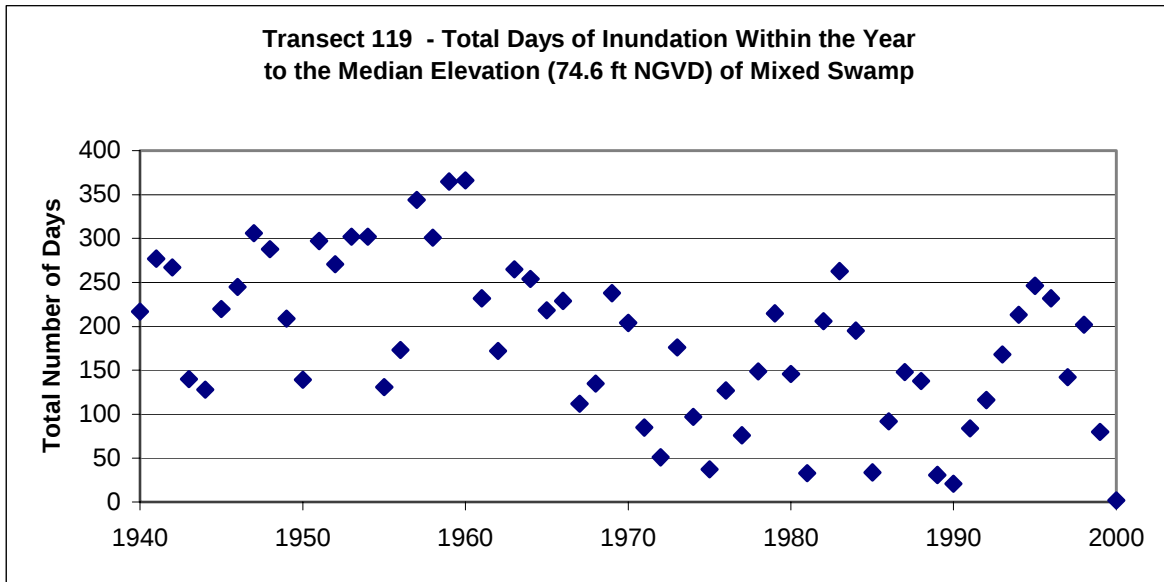


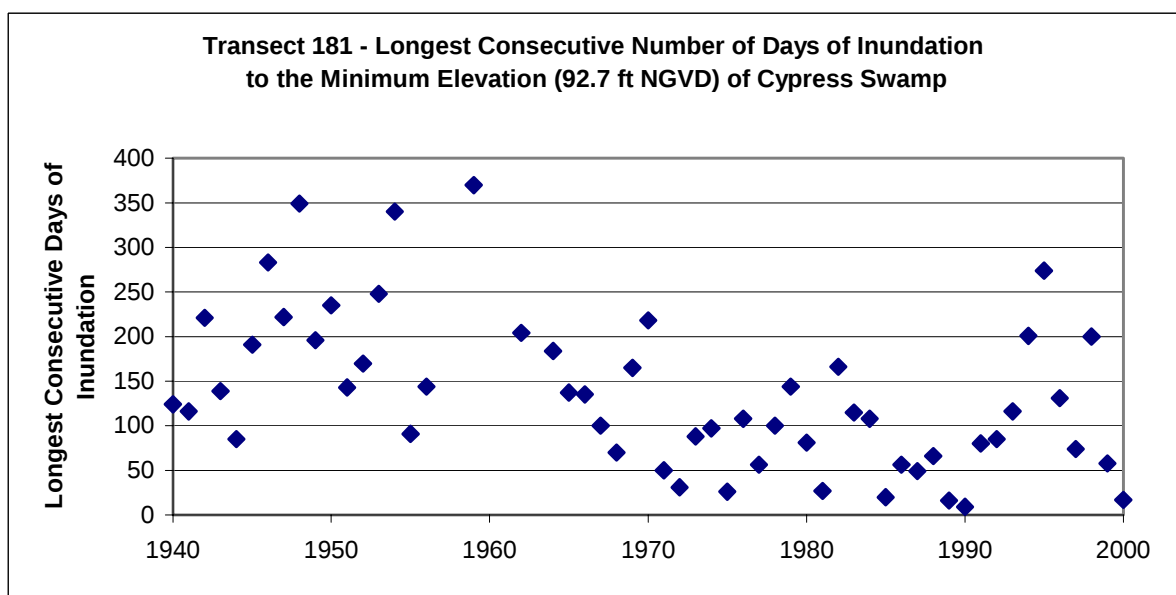
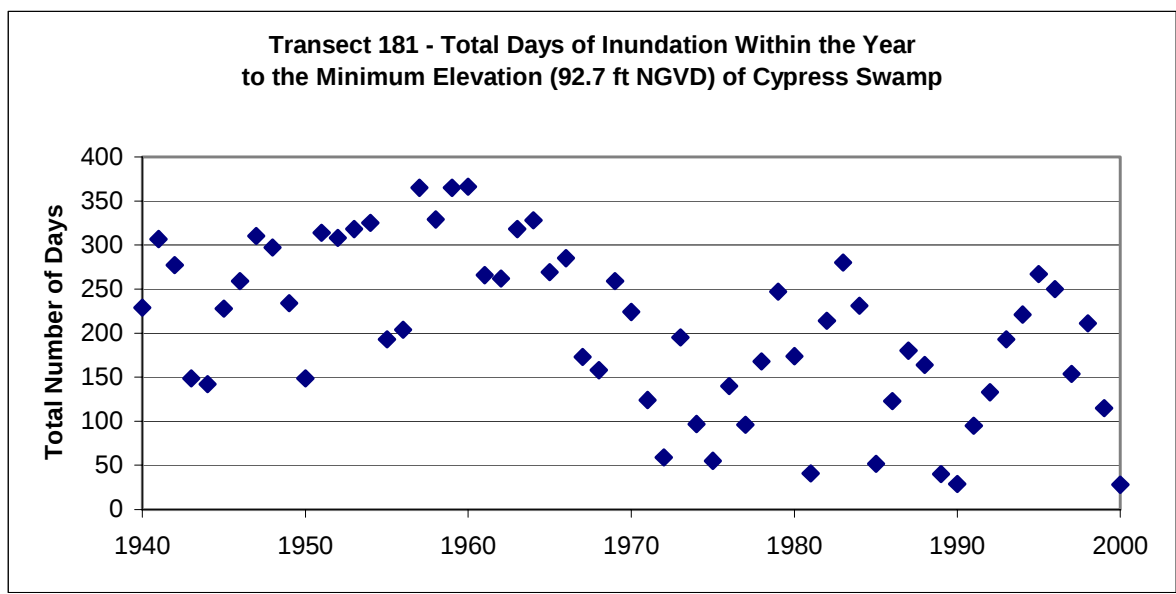


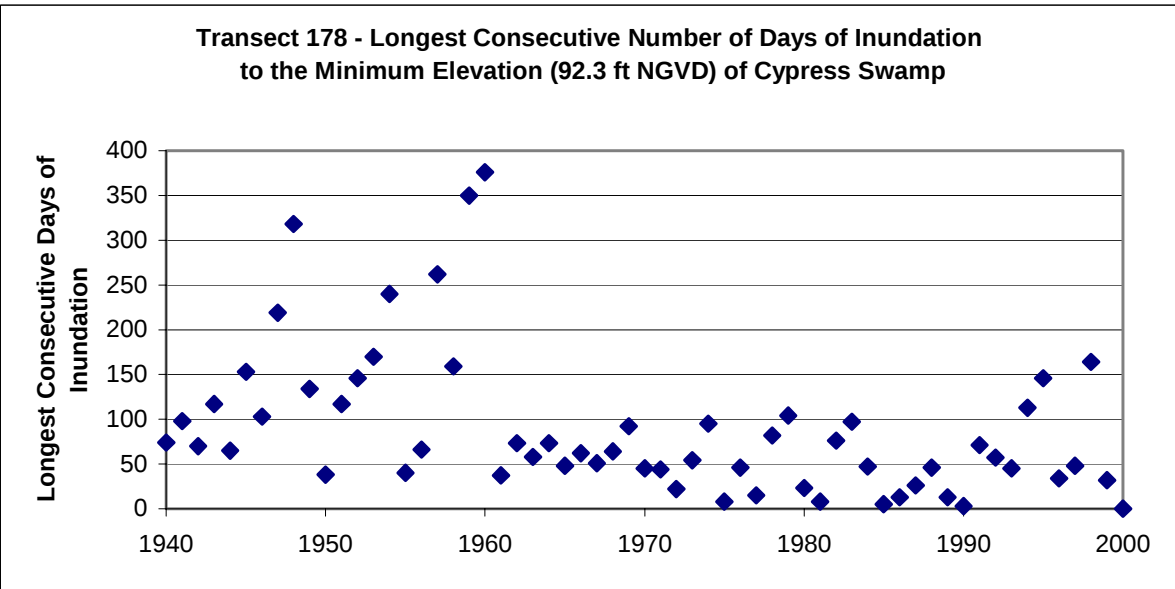
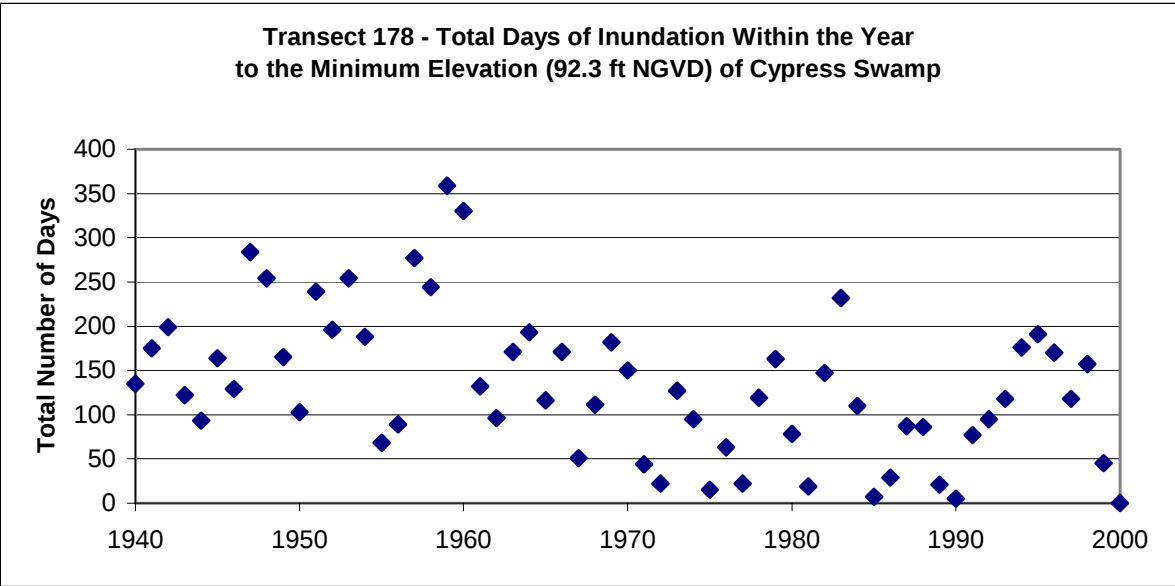


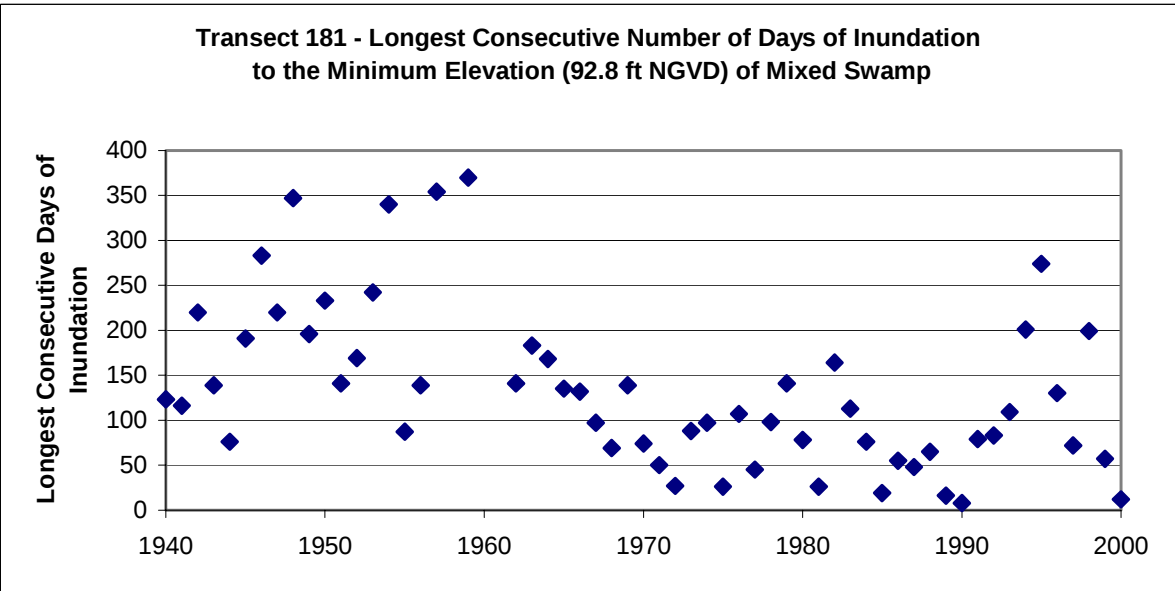
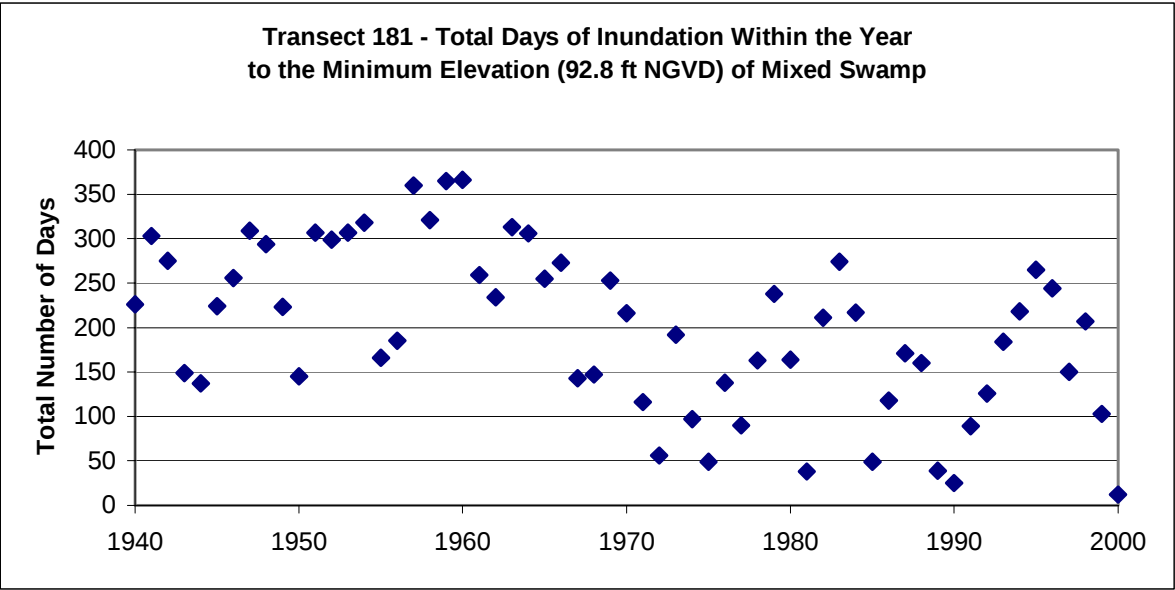


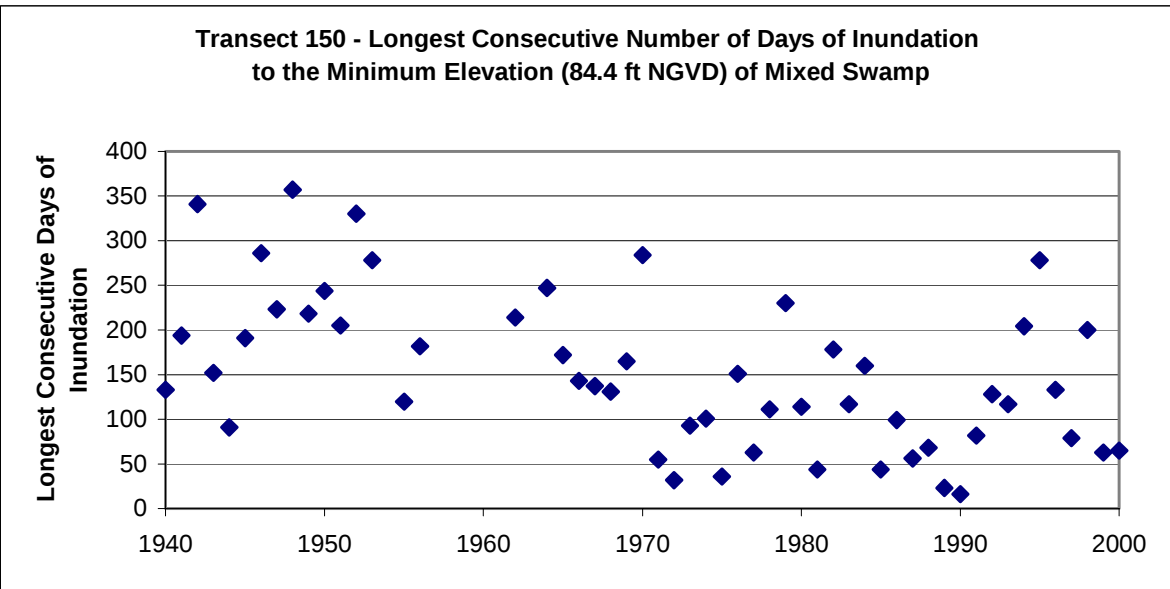
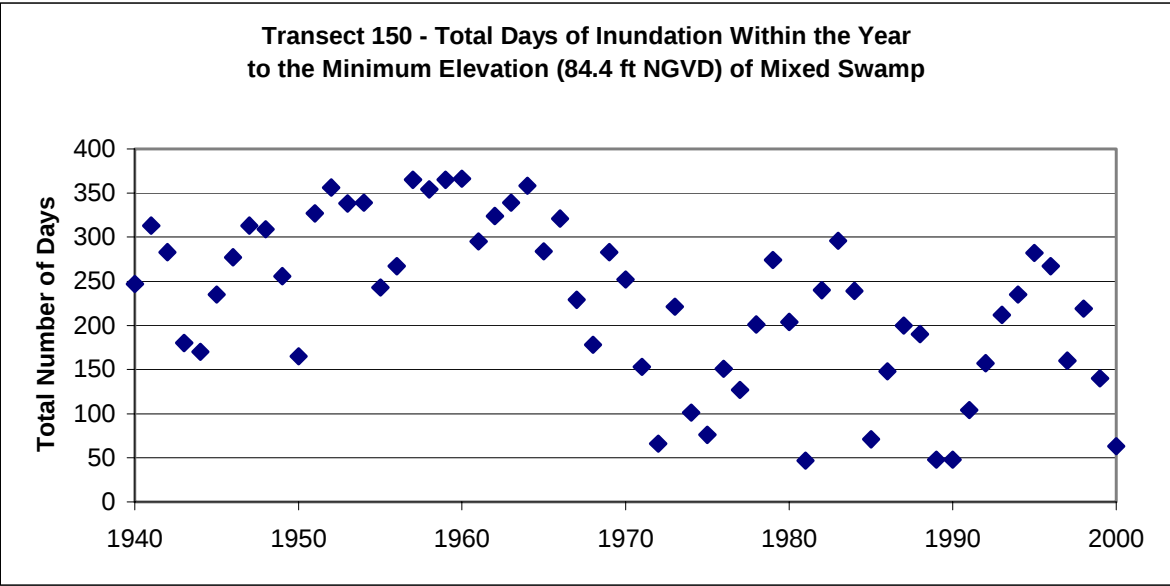


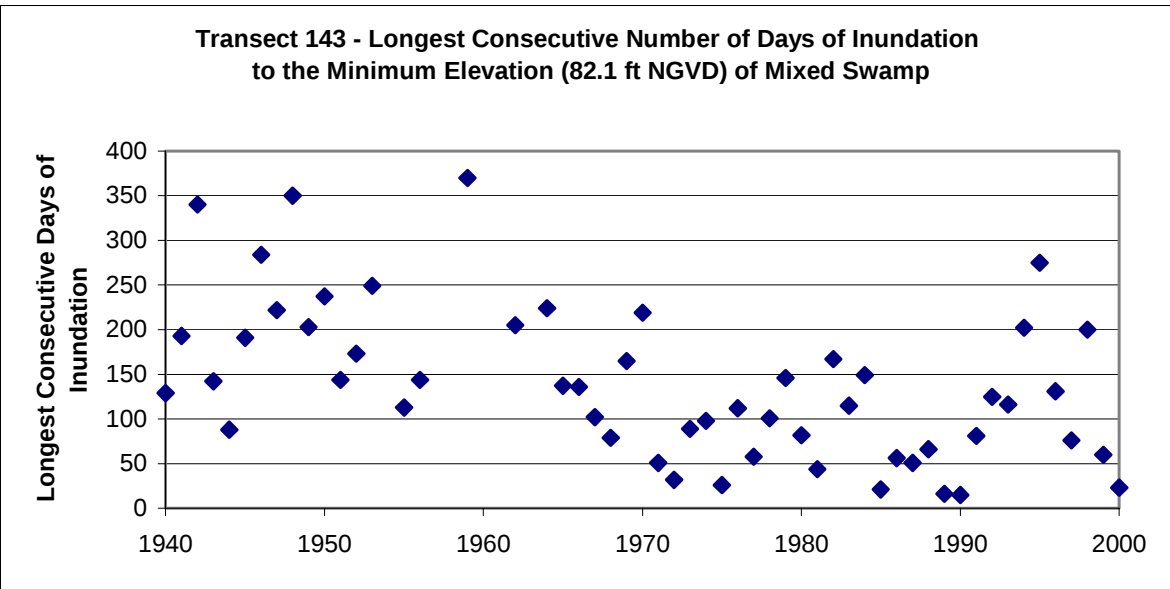
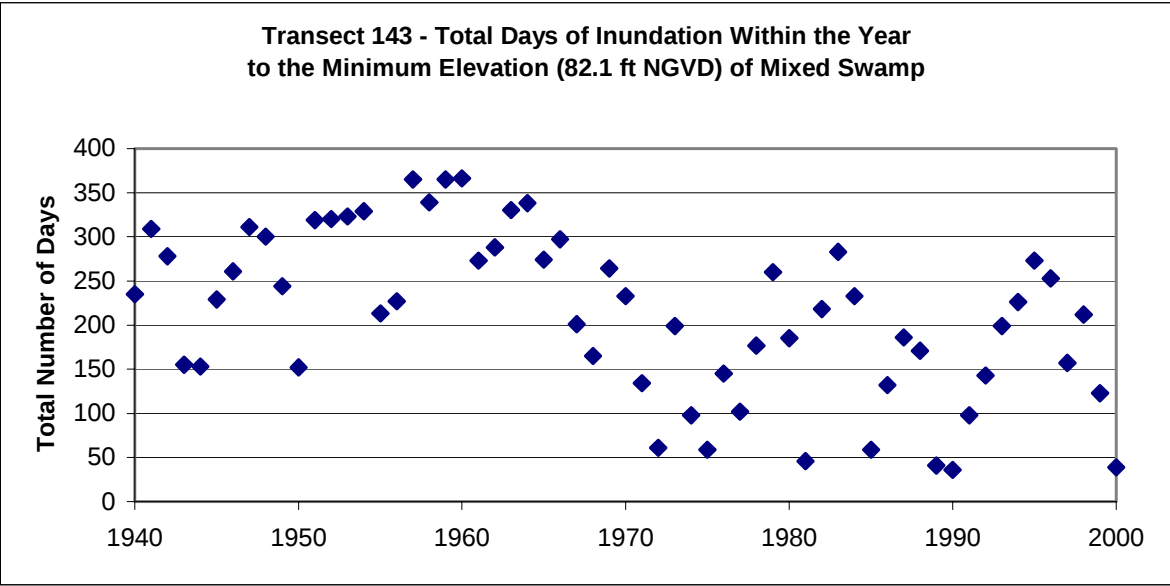


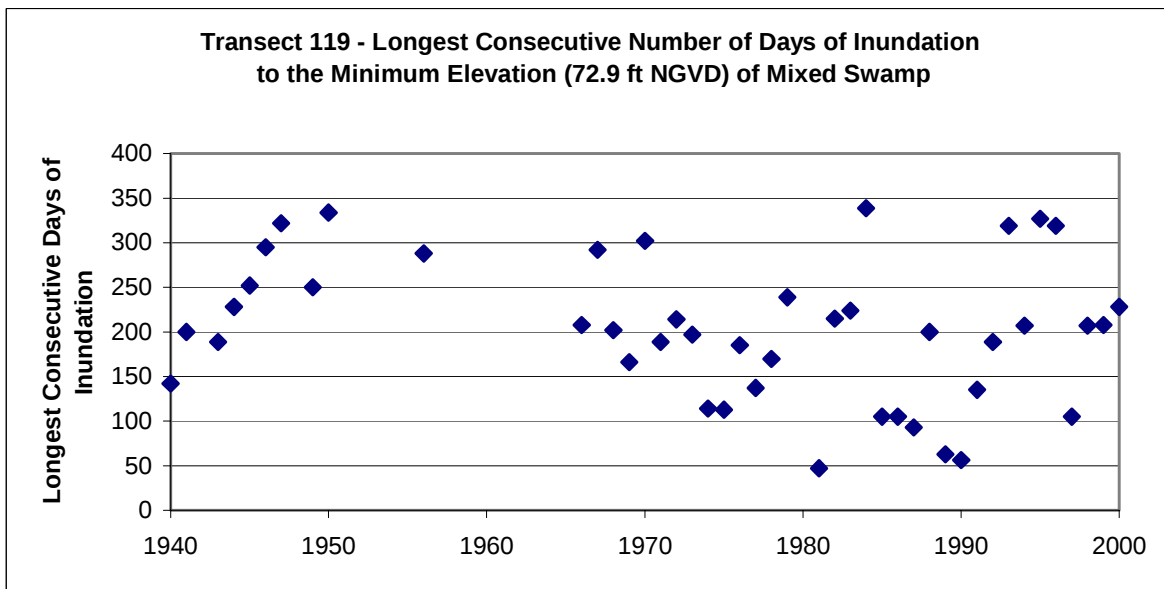
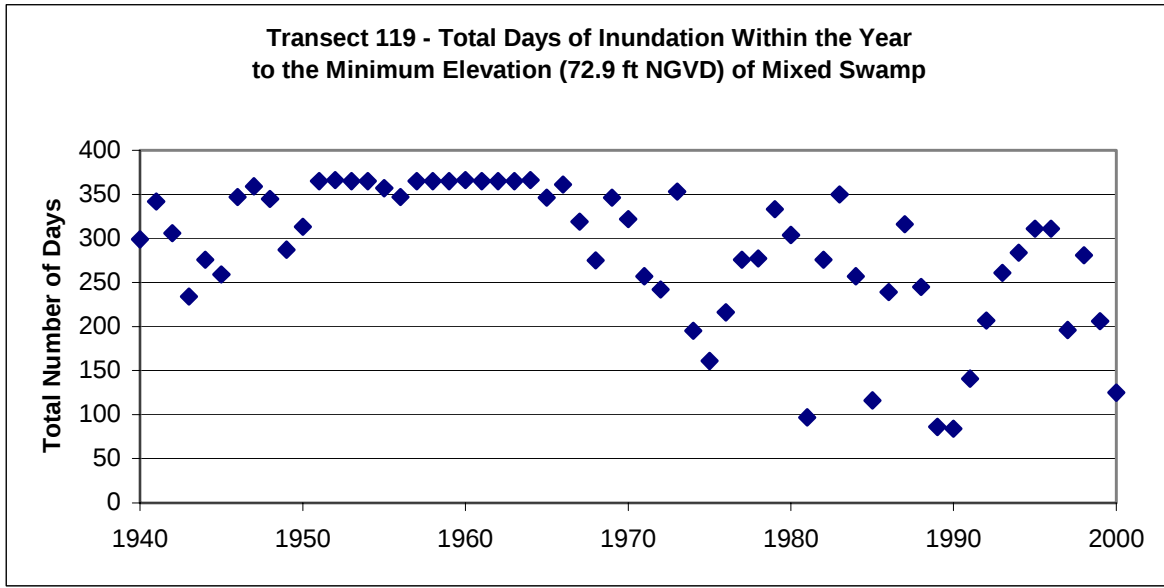


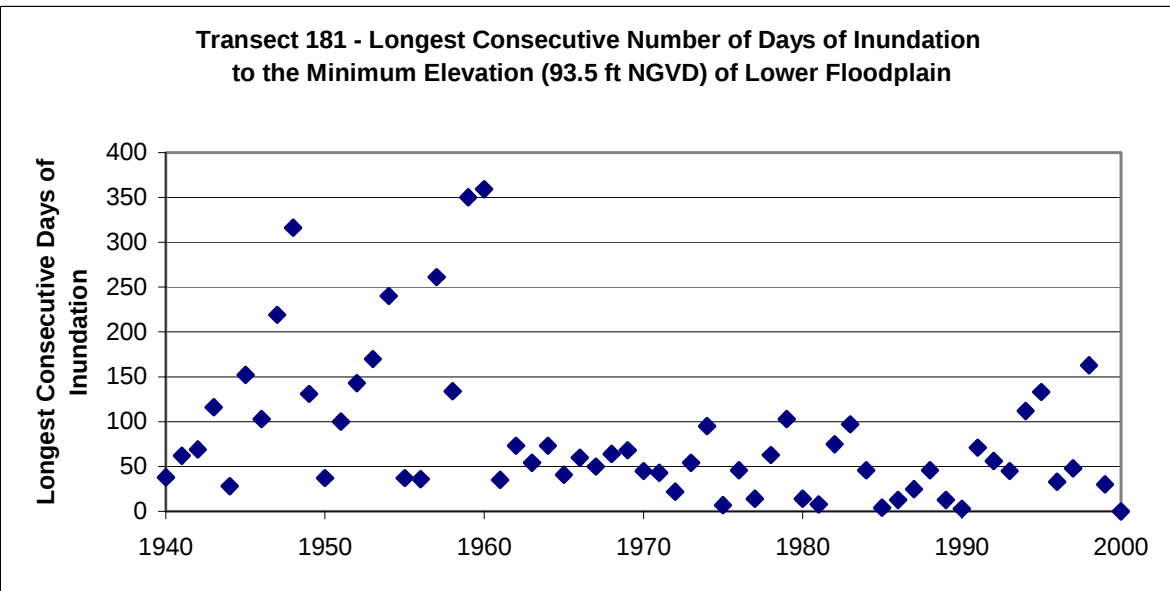
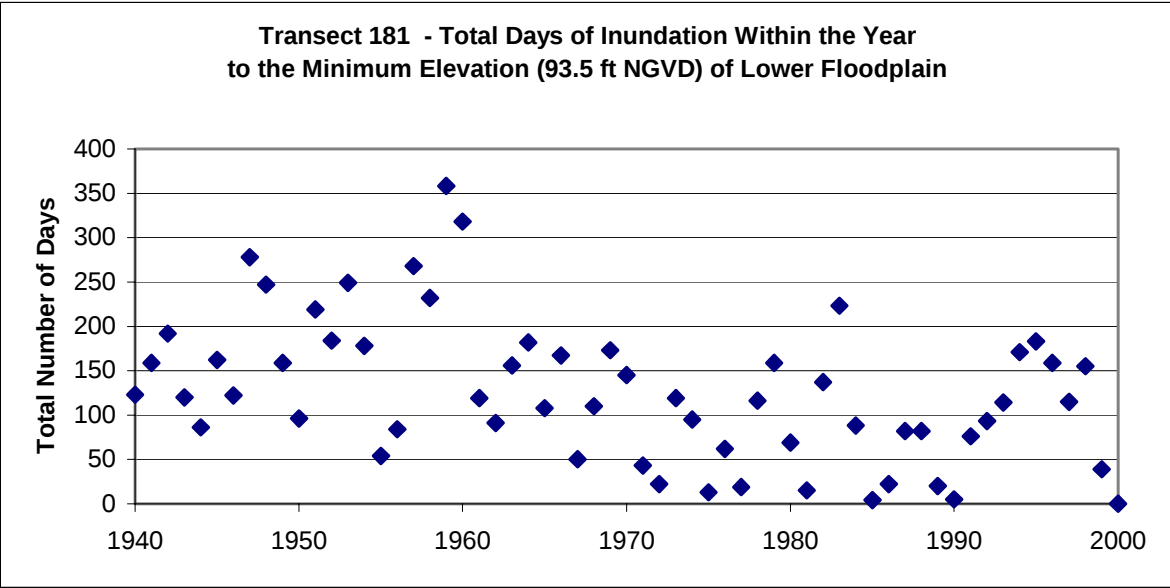


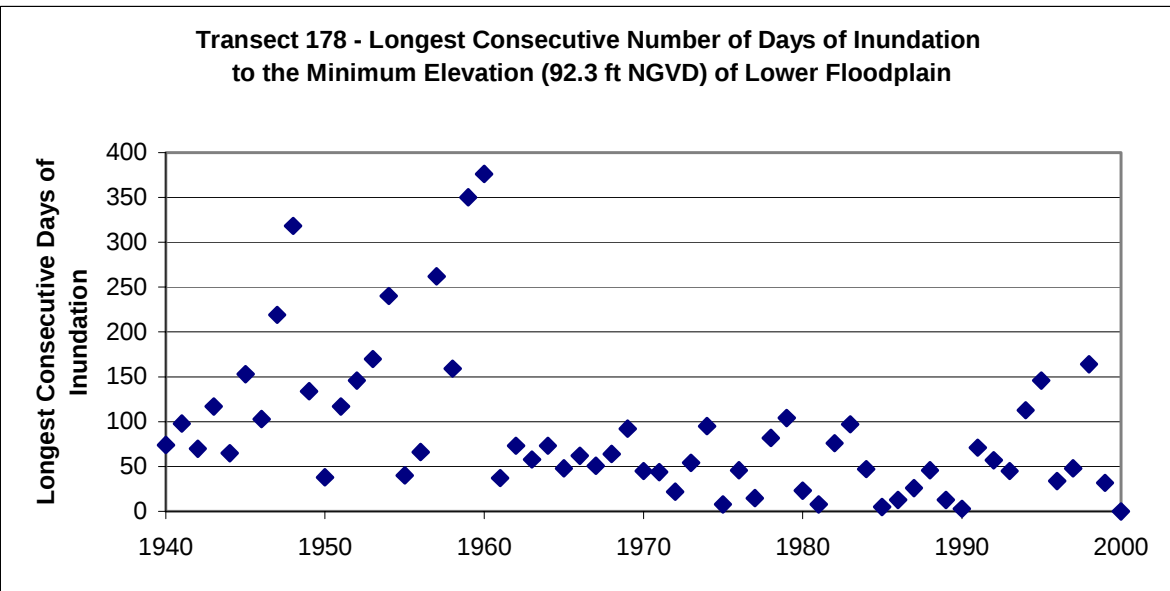
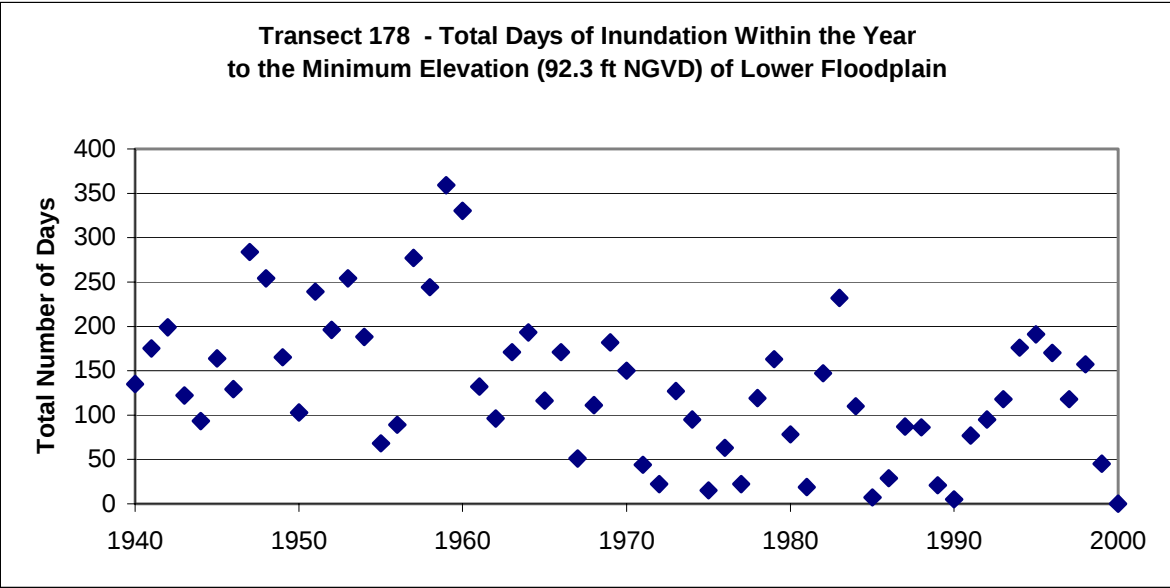


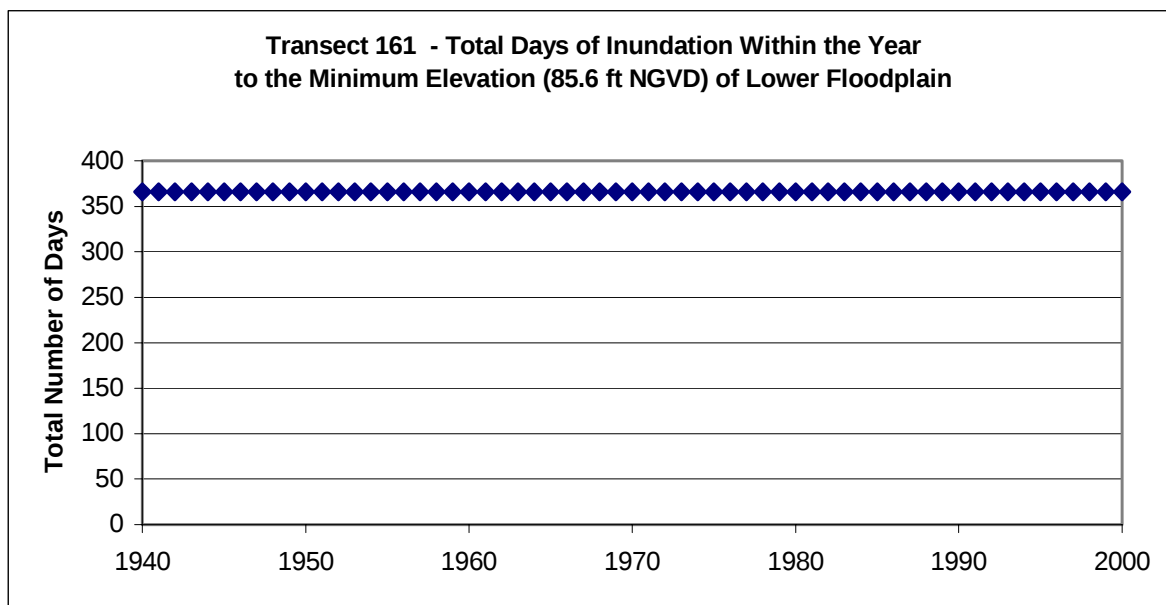


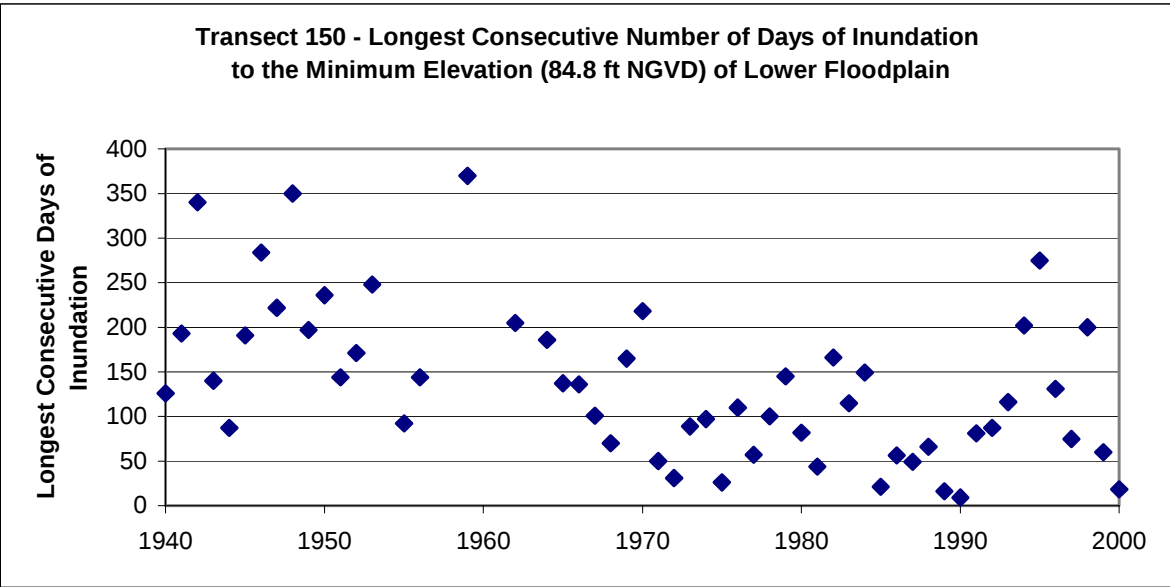
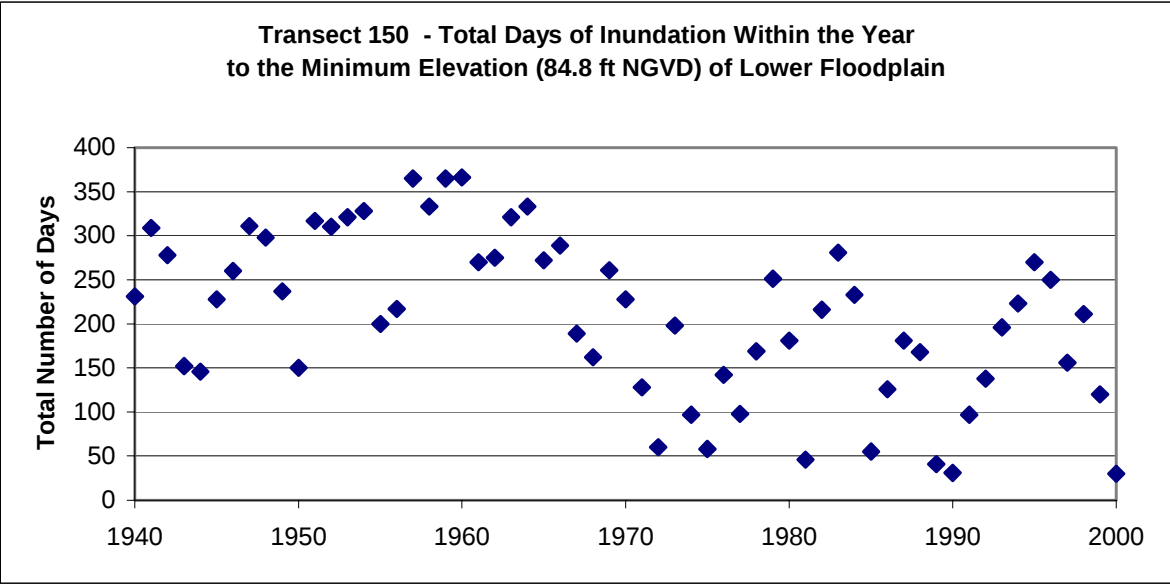


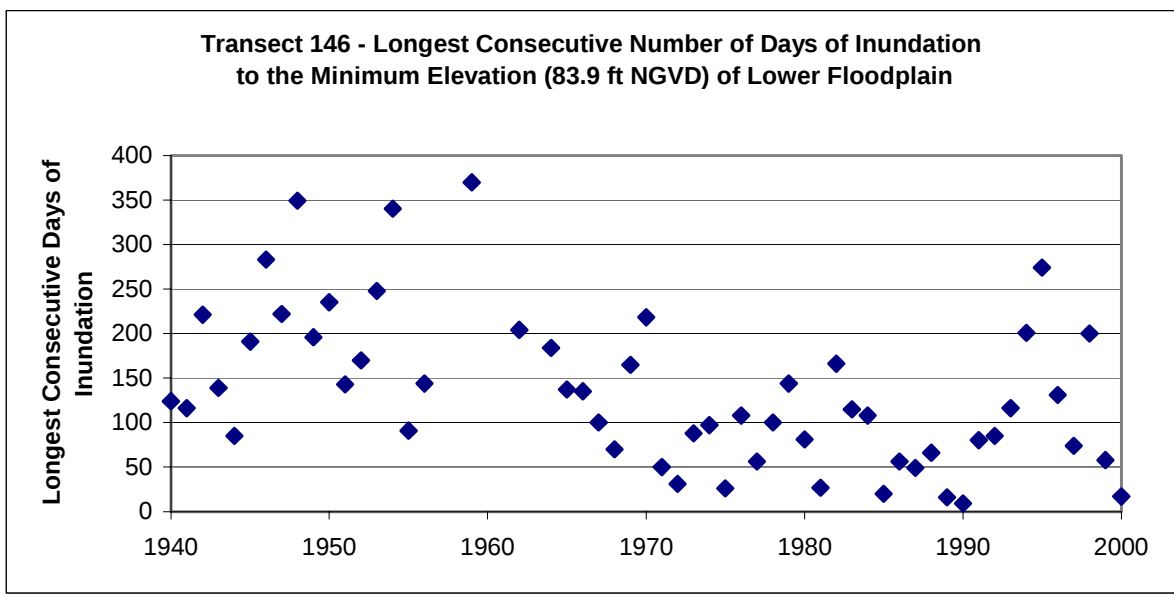
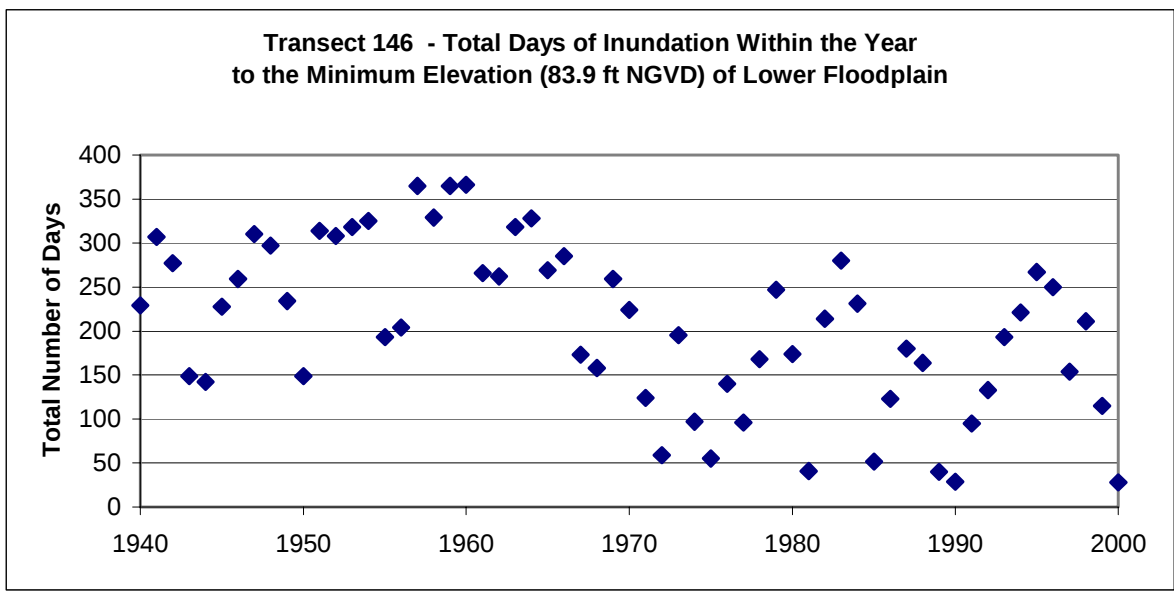


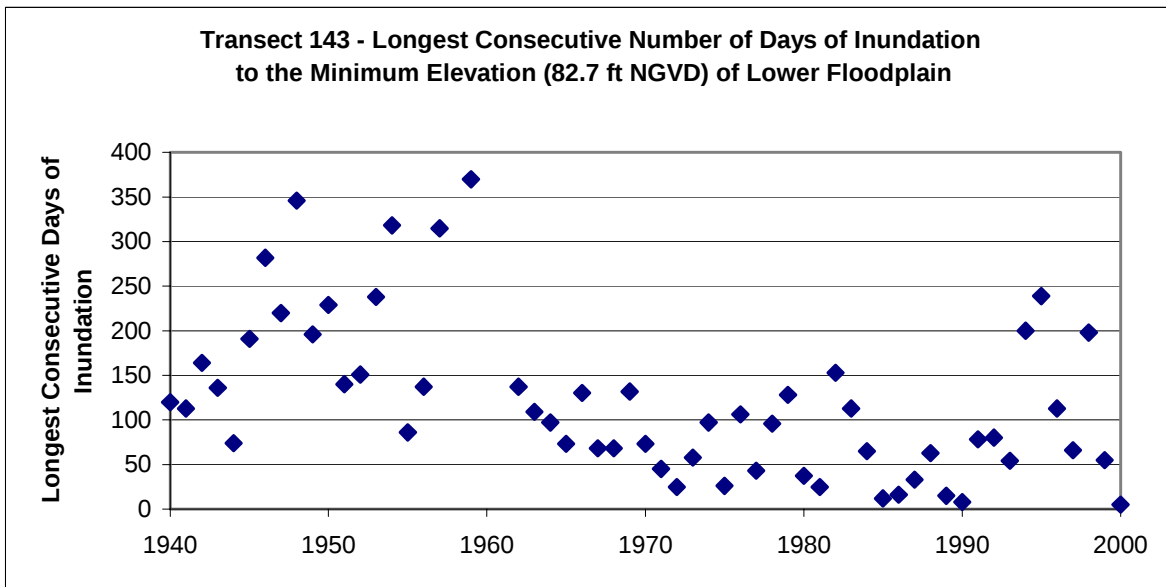
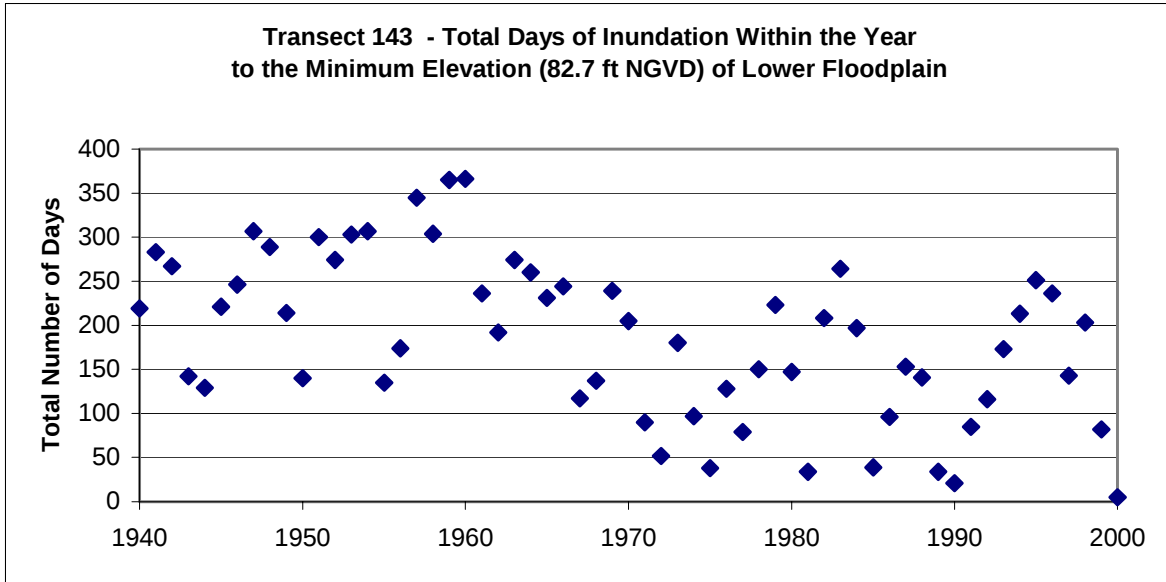


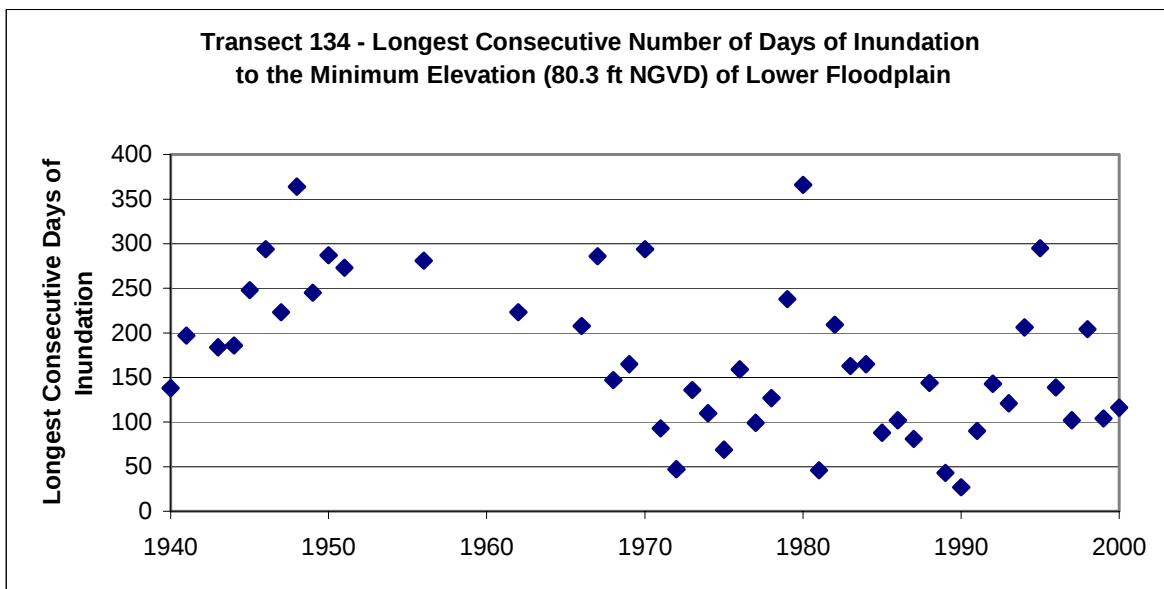
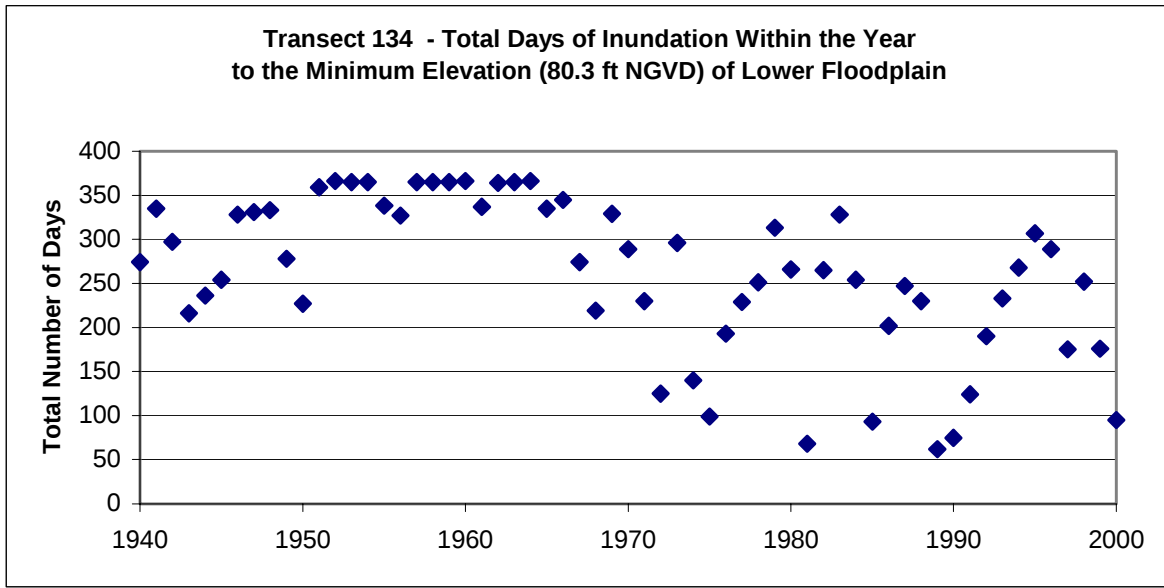


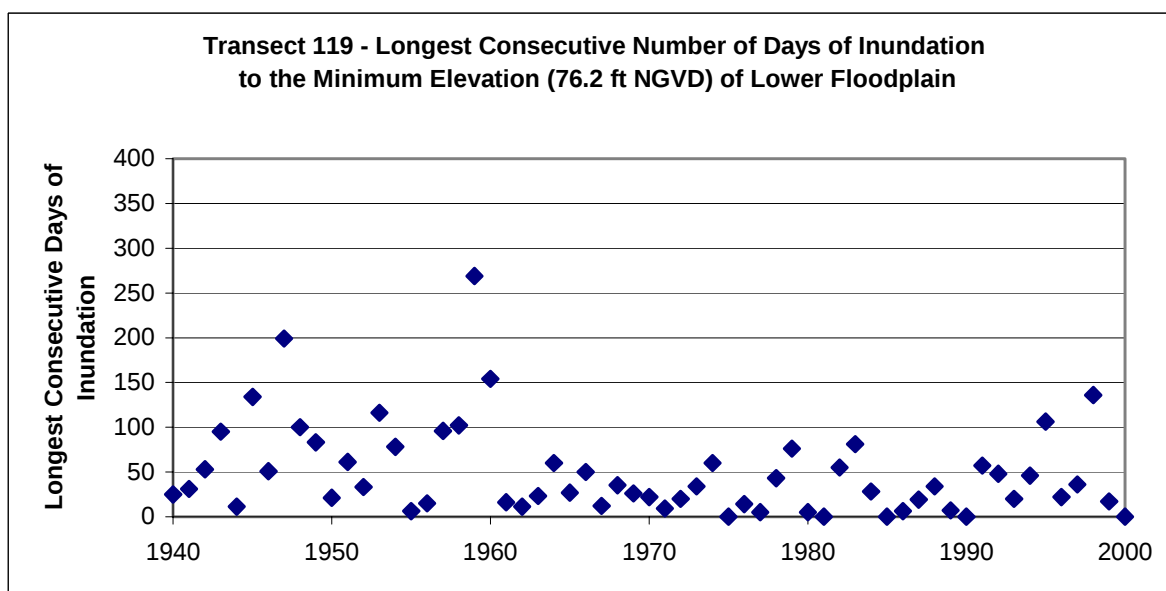
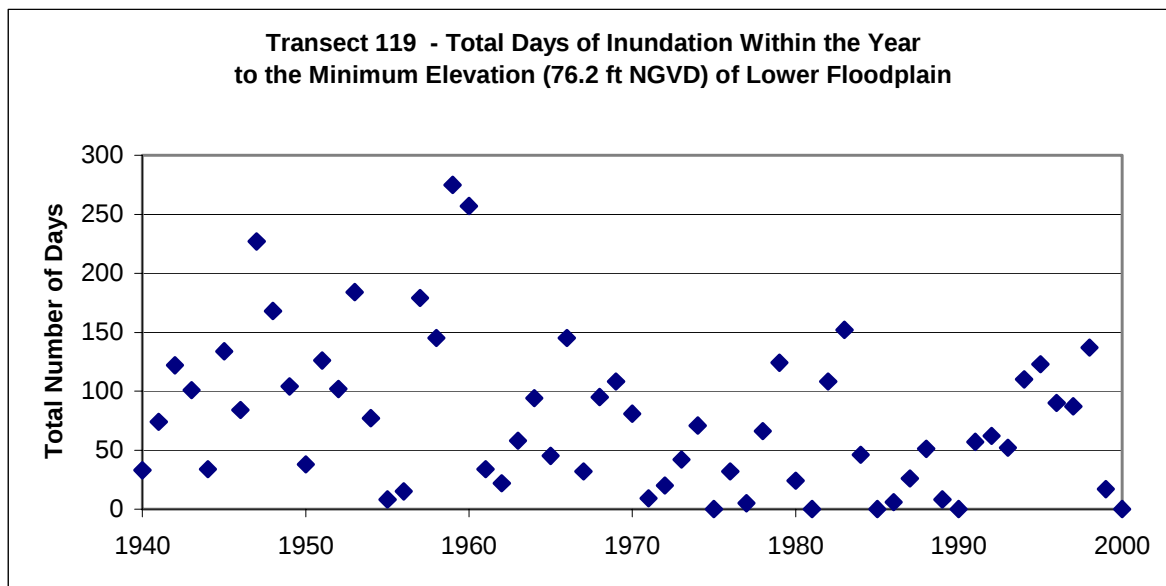


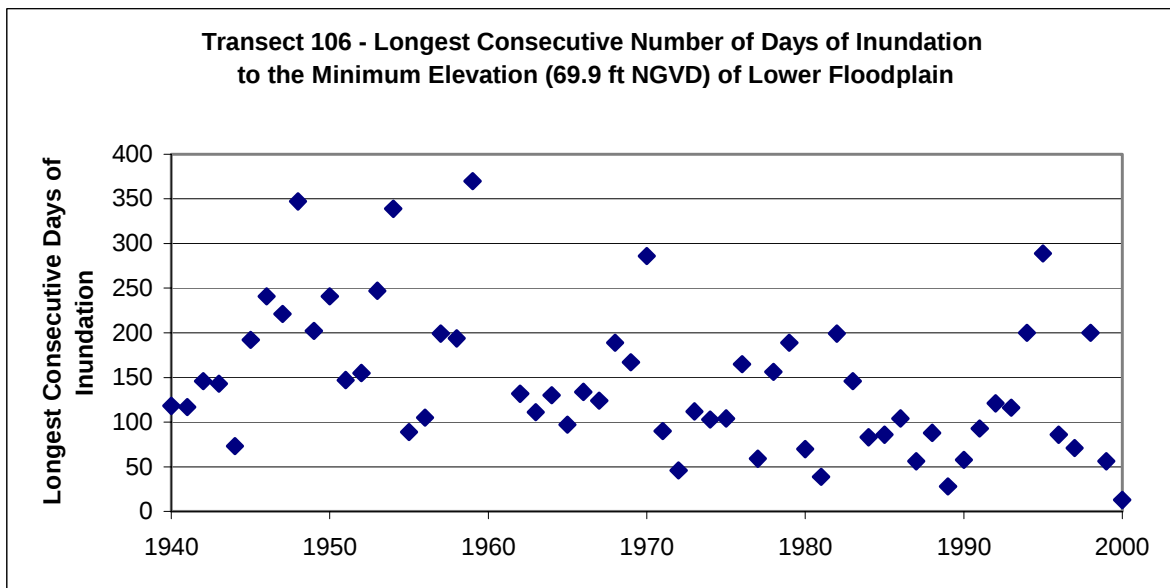
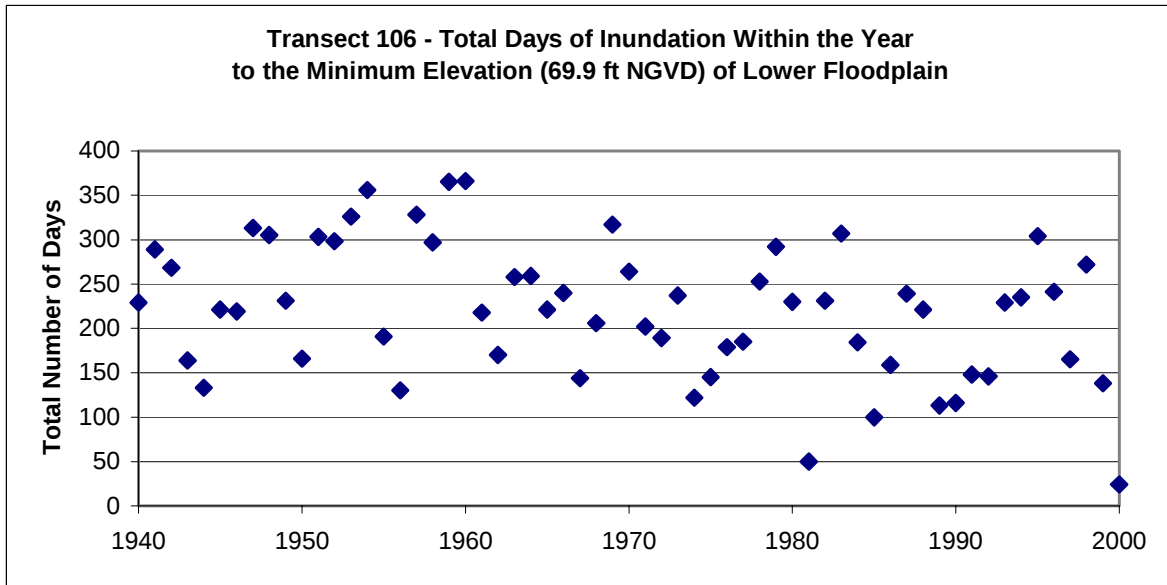


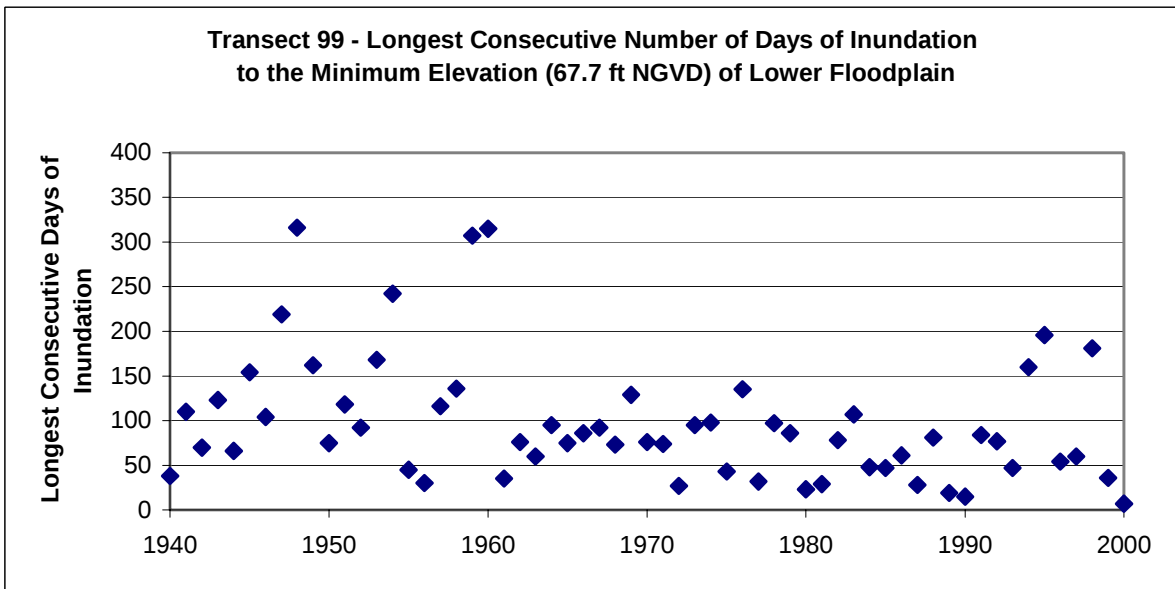
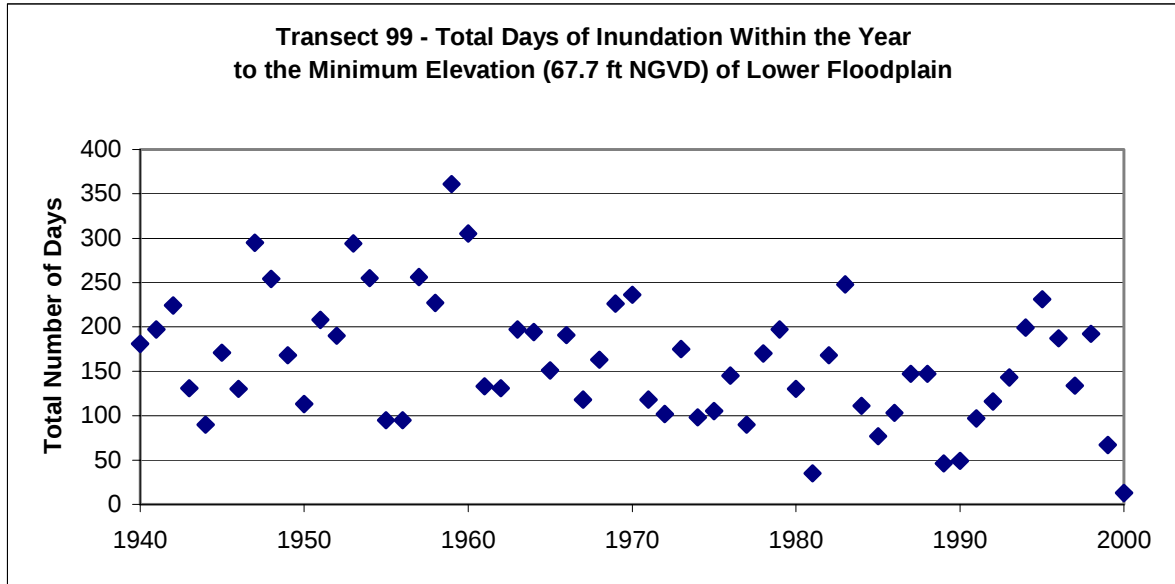


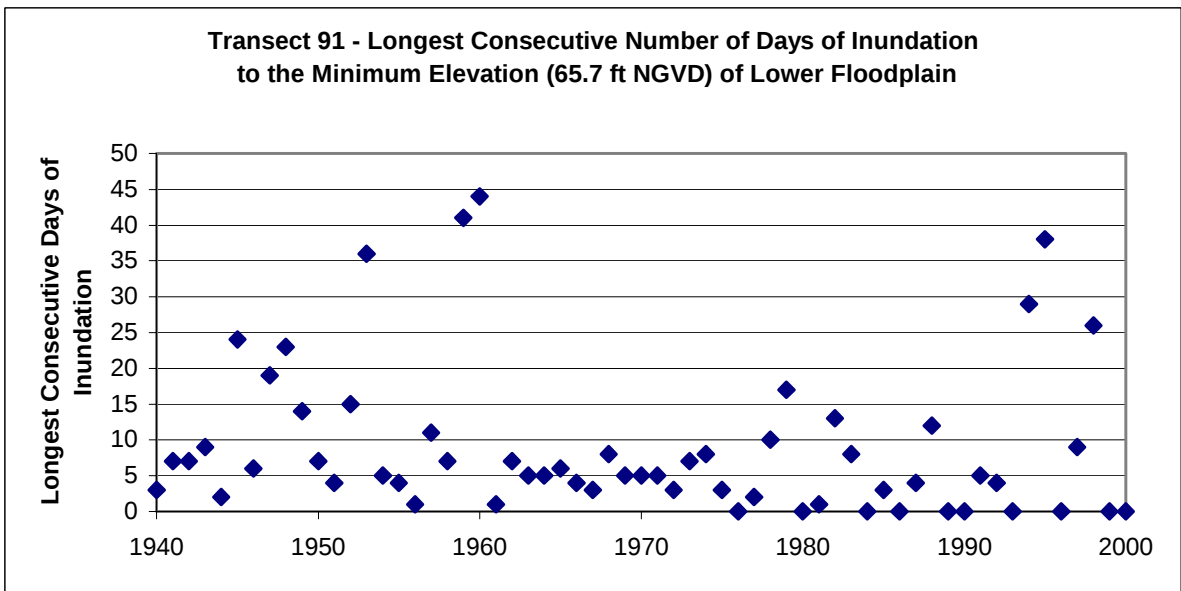
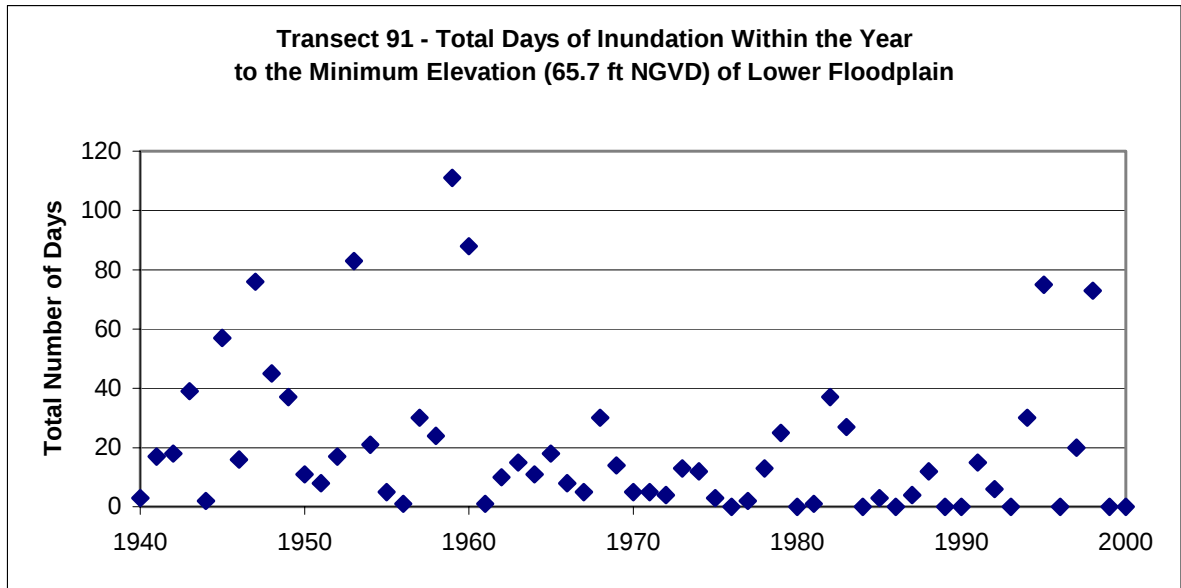


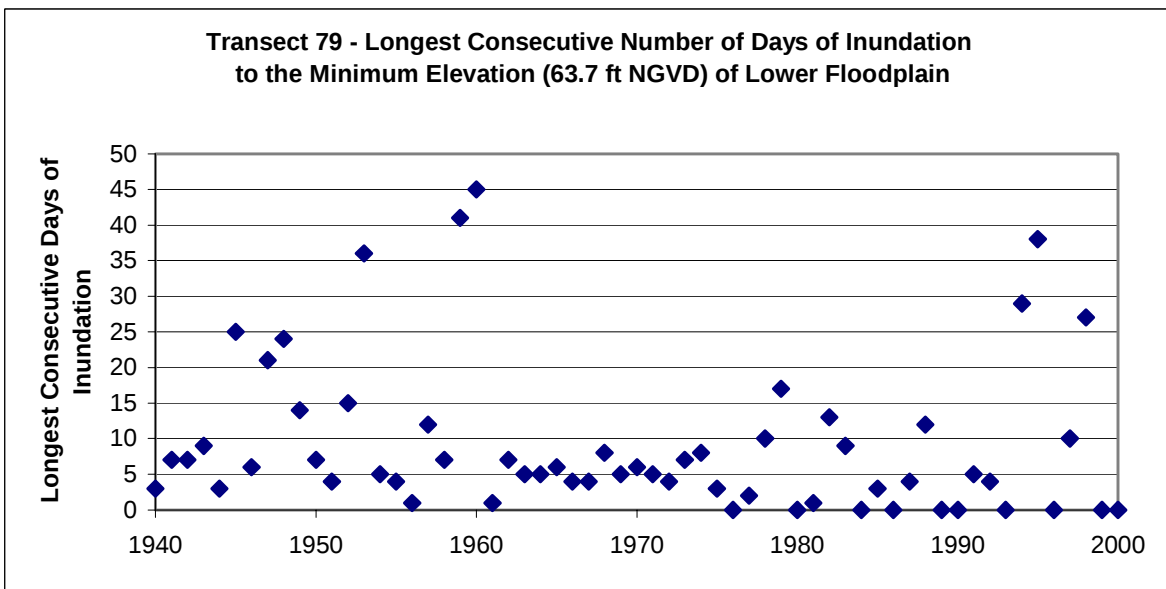
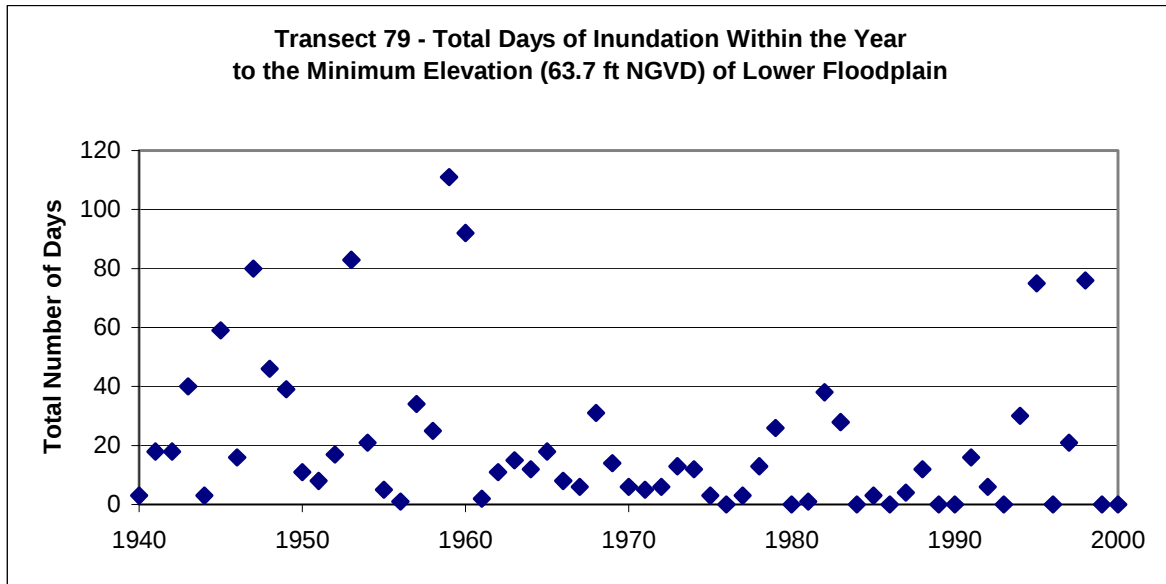


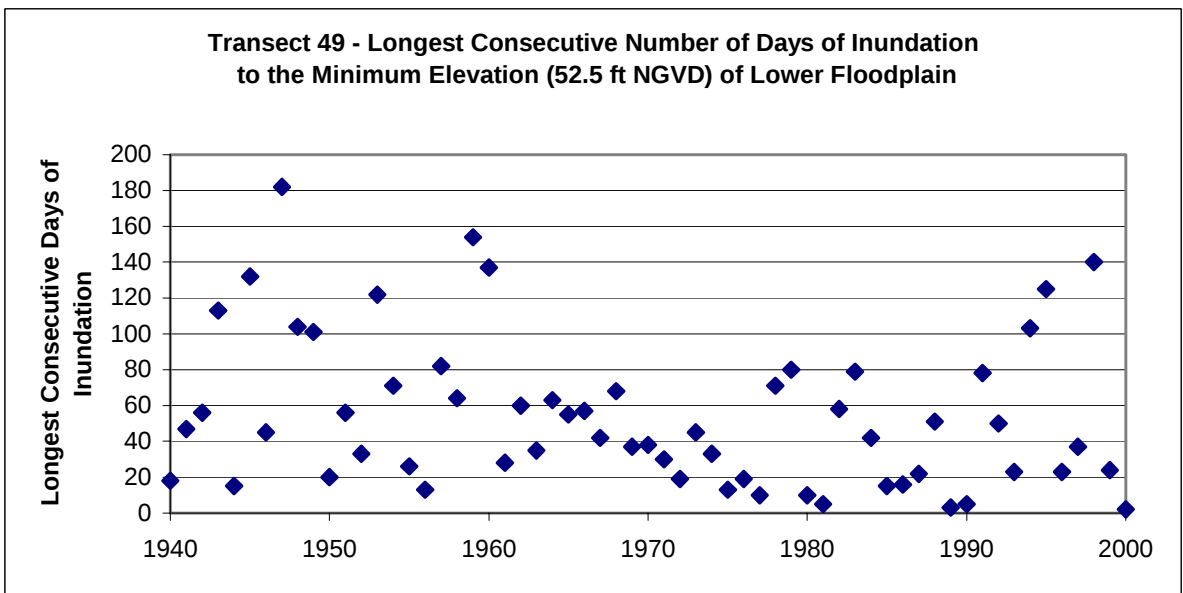
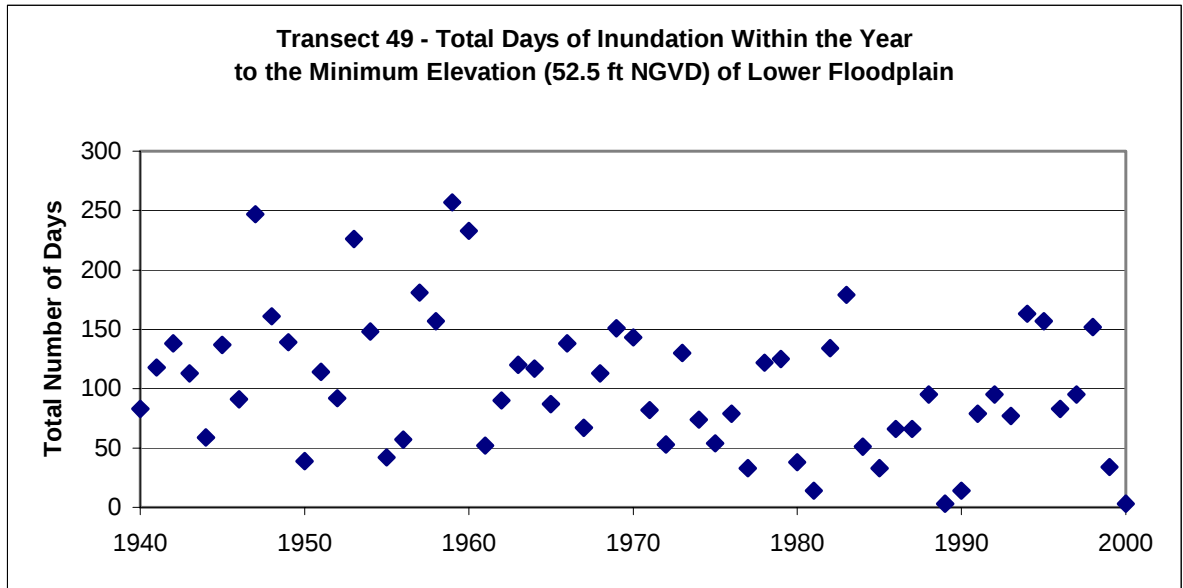


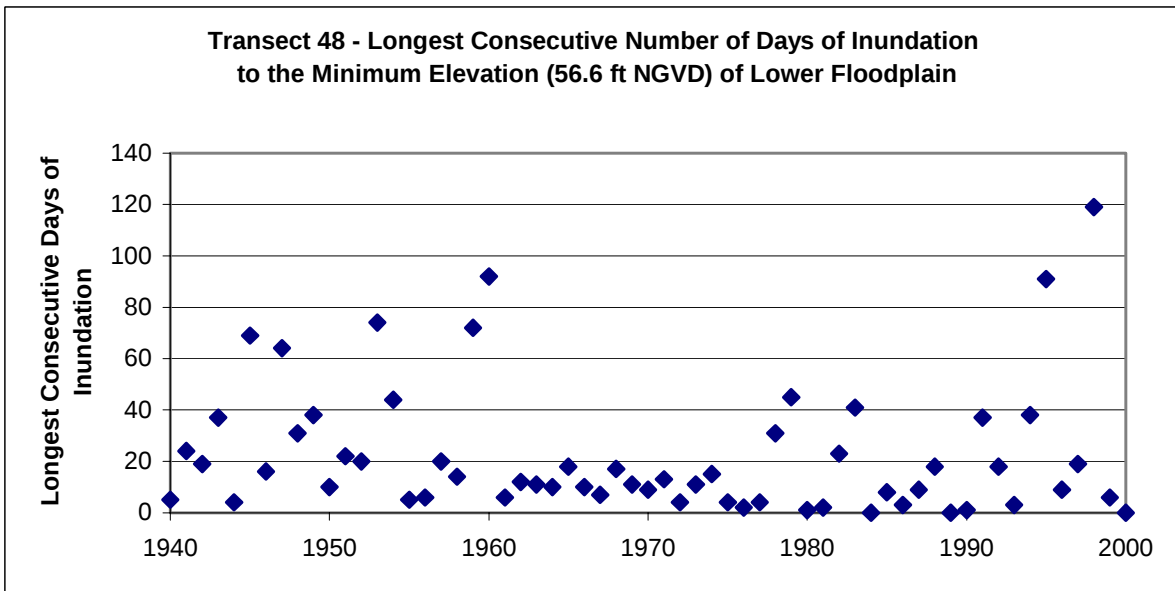
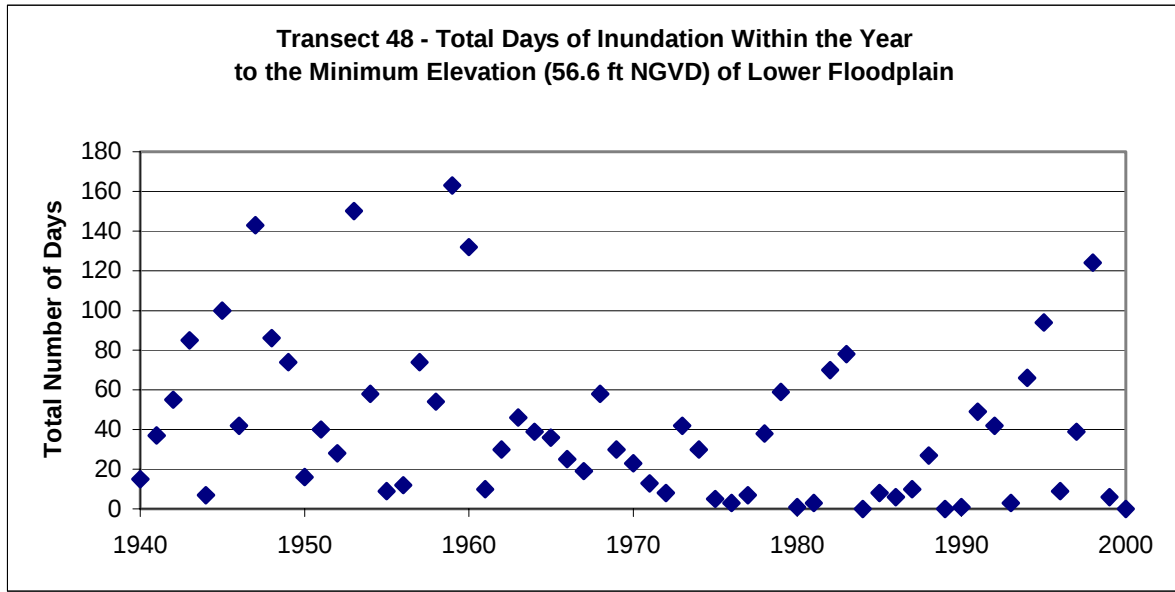


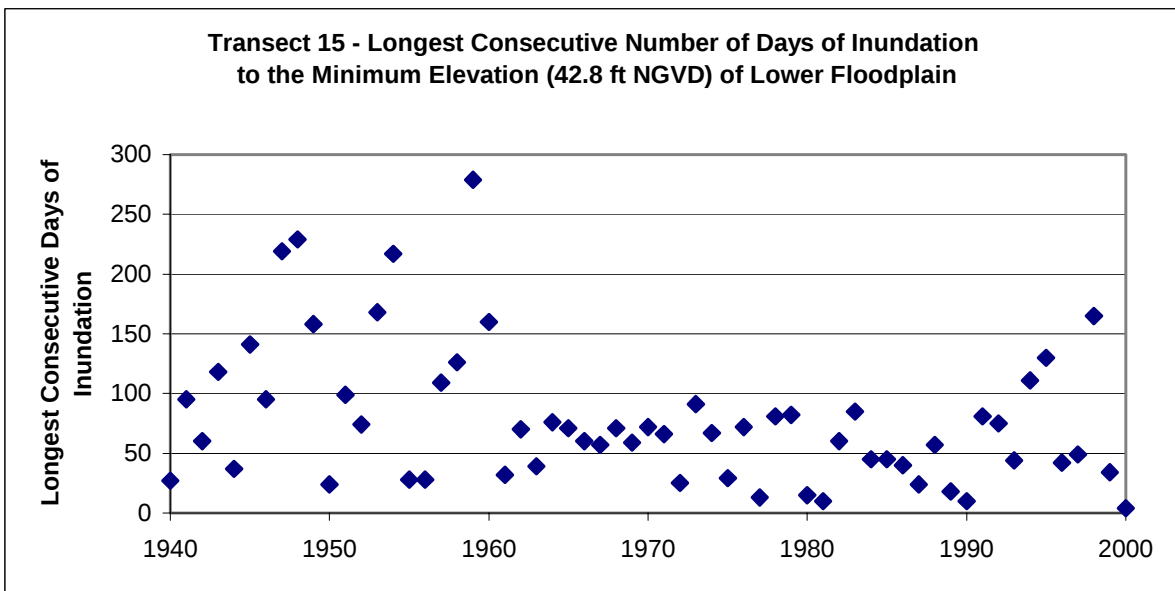
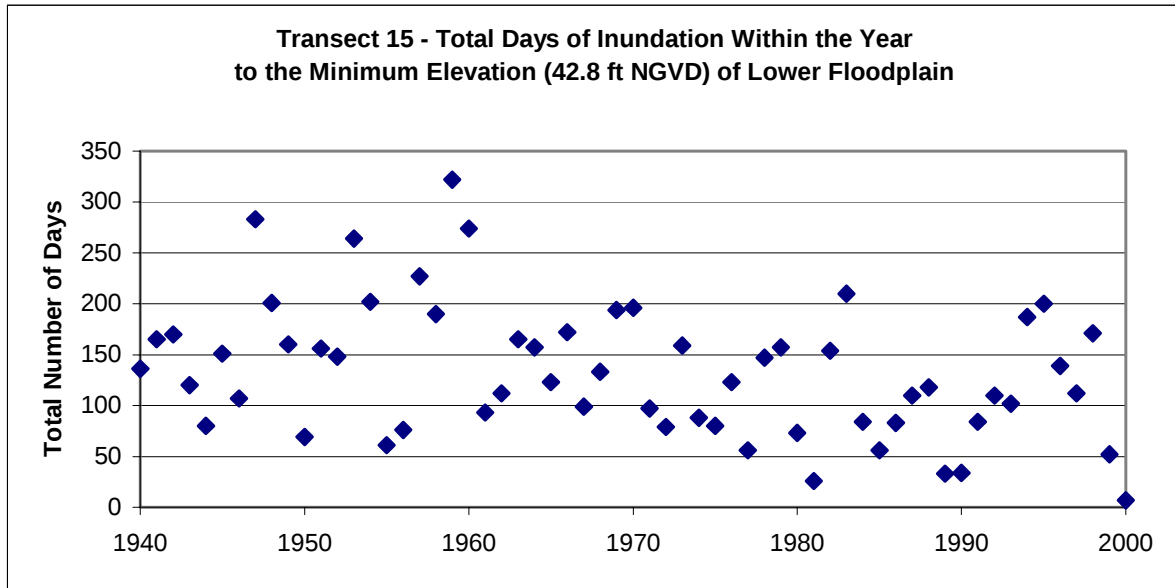


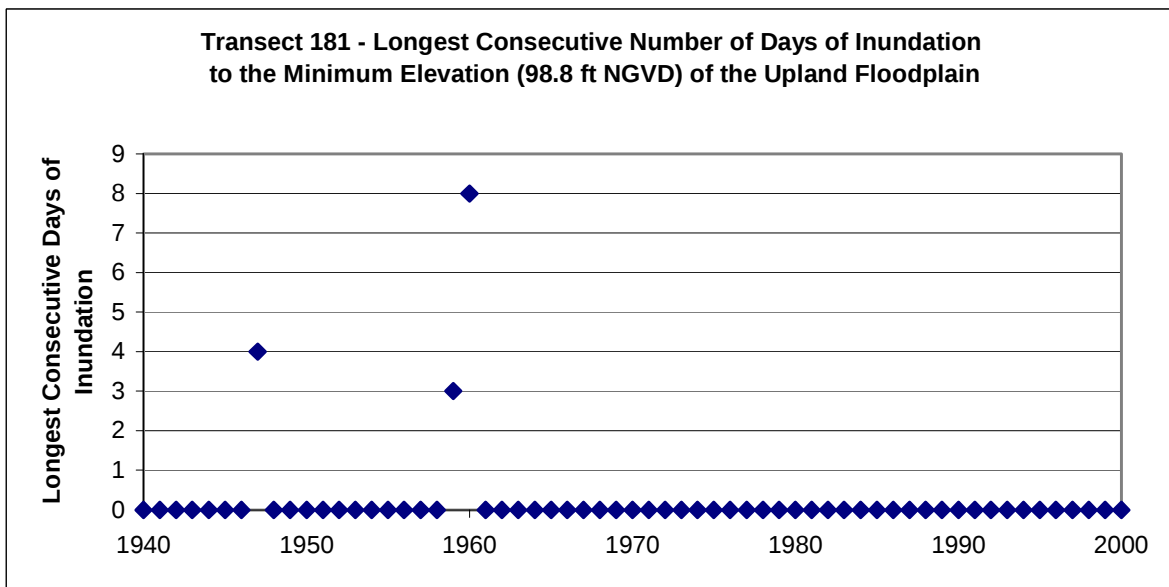
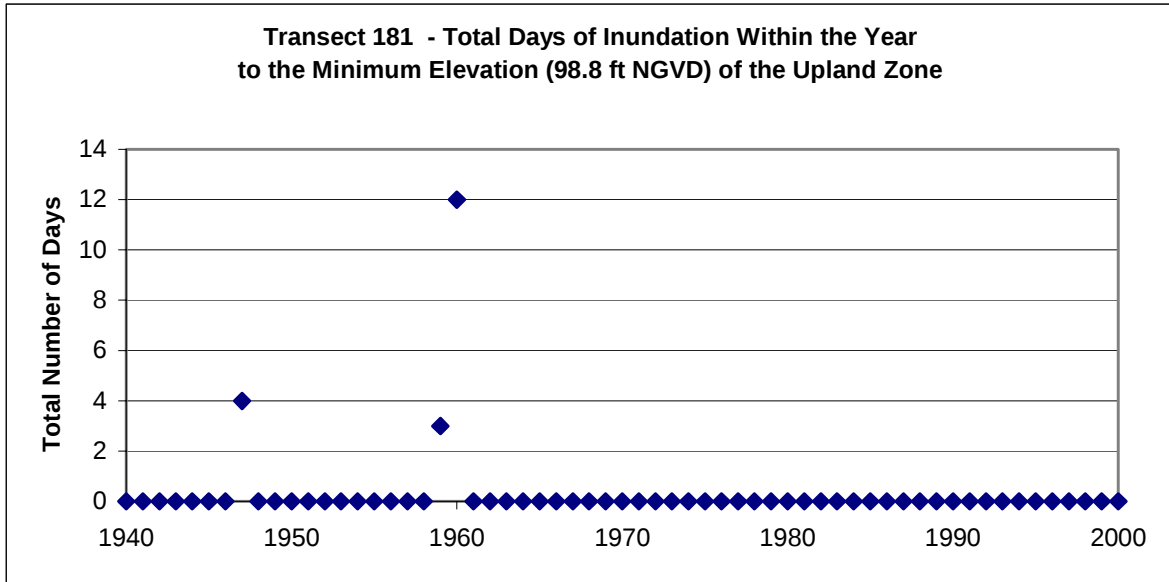


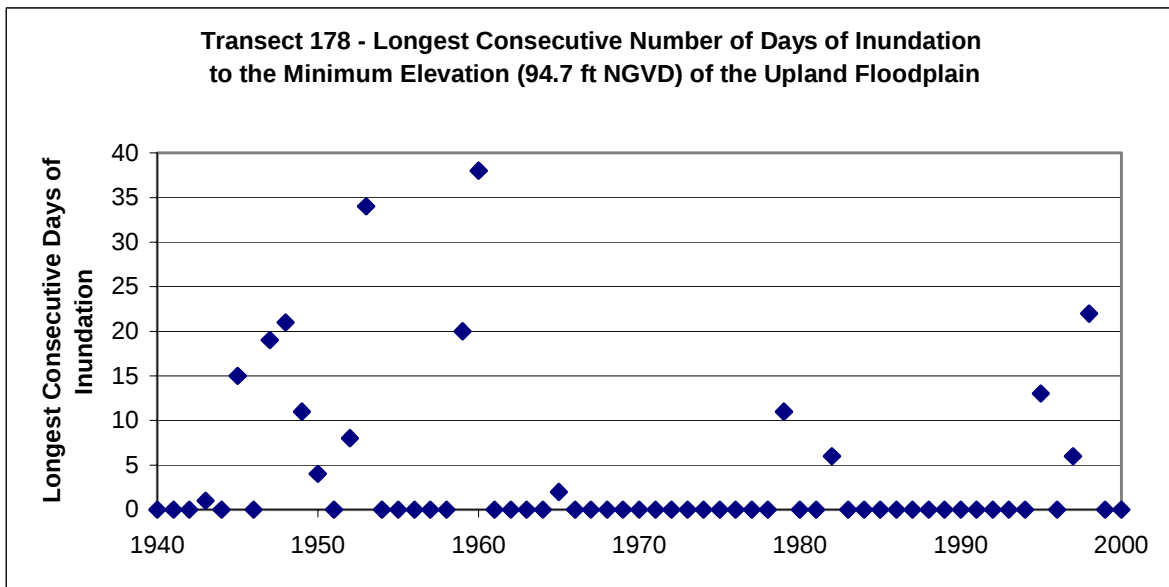
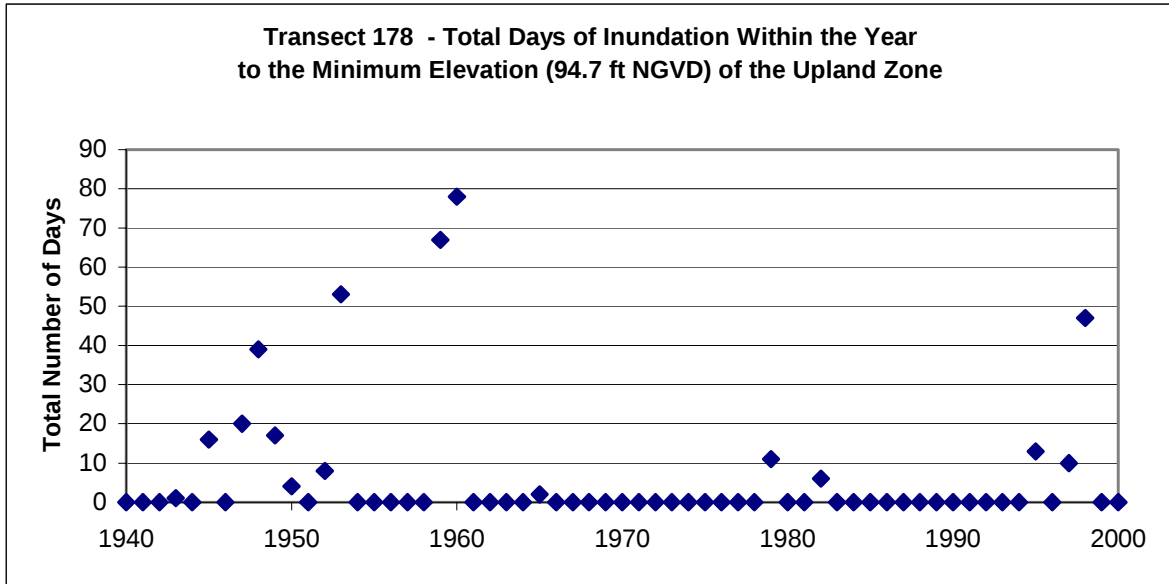


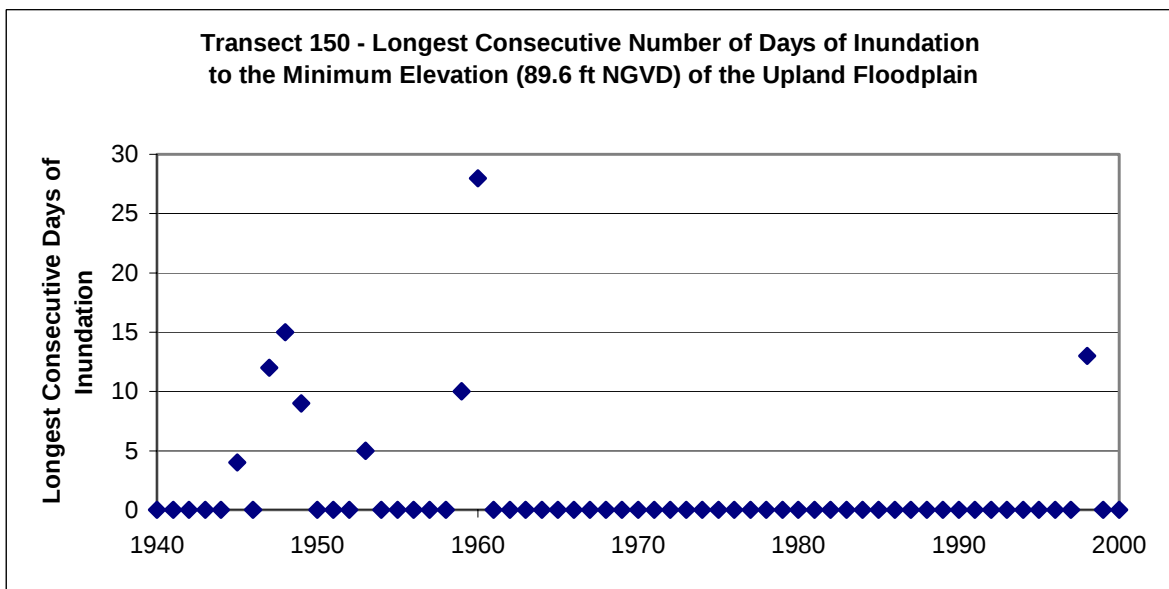
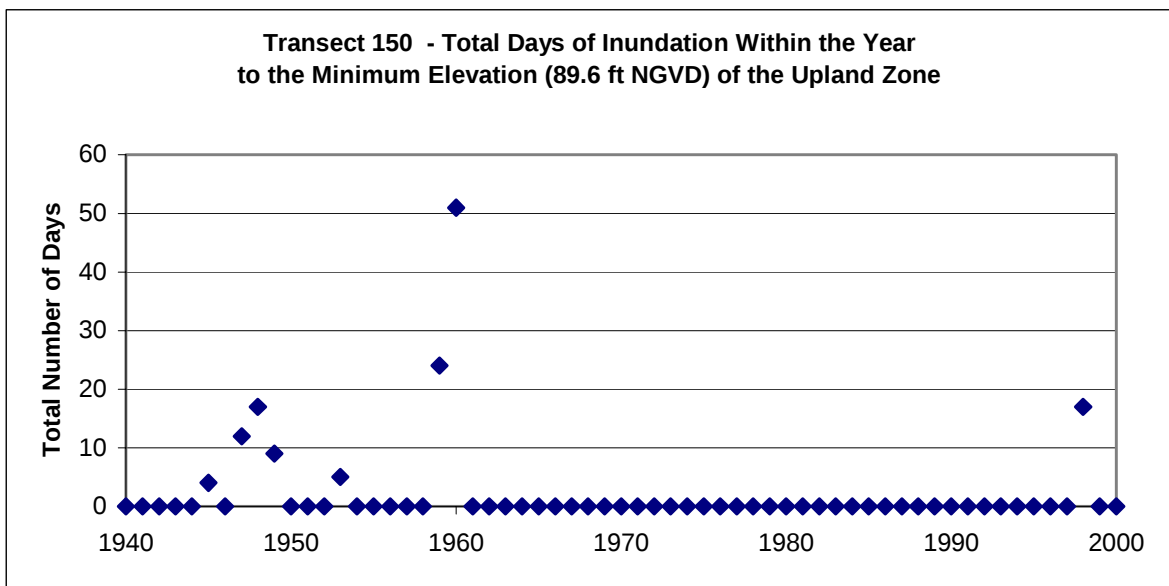


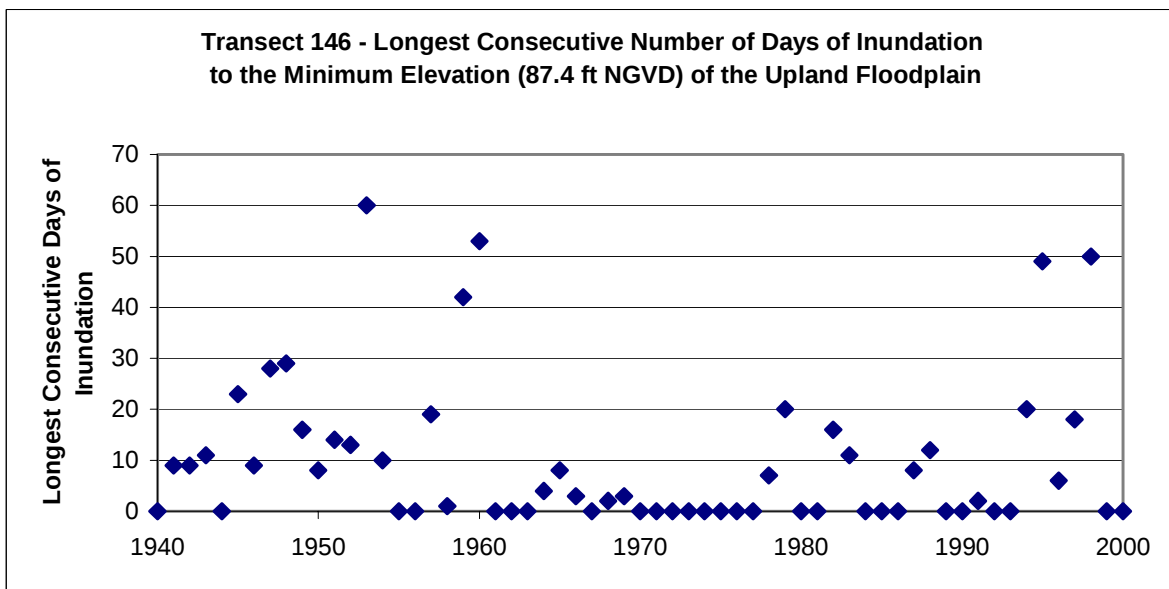
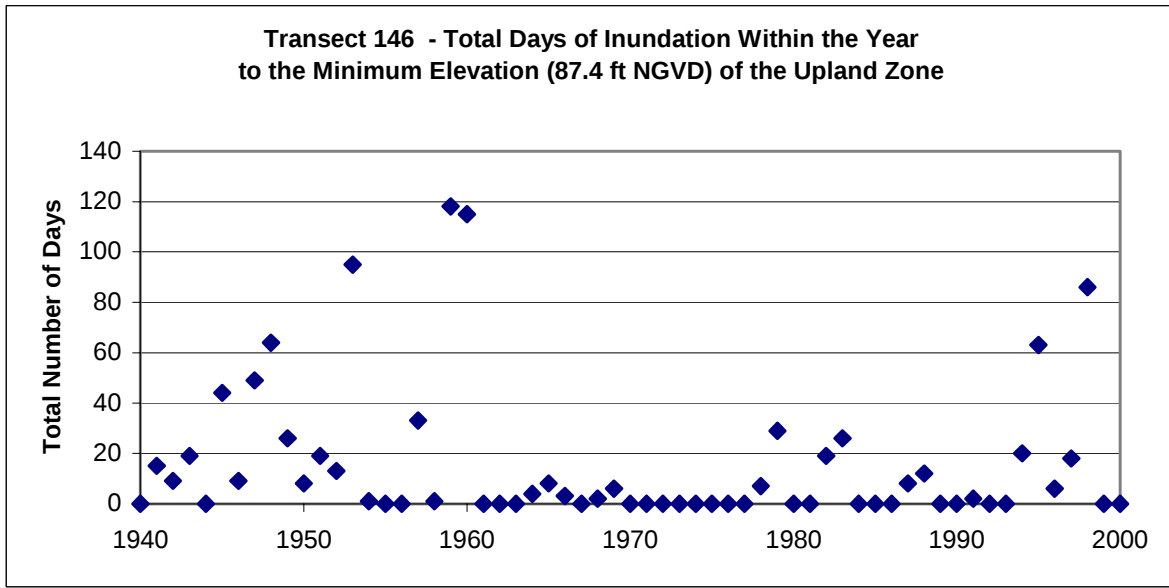


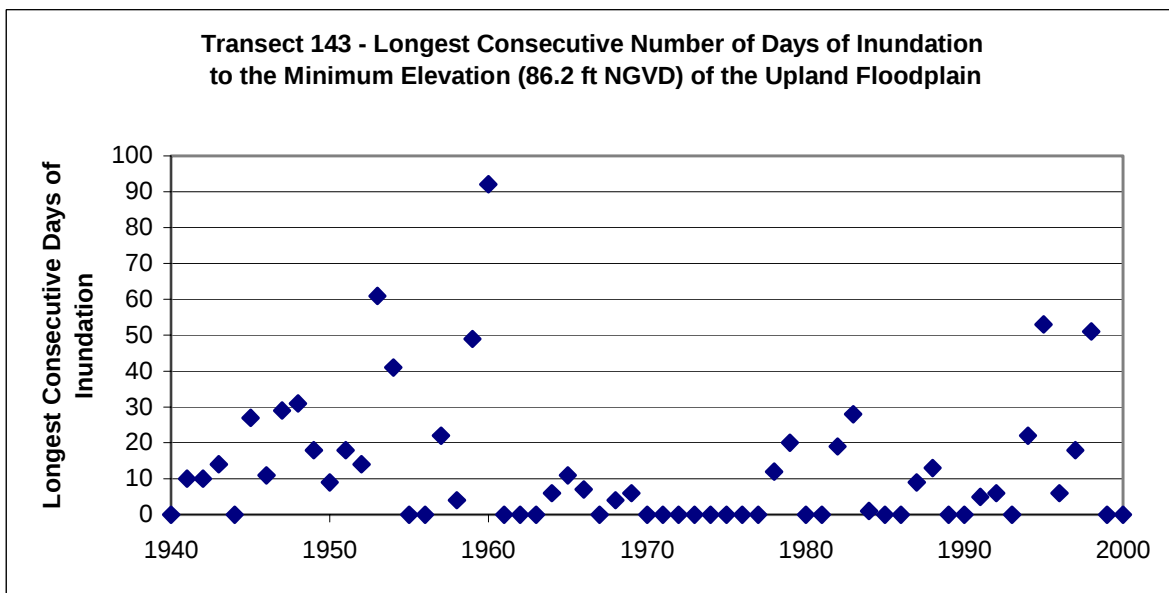
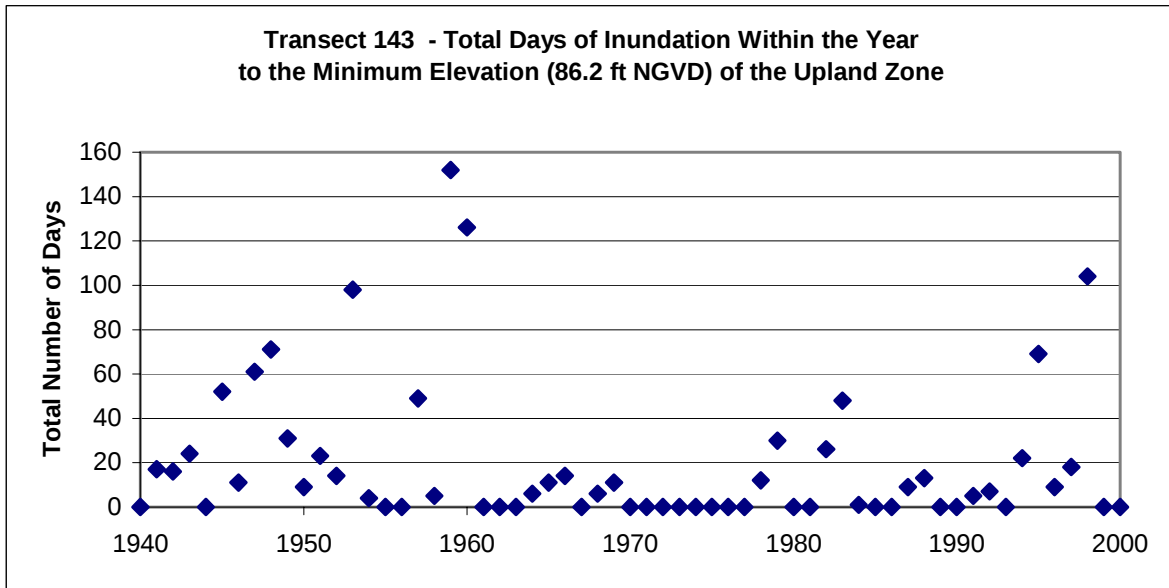


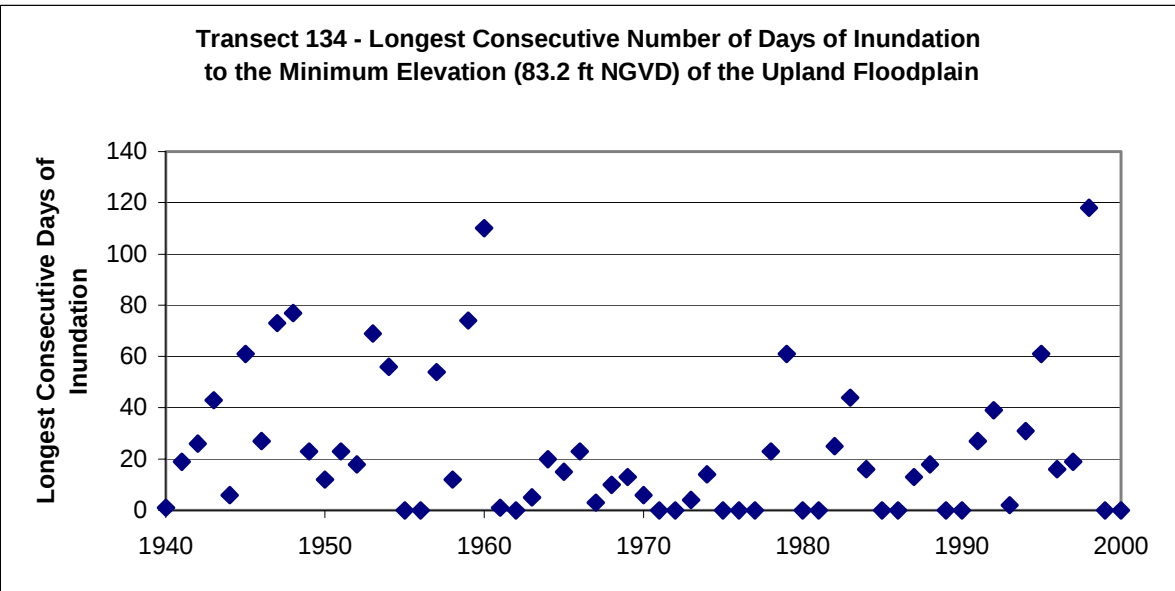
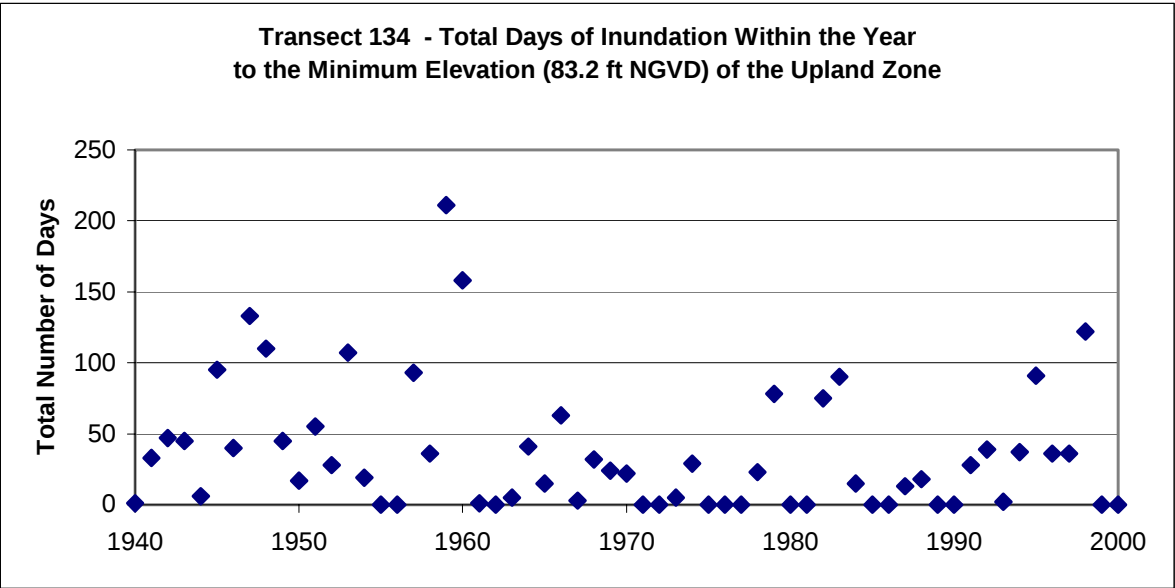


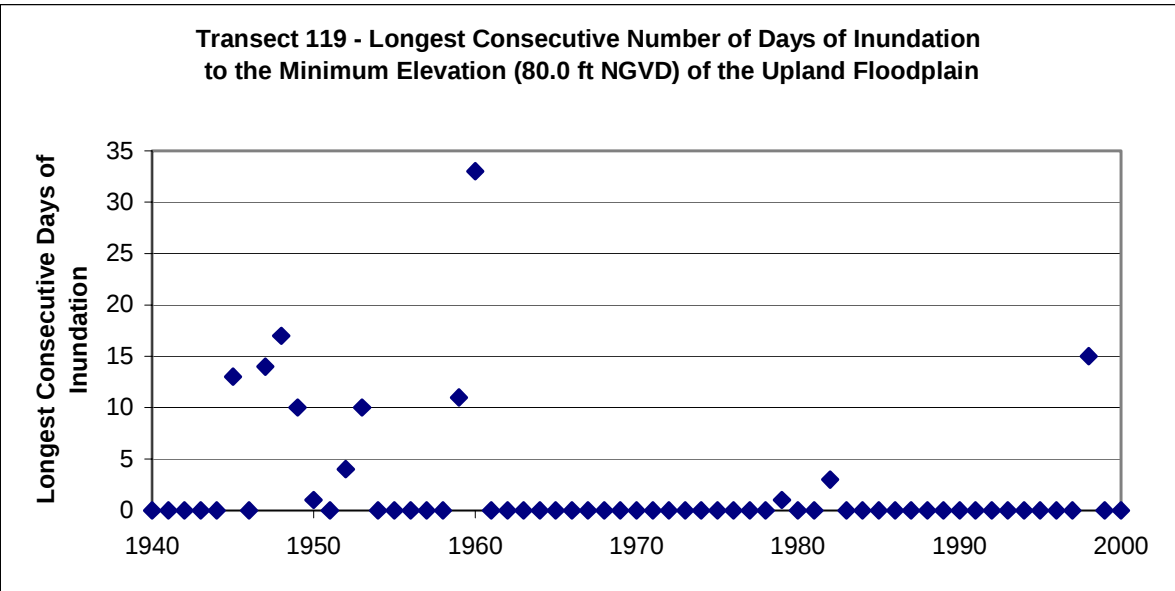
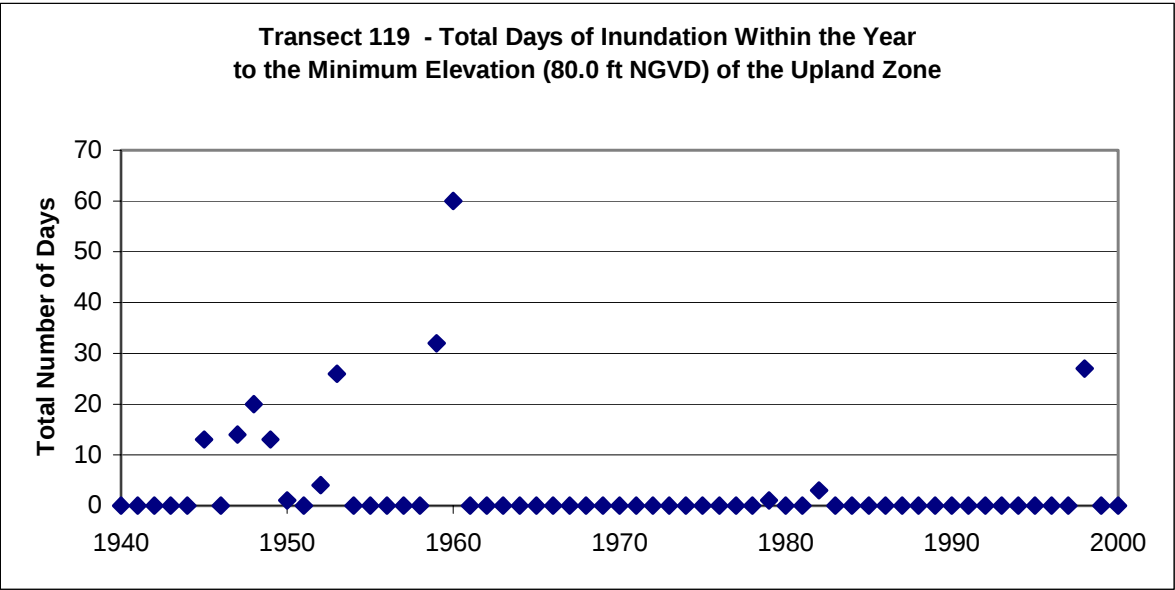


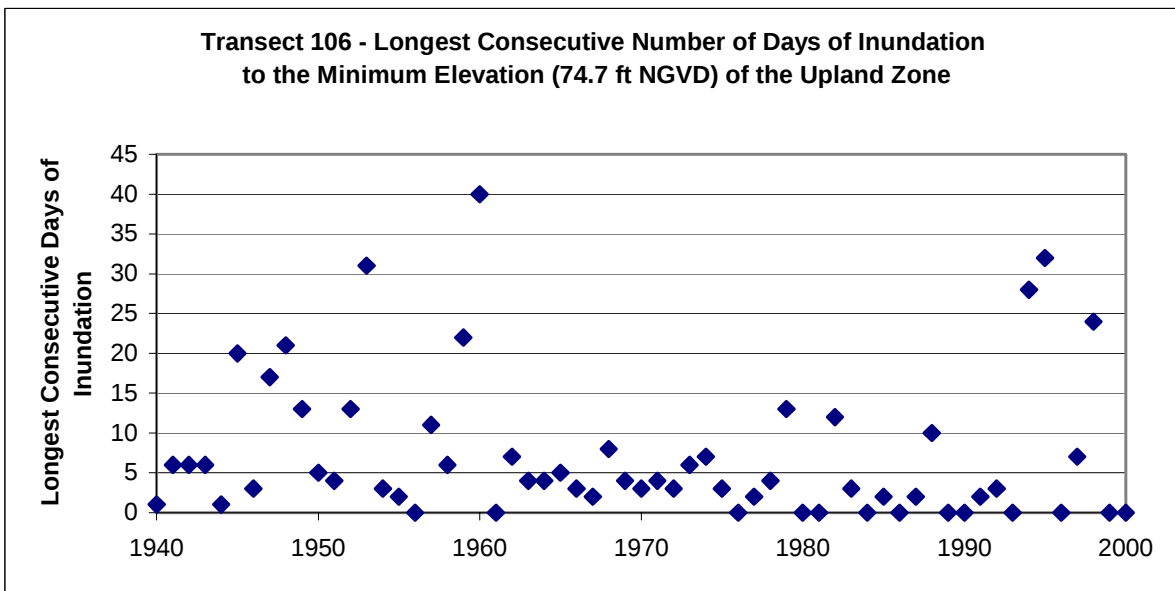
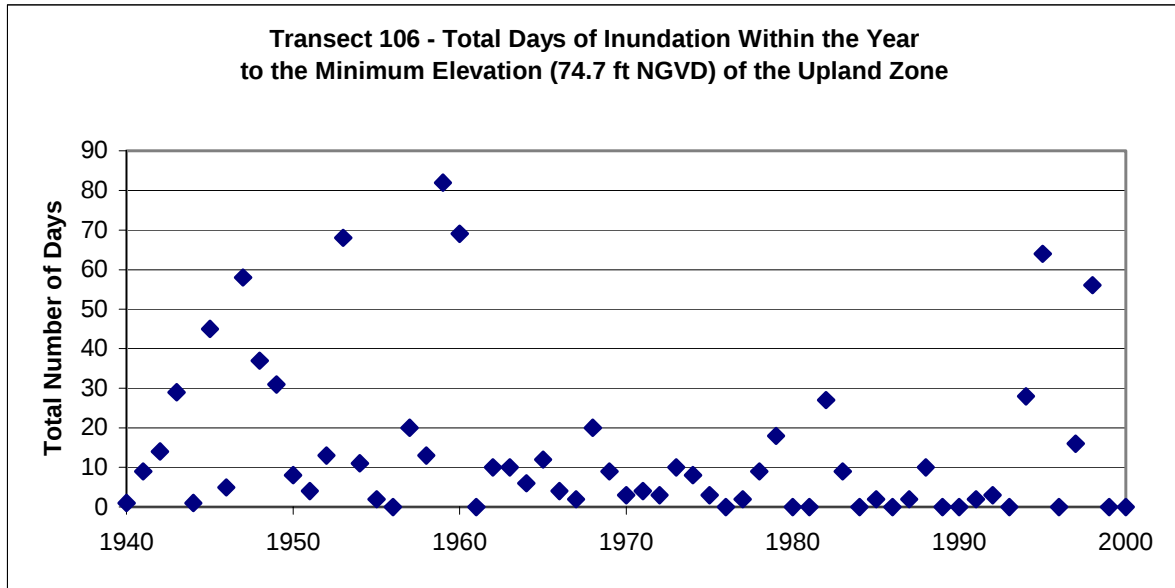


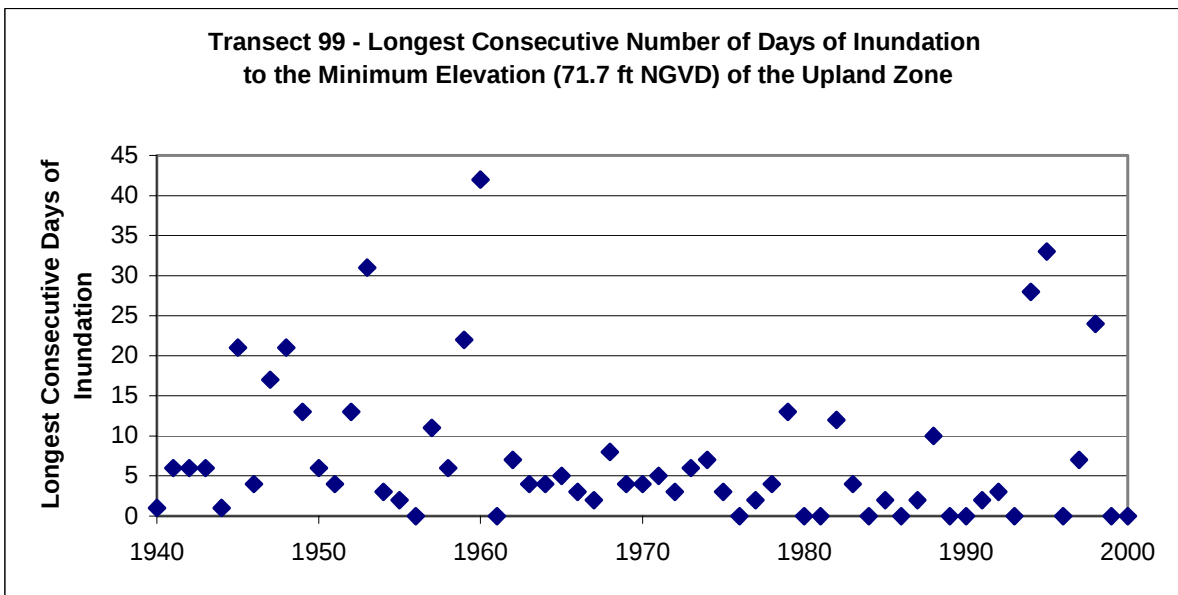
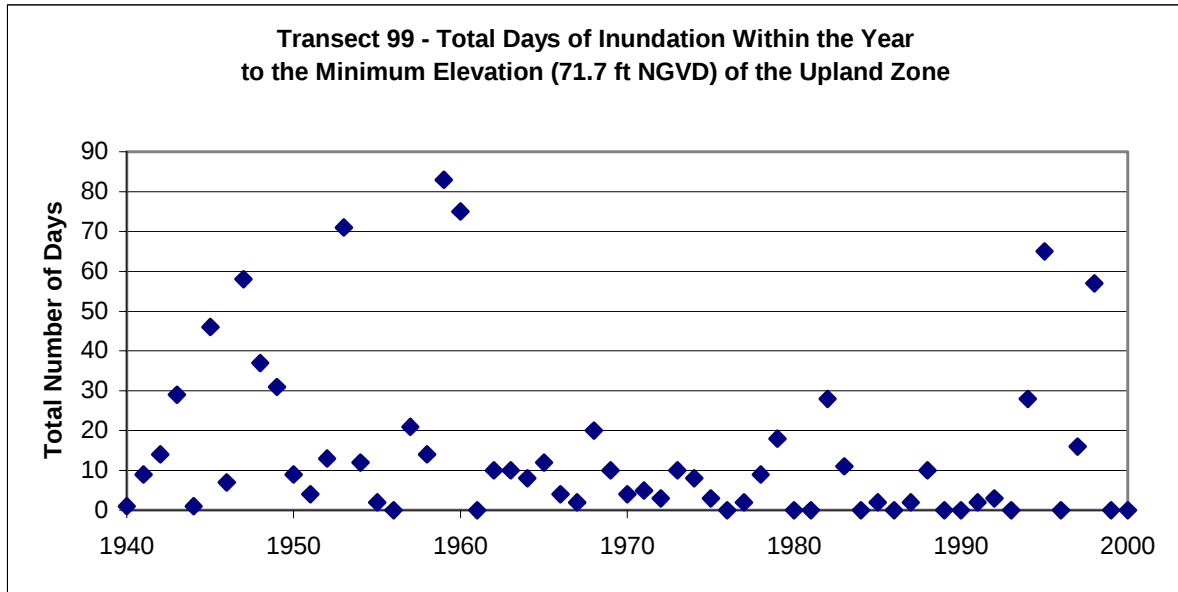


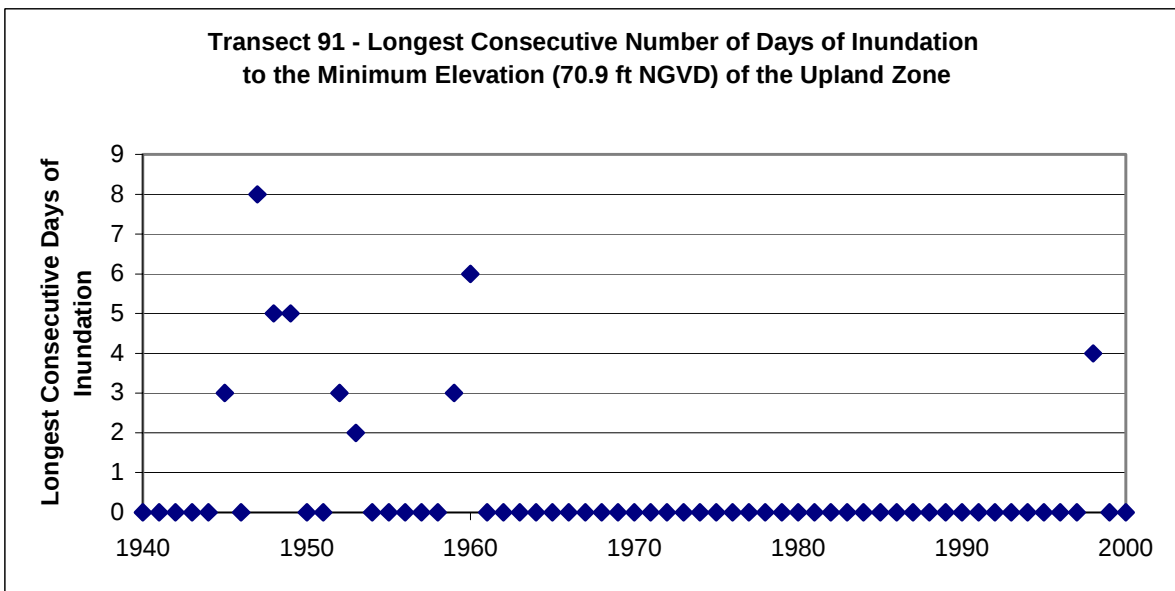
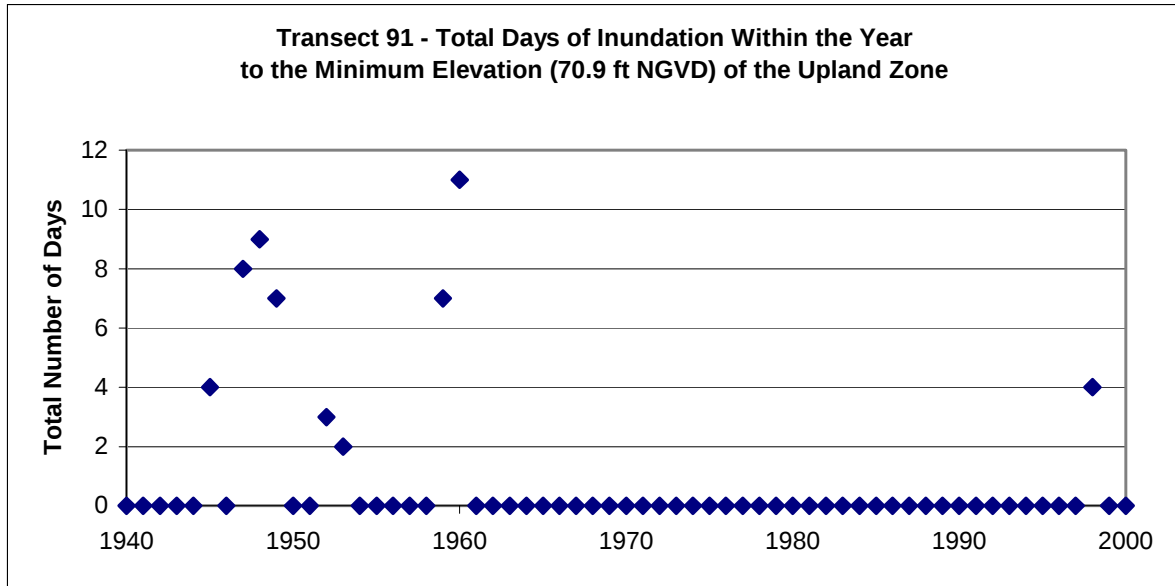


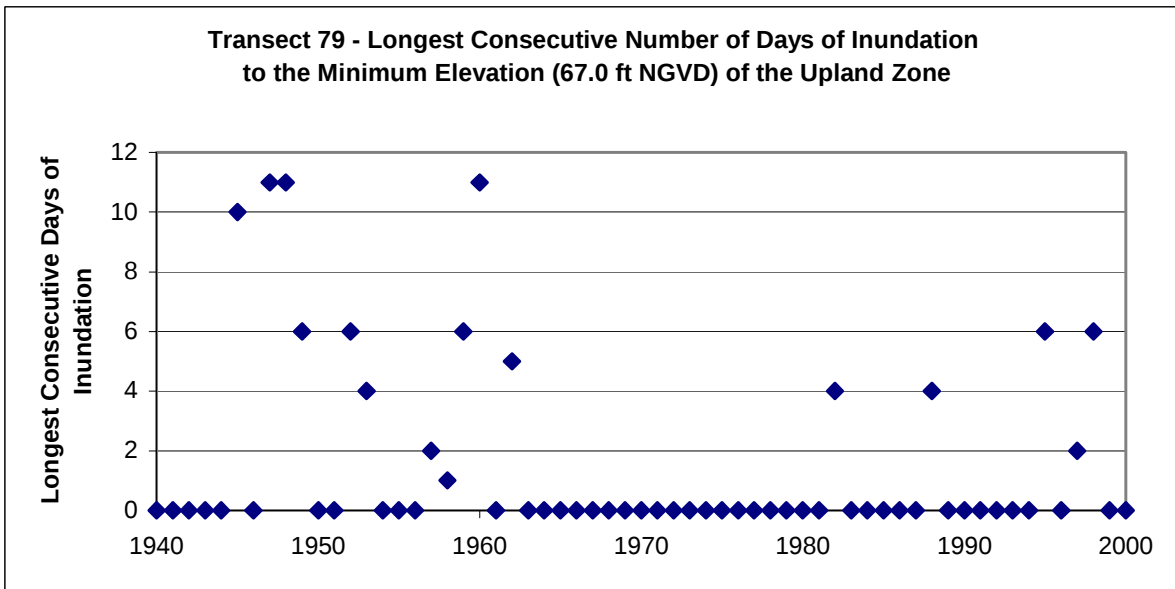
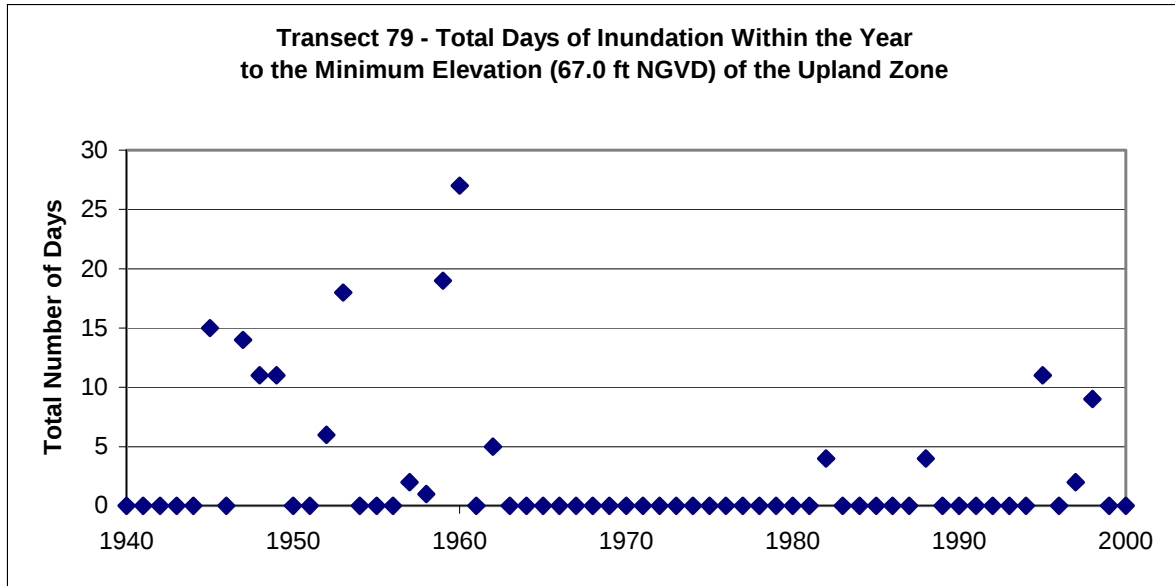


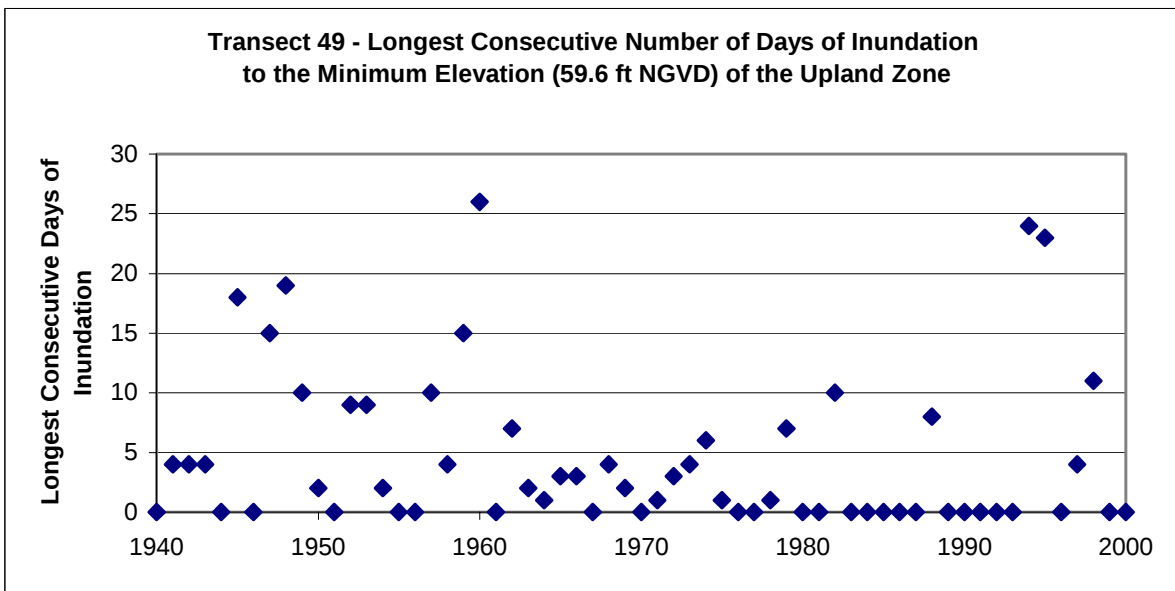
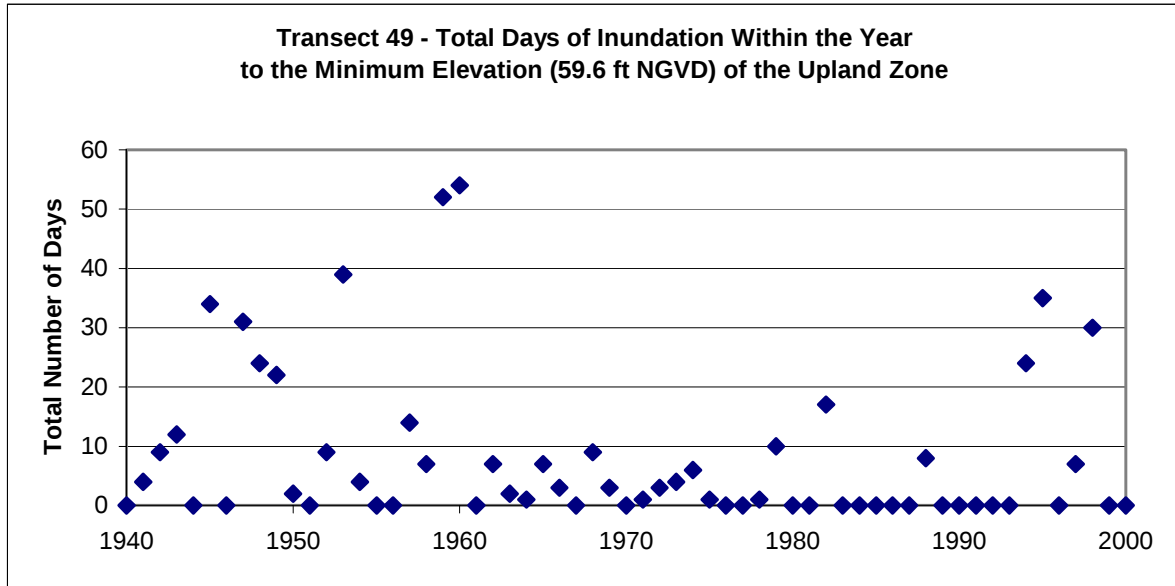


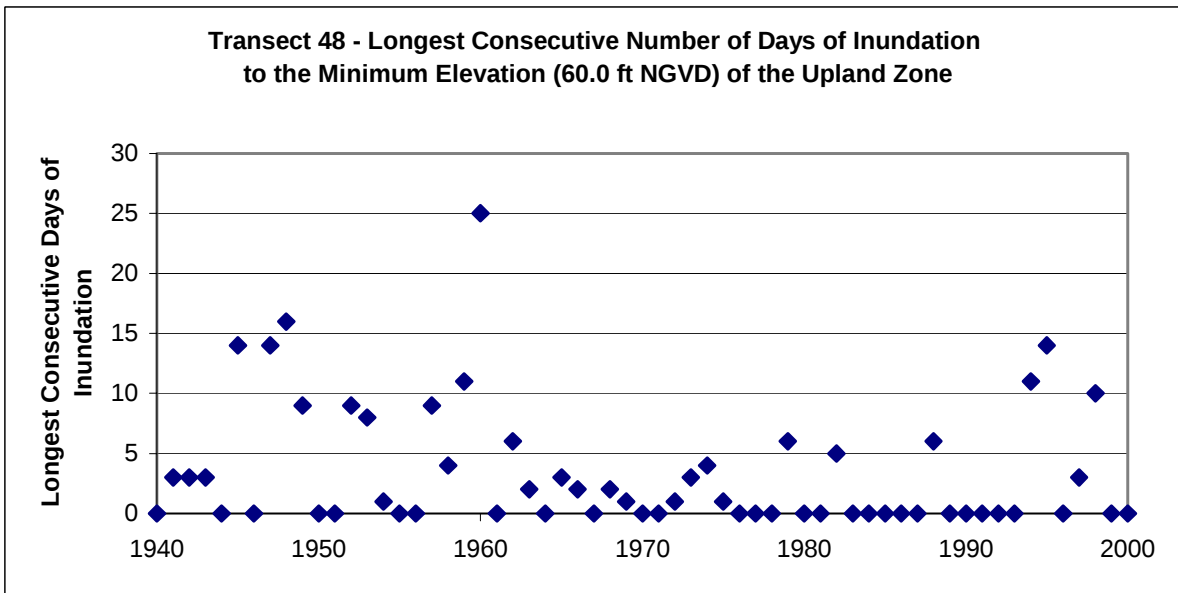
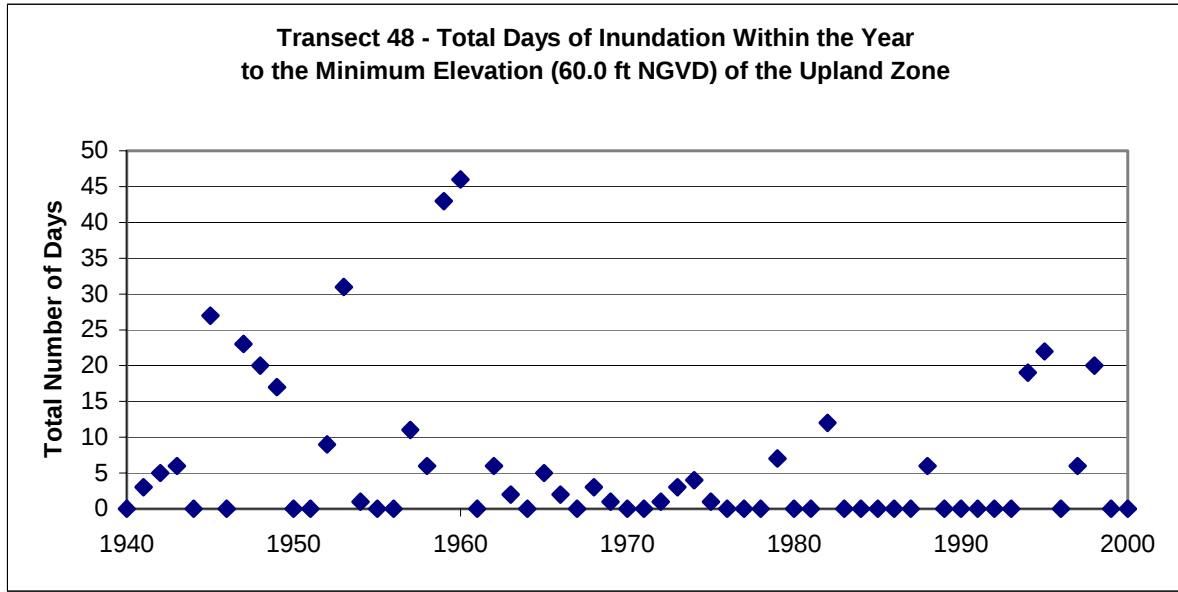


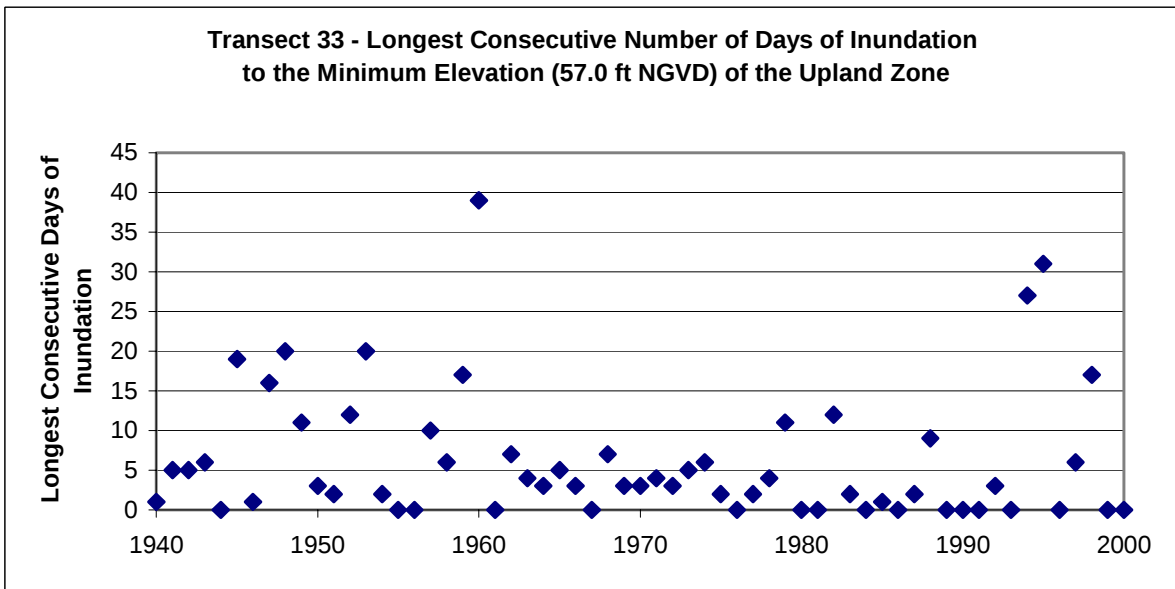
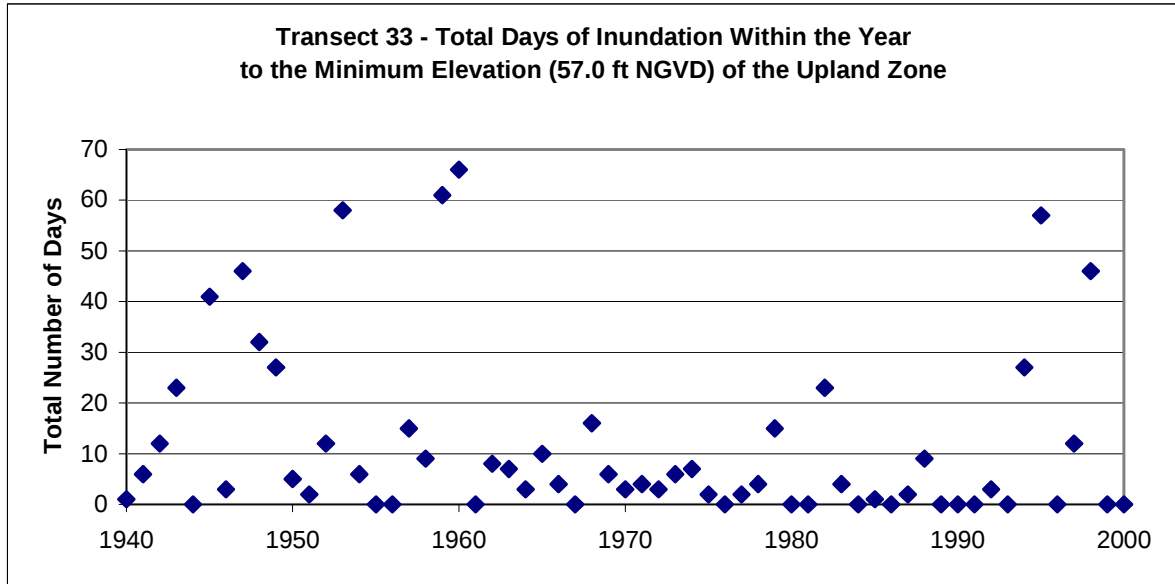


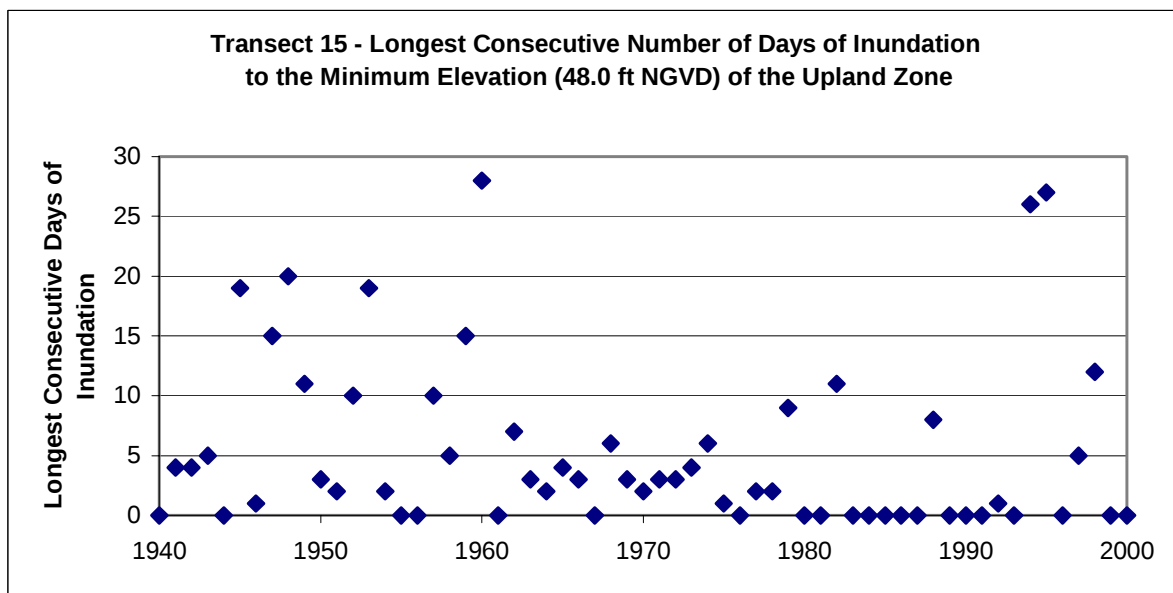
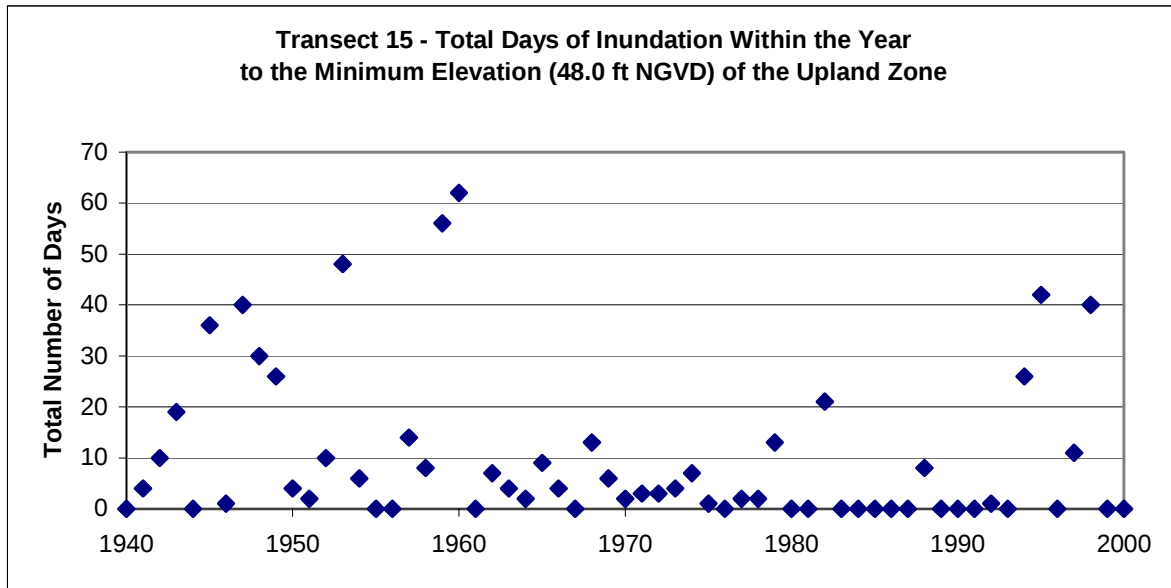












APPENDIX WP

Wetted Perimeter – WP

This appendix contains all wetted perimeter plots where a flow value greater than the lowest modeled flow was selected. The wetted perimeter plot for every (18) SWFWMD vegetative transect is included regardless. Each page of the appendix contains the wetted perimeter plot and three columns of information for the particular site presented. The first column, labeled “W.P. Total” is the wetted perimeter total length in feet. The second column, labeled “Q Total”, is the flow in cubic feet per second (discharge) that yields the corresponding wetted perimeter. The third column, labeled “DeltaWP/DeltaQ”, is the unit change in wetted perimeter per unit change in flow and is obtained by dividing the increase in wetted perimeter from the preceding value by the increase in flow from the preceding value. These values were subjectively used when visually evaluating the “inflection point” flow.

Chart and Table	Page
Wetted perimeter plots for USGS 505 & SWFWMD 181	WP-3
Wetted perimeter plots for USGS 493 & SWFWMD 178	WP-4
Wetted perimeter plots for USGS 486	WP-5
Wetted perimeter plots for USGS 474	WP-6
Wetted perimeter plots for USGS 466.5 & SWFWMD 161	WP-7
Wetted perimeter plots for USGS 466	WP-8
Wetted perimeter plots for USGS 458	WP-9
Wetted perimeter plots for USGS 453 & SWFWMD 150	WP-10
Wetted perimeter plots for USGS 449 & SWFWMD 146	WP-11
Wetted perimeter plots for USGS 445	WP-12
Wetted perimeter plots for USGS 444	WP-13
Wetted perimeter plots for USGS 442	WP-14
Wetted perimeter plots for USGS 441 & SWFWMD 143	WP-15
Wetted perimeter plots for USGS 431 & SWFWMD 134	WP-16
Wetted perimeter plots for USGS 417	WP-17
Wetted perimeter plots for USGS 409 & SWFWMD 119	WP-18
Wetted perimeter plots for USGS 407	WP-19
Wetted perimeter plots for USGS 399 & SWFWMD 106	WP-20
Wetted perimeter plots for USGS 390.5 & SWFWMD 99	WP-21
Wetted perimeter plots for USGS 381 & SWFWMD 91	WP-22
Wetted perimeter plots for USGS 375 & SWFWMD 83	WP-23
Wetted perimeter plots for USGS 371 & SWFWMD 79	WP-24
Wetted perimeter plots for USGS 337.5 & SWFWMD 49	WP-25
Wetted perimeter plots for USGS 336.5 & SWFWMD 48	WP-26
Wetted perimeter plots for USGS 330	WP-27
Wetted perimeter plots for USGS 326	WP-28

Chart/Table

Page

Wetted perimeter plots for USGS 325 & SWFWMD 33

WP-29

Wetted perimeter plots for USGS 316

WP-30

Wetted perimeter plots for USGS 302

WP-31

Wetted perimeter plots for USGS 301 & SWFWMD 15

WP-32

Wetted perimeter plots for USGS 298

WP-33

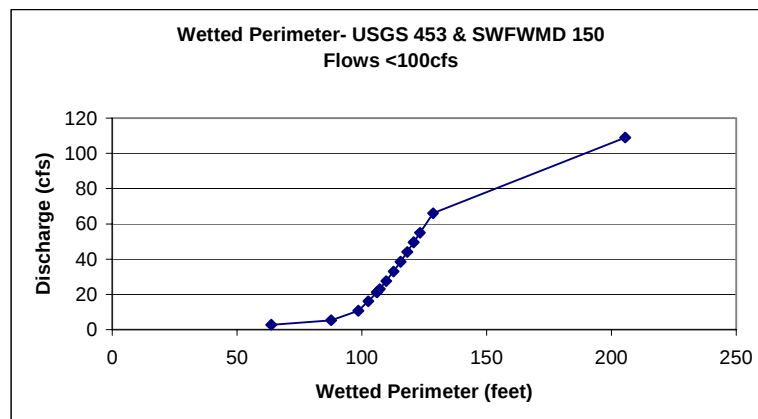
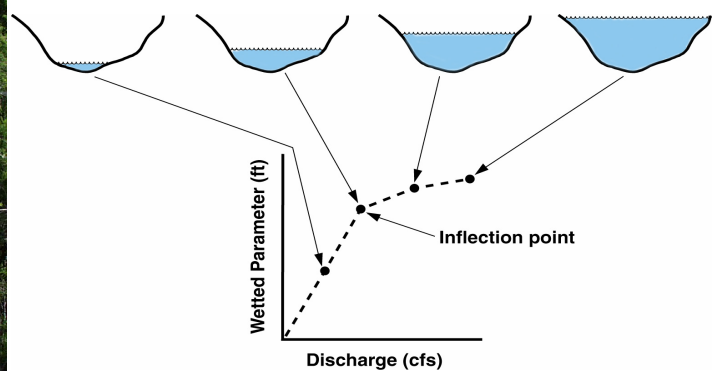
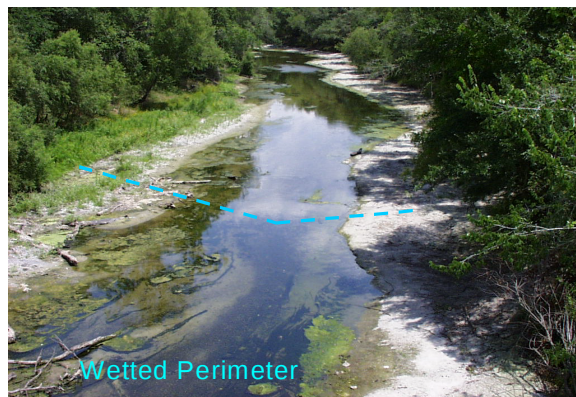
Wetted perimeter plots for USGS Zolfo Springs Gage

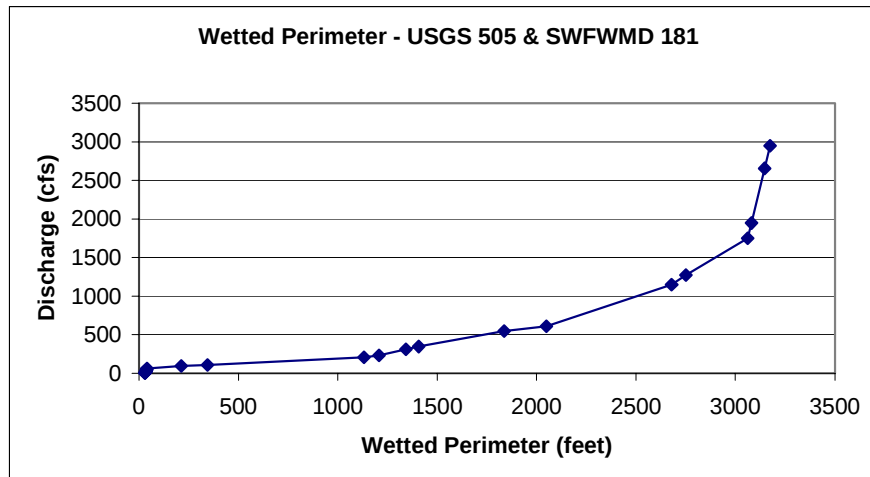
WP-34

Plot of LWPIP by site

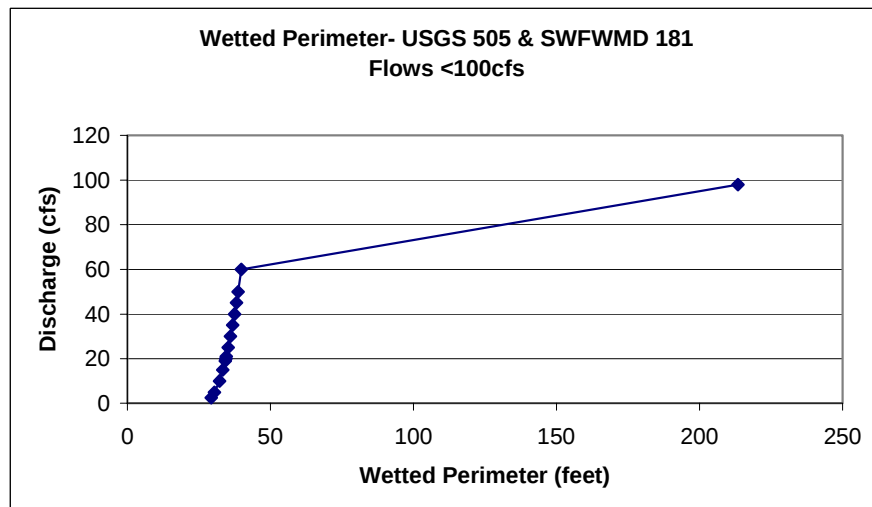
WP-35

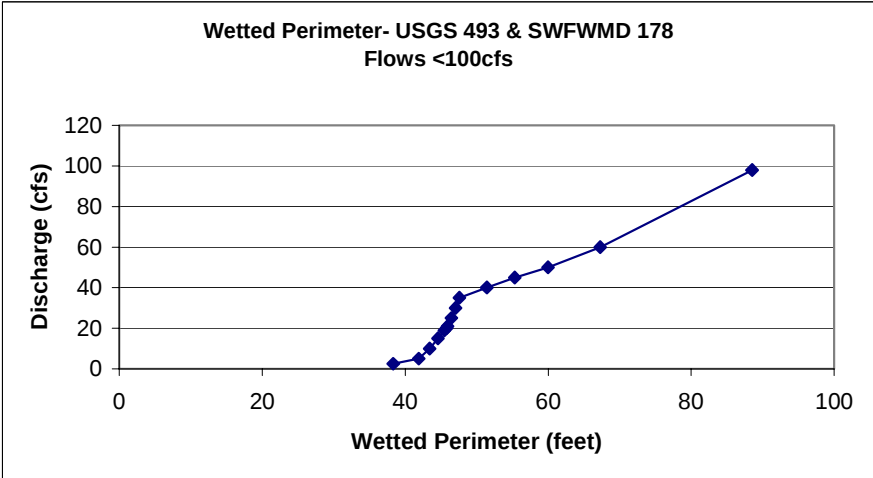
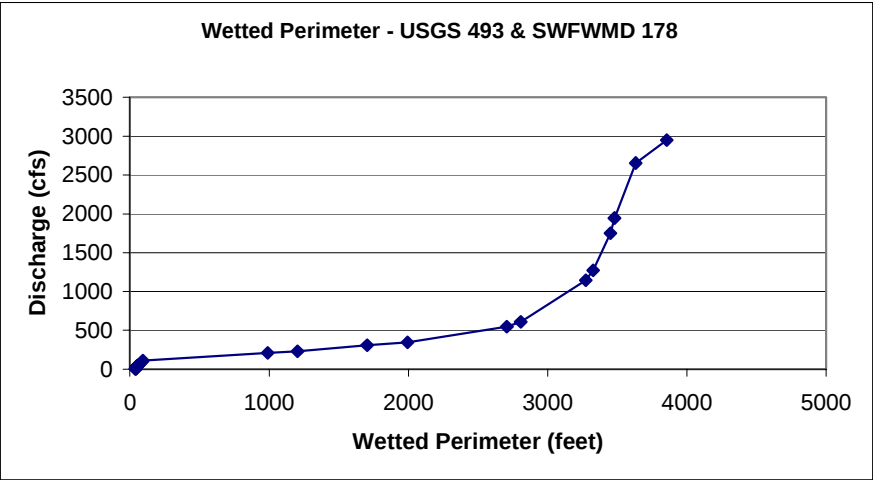
Conceptualization of the "wetted perimeter" determination, with plot of modeled data from one transect for illustrative purposes.



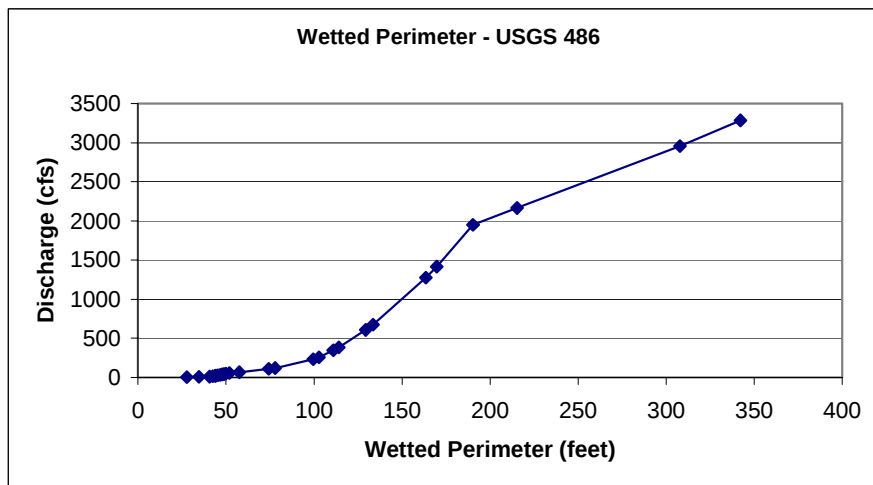


W.P. Total	Q Total	DeltaWP/DeltaQ
29.34	2.5	11.736
30.5	5	6.1
32.15	10	3.215
33.38	15	2.225333
34.21	19	1.800526
34.41	20	1.7205
34.59	21	1.647143
35.3	25	1.412
36.09	30	1.203
36.82	35	1.052
37.49	40	0.93725
38.13	45	0.847333
38.73	50	0.7746
39.82	60	0.663667
213.4	98	2.177551
345.74	109	3.171927
1131.53	209	5.414019
1207.32	232	5.203966
1342.22	311	4.31582
1408.12	346	4.069711
1837.59	547	3.359397
2049.41	608	3.37074
2679.44	1147	2.336042
2751.51	1274	2.159741
3061.18	1751	1.748247
3080.68	1946	1.583083
3146.86	2655	1.185258
3173.54	2950	1.075776

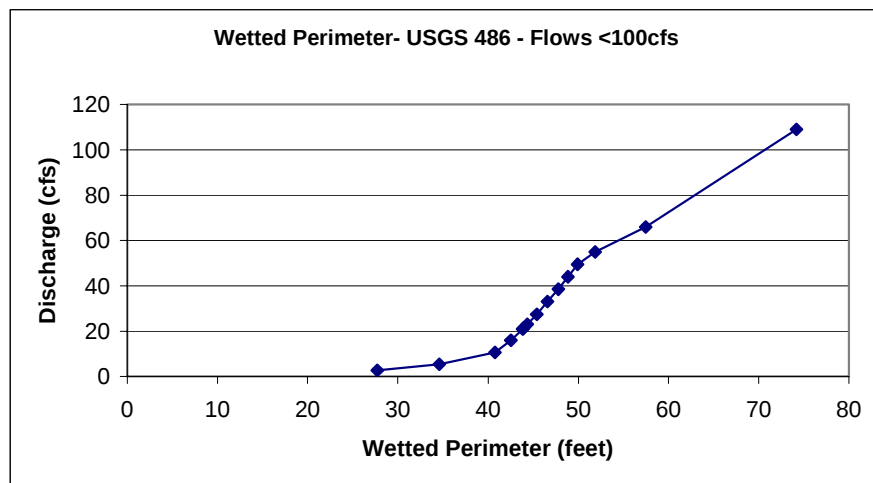


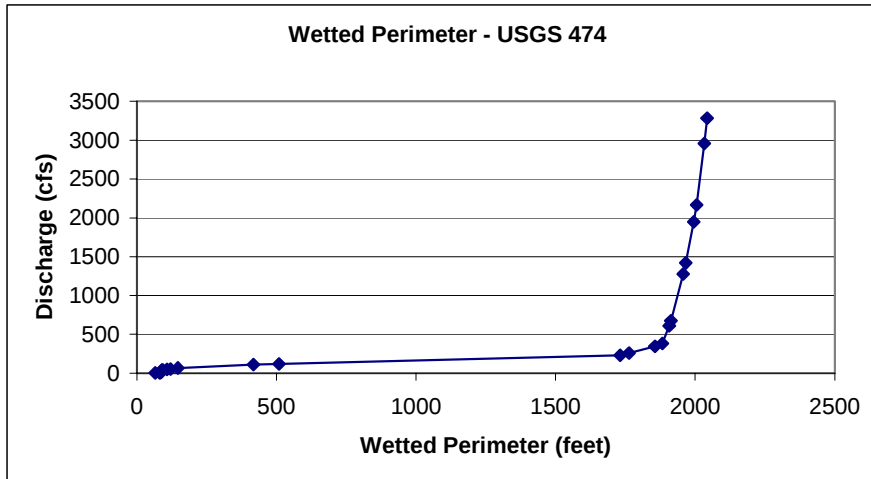


W.P.	Total Q	Total	DeltaWP/DeltaQ
38.32	2.5	15.328	
41.9	5	8.38	
43.41	10	4.341	
44.6	15	2.973333	
45.48	19	2.393684	
45.76	20	2.288	
45.93	21	2.187143	
46.49	25	1.8596	
47.04	30	1.568	
47.59	35	1.359714	
51.39	40	1.28475	
55.31	45	1.229111	
59.95	50	1.199	
67.26	60	1.121	
88.5	98	0.903061	
92.26	109	0.846422	
990.57	209	4.739569	
1204.17	232	5.190388	
1703.64	311	5.477942	
1993.09	346	5.760376	
2706.83	547	4.948501	
2806.38	608	4.615757	
3273.7	1147	2.854141	
3326.8	1274	2.611303	
3449.28	1751	1.969891	
3478.7	1946	1.787616	
3630.96	2655	1.367593	
3855.75	2950	1.307034	

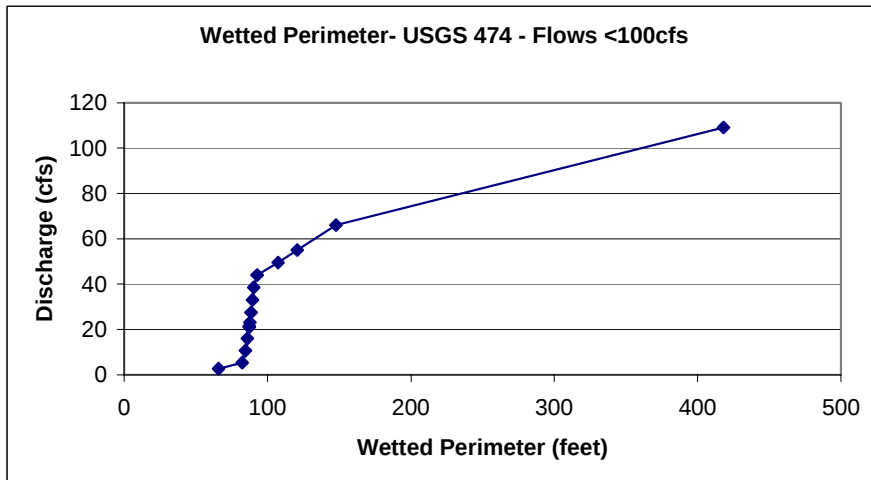


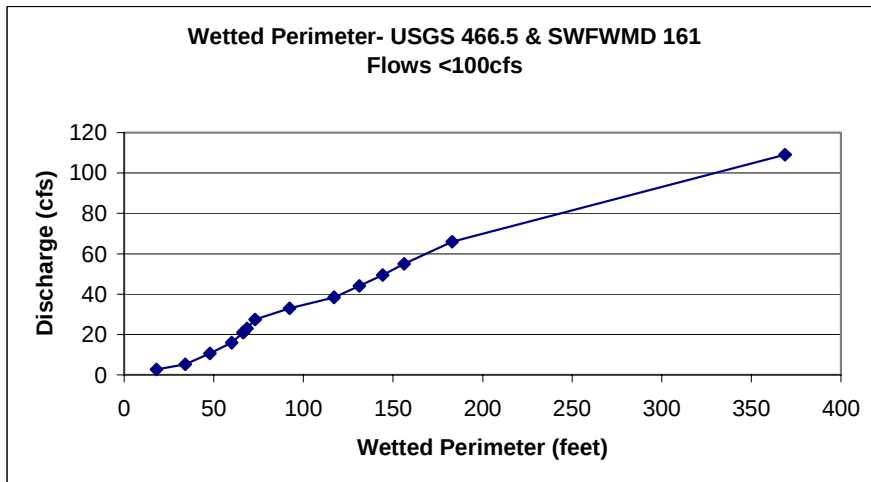
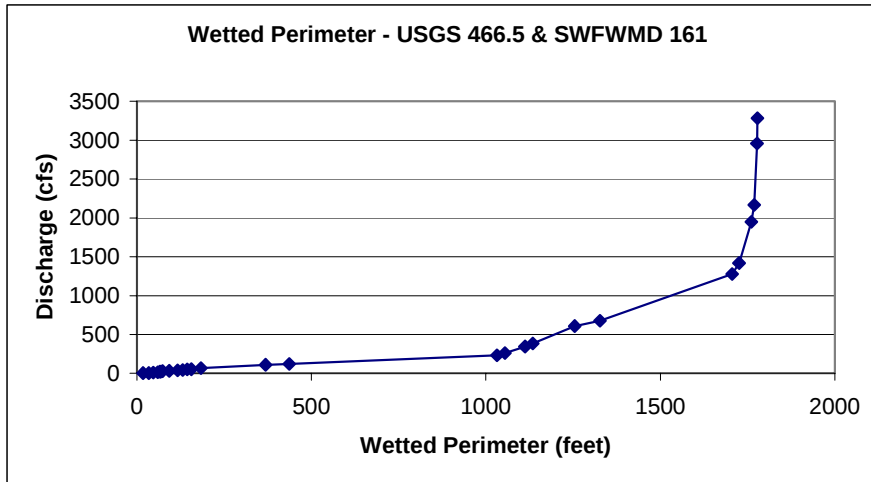
W.P.	Total Q	Total	DeltaWP/DeltaQ
27.72	2.67	10.38202	
34.61	5.33	6.493433	
40.77	10.67	3.820993	
42.52	16	2.6575	
43.83	21	2.087143	
43.92	21.33	2.059072	
44.36	23	1.928696	
45.39	27.5	1.650545	
46.6	33	1.412121	
47.79	38.5	1.241299	
48.86	44	1.110455	
49.92	49.5	1.008485	
51.89	55	0.943455	
57.48	66	0.870909	
74.2	109	0.680734	
77.86	121	0.643471	
99.5	232	0.428879	
102.81	258	0.398488	
110.92	346	0.320578	
114.01	385	0.29613	
129.37	609	0.21243	
133.4	676	0.197337	
163.52	1276	0.12815	
169.6	1418	0.119605	
190.24	1949	0.097609	
215.35	2166	0.099423	
307.74	2955	0.104142	
342.21	3283	0.104237	



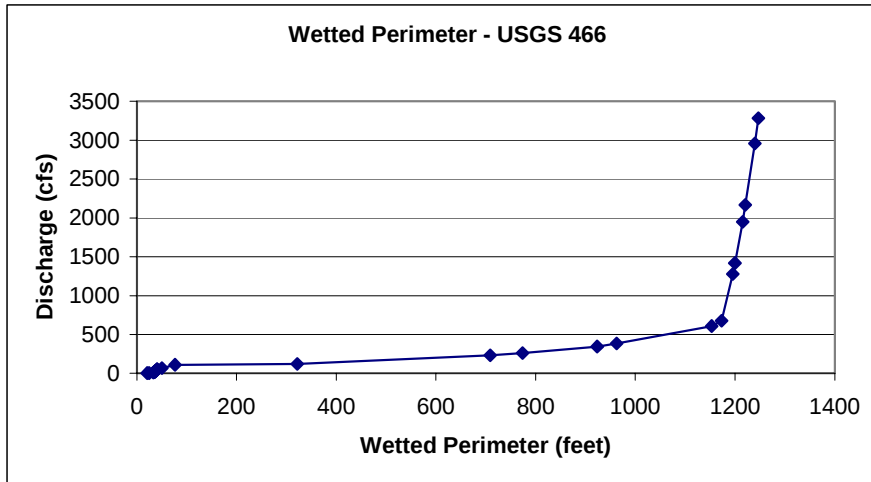


W.P.	Total Q	Total	DeltaWP/DeltaQ
65.81	2.67	24.64794	
82.33	5.33	6.210526	
84.56	10.67	0.417603	
86.09	16	0.287054	
87.26	21	0.234	
87.34	21.33	0.242424	
87.68	23	0.203593	
88.56	27.5	0.195556	
89.53	33	0.176364	
90.37	38.5	0.152727	
92.8	44	0.441818	
107.42	49.5	2.658182	
120.81	55	2.434545	
147.71	66	2.445455	
417.98	109	6.285349	
508.4	121	7.535	
1731.59	232	11.01973	
1763.1	258	1.211923	
1855.84	346	1.053864	
1882.61	385	0.68641	
1906.96	609	0.108705	
1913.2	676	0.093134	
1957.5	1276	0.073833	
1966.15	1418	0.060915	
1995.18	1949	0.05467	
2005.15	2166	0.045945	
2032.98	2955	0.035272	
2042.87	3283	0.030152	

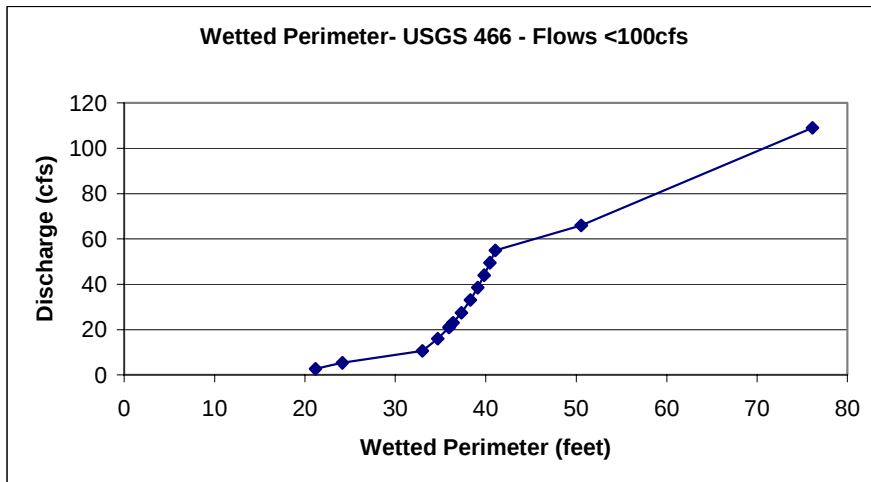


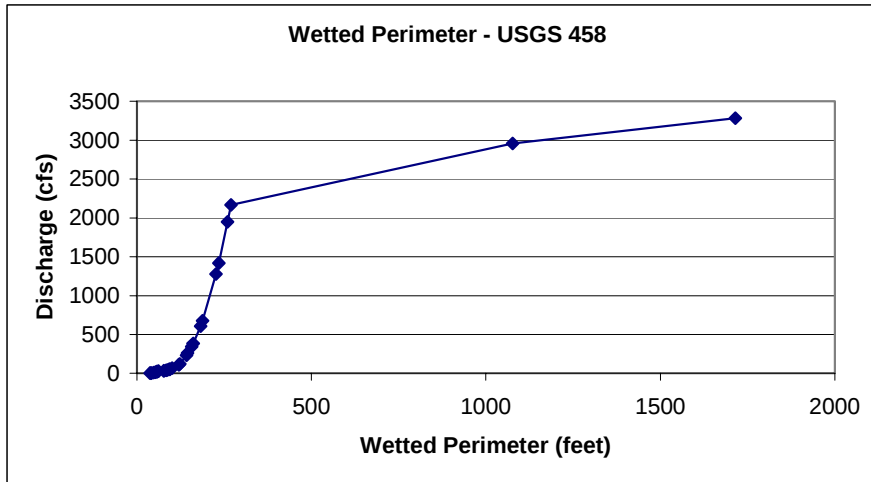


W.P.	Total	Q	Total	DeltaWP/DeltaQ
17.96	2.67	6.726592		
34.13	5.33	6.078947		
47.8	10.67	2.559925		
59.99	16	2.287054		
66.26	21	1.254		
66.64	21.33	1.151515		
68.5	23	1.113772		
73.17	27.5	1.037778		
92.32	33	3.481818		
117.07	38.5	4.5		
131.24	44	2.576364		
144.27	49.5	2.369091		
156.28	55	2.183636		
183.03	66	2.431818		
368.82	109	4.320698		
437.12	121	5.691667		
1032.8	232	5.366486		
1054.44	258	0.832308		
1112.35	346	0.658068		
1134.17	385	0.559487		
1254.86	609	0.538795		
1327.07	676	1.077761		
1706.31	1276	0.632067		
1725.6	1418	0.135845		
1760.96	1949	0.066591		
1768.81	2166	0.036175		
1777.39	2955	0.010875		
1778.7	3283	0.003994		

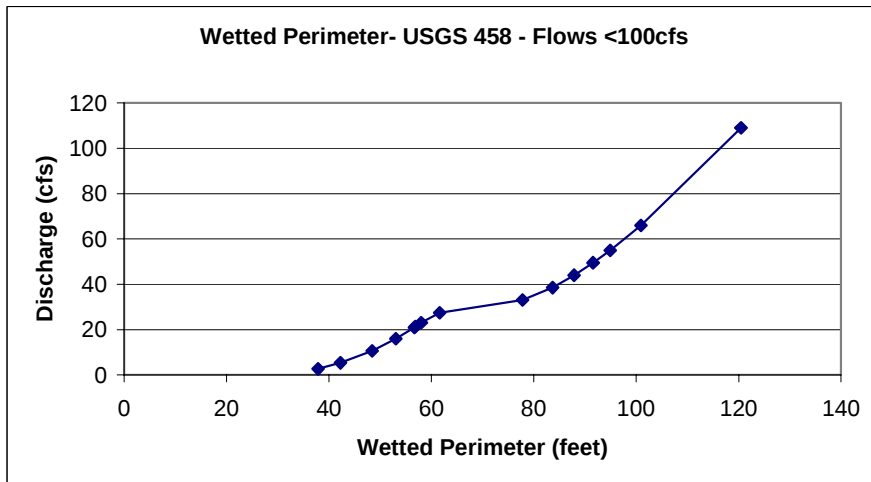


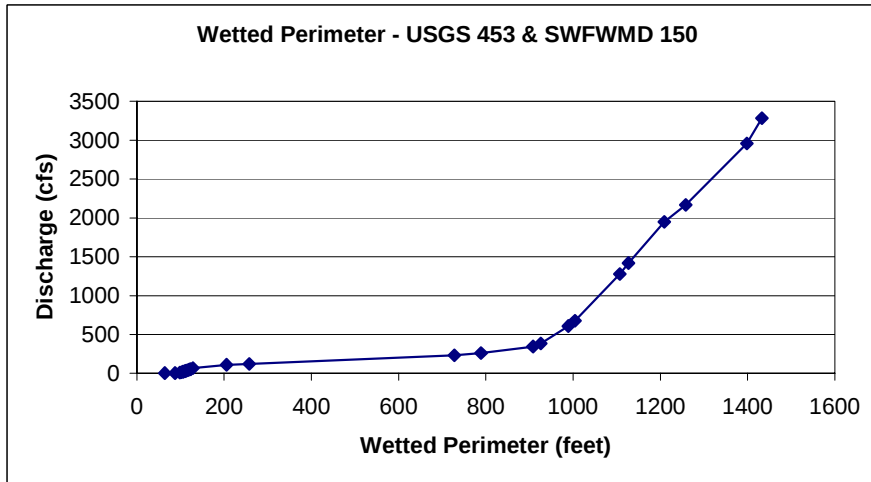
W.P.	Total Q	Total	DeltaWP/DeltaQ
21.18	2.67	7.932584	
24.13	5.33	1.109023	
32.98	10.67	1.657303	
34.68	16	0.318949	
35.94	21	0.252	
36.01	21.33	0.212121	
36.38	23	0.221557	
37.3	27.5	0.204444	
38.29	33	0.18	
39.11	38.5	0.149091	
39.82	44	0.129091	
40.47	49.5	0.118182	
41.07	55	0.109091	
50.57	66	0.863636	
76.11	109	0.593953	
321.96	121	20.4875	
708.65	232	3.483694	
773.38	258	2.489615	
923.55	346	1.706477	
962.41	385	0.99641	
1153.26	609	0.852009	
1173.16	676	0.297015	
1195.42	1276	0.0371	
1199.9	1418	0.031549	
1215.21	1949	0.028832	
1220.92	2166	0.026313	
1239.42	2955	0.023447	
1246.63	3283	0.021982	



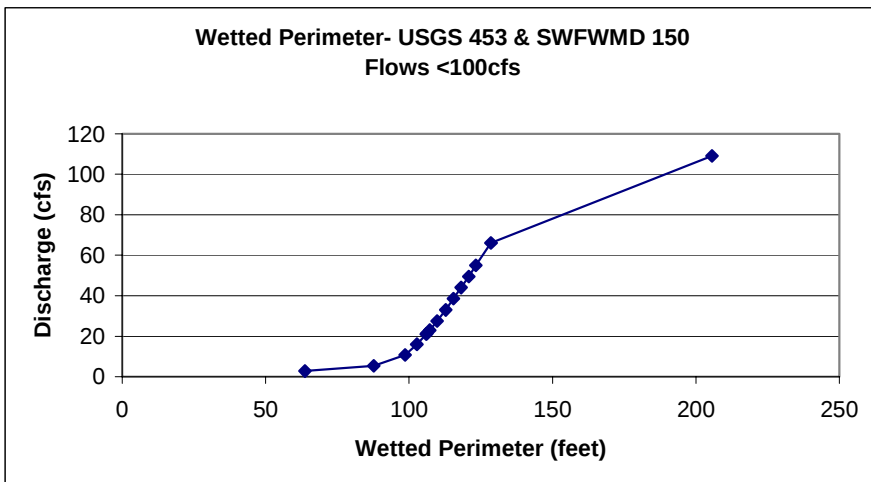


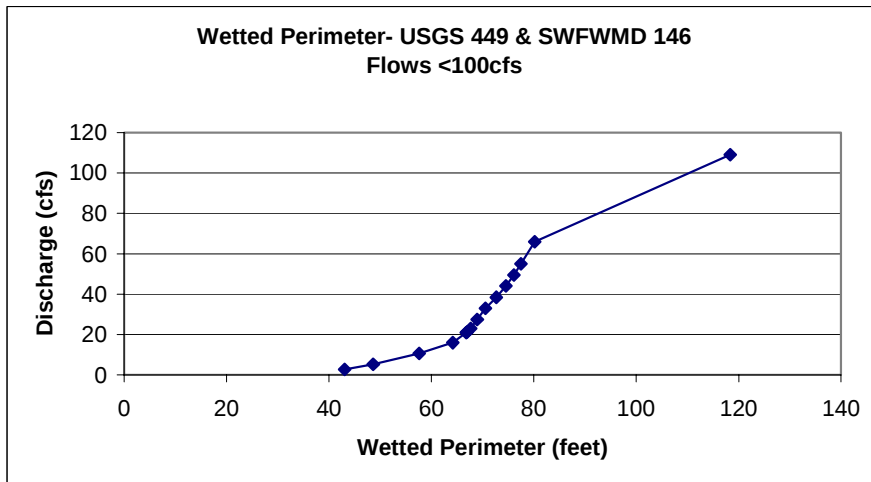
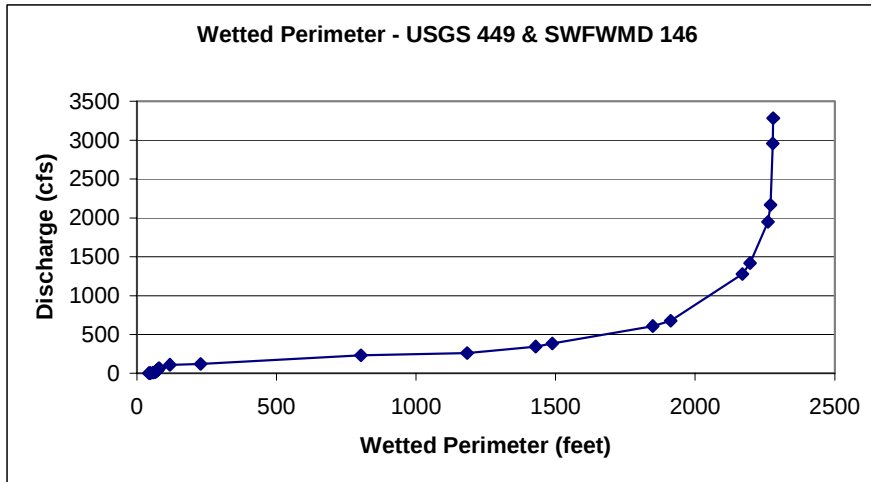
W.P.	Total Q	Total	DeltaWP/DeltaQ
37.89	2.67	14.19101	
42.24	5.33	1.635338	
48.43	10.67	1.159176	
53.06	16	0.868668	
56.68	21	0.724	
56.9	21.33	0.666667	
58	23	0.658683	
61.6	27.5	0.8	
77.76	33	2.938182	
83.66	38.5	1.072727	
87.83	44	0.758182	
91.56	49.5	0.678182	
94.92	55	0.610909	
100.91	66	0.544545	
120.45	109	0.454419	
122.94	121	0.2075	
142.01	232	0.171802	
145.79	258	0.145385	
156.97	346	0.127045	
161.45	385	0.114872	
182.99	609	0.096161	
188.49	676	0.08209	
227.12	1276	0.064383	
234.67	1418	0.053169	
260.19	1949	0.04806	
269.46	2166	0.042719	
1076.4	2955	1.022738	
1715.43	3283	1.948262	



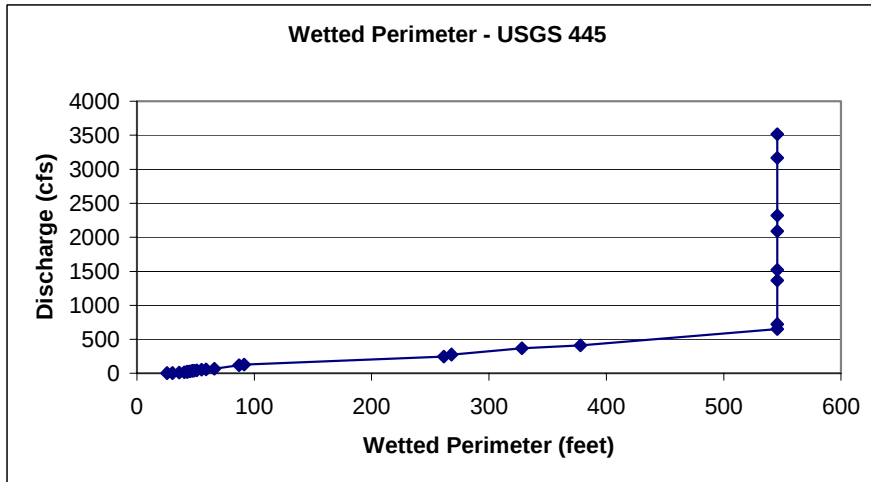


W.P.	Total Q	Total	DeltaWP/DeltaQ
63.69	2.67	23.85393	
87.72	5.33	9.033835	
98.64	10.67	2.044944	
102.65	16	0.752345	
105.97	21	0.664	
106.17	21.33	0.606061	
107.2	23	0.616766	
109.81	27.5	0.58	
112.78	33	0.54	
115.51	38.5	0.496364	
118.2	44	0.489091	
120.78	49.5	0.469091	
123.25	55	0.449091	
128.51	66	0.478182	
205.57	109	1.792093	
258.1	121	4.3775	
727.88	232	4.232252	
789.43	258	2.367308	
908.39	346	1.351818	
925.8	385	0.44641	
988.84	609	0.281429	
1004.52	676	0.23403	
1107.15	1276	0.17105	
1127.17	1418	0.140986	
1209.47	1949	0.154991	
1258.35	2166	0.225253	
1398.51	2955	0.177643	
1433.18	3283	0.105701	

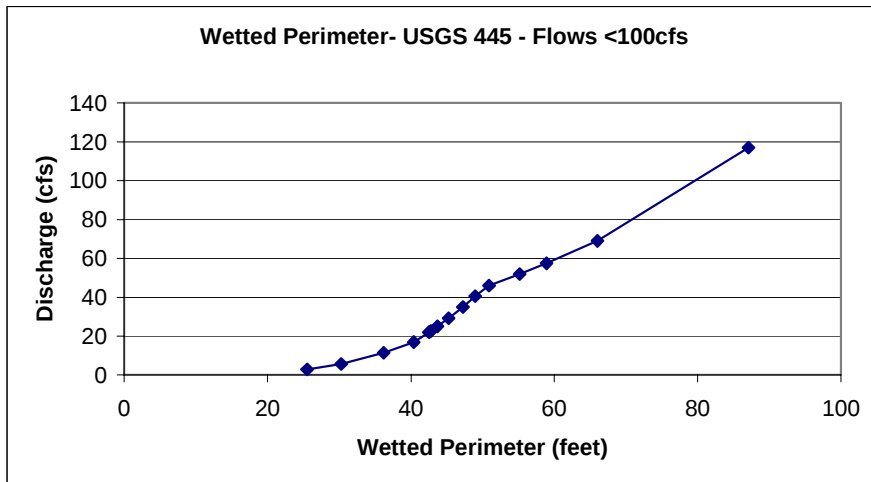


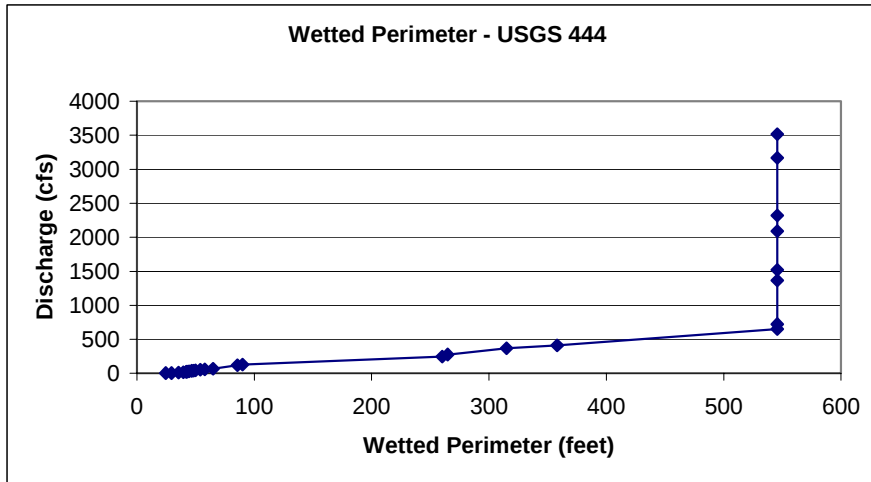


W.P.	Total Q	Total	DeltaWP/DeltaQ
43.04	2.67	16.11985	
48.62	5.33	2.097744	
57.63	10.67	1.687266	
64.16	16	1.225141	
66.79	21	0.526	
66.98	21.33	0.575758	
67.68	23	0.419162	
68.97	27.5	0.286667	
70.56	33	0.289091	
72.68	38.5	0.385455	
74.57	44	0.343636	
76.09	49.5	0.276364	
77.45	55	0.247273	
80.13	66	0.243636	
118.34	109	0.888605	
227.84	121	9.125	
802.61	232	5.178108	
1182.75	258	14.62077	
1429.24	346	2.801023	
1488.4	385	1.516923	
1847.55	609	1.603348	
1912.53	676	0.969851	
2168.93	1276	0.427333	
2196.37	1418	0.193239	
2260.86	1949	0.12145	
2269.56	2166	0.040092	
2277.75	2955	0.01038	
2279.51	3283	0.005366	

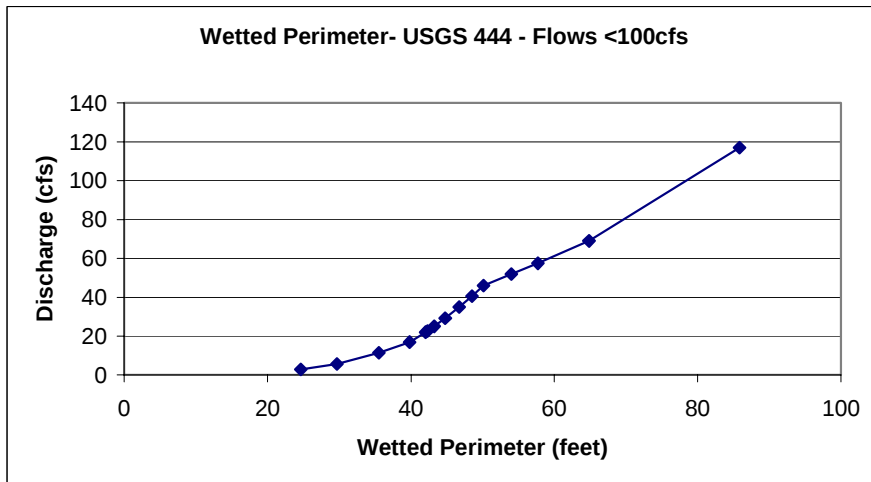


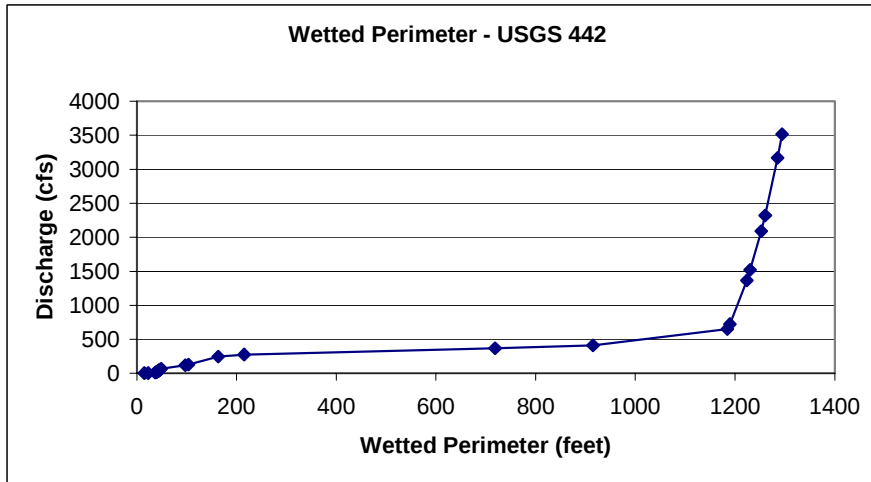
W.P.	Total Q	Total	DeltaWP/DeltaQ
25.52	2.83	9.017668	
30.28	5.67	1.676056	
36.2	11.33	1.045936	
40.41	17	0.742504	
42.5	22	0.418	
42.77	22.67	0.402985	
43.71	25	0.403433	
45.25	29.17	0.369305	
47.23	35	0.339623	
48.98	40.5	0.318182	
50.91	46	0.350909	
55.19	52	0.713333	
58.91	57.5	0.676364	
66.04	69	0.62	
87.08	117	0.438333	
91.41	130	0.333077	
261.51	249	1.429412	
268.16	277	0.2375	
328.16	371	0.638298	
377.92	412	1.213659	
545.8	652	0.6995	
545.8	725	0	
545.8	1367	0	
545.8	1519	0	
545.8	2088	0	
545.8	2320	0	
545.8	3165	0	
545.8	3517	0	



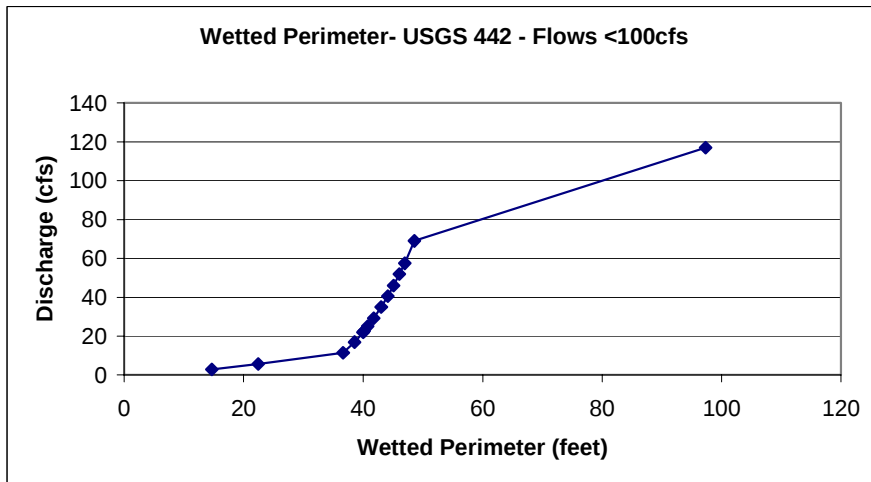


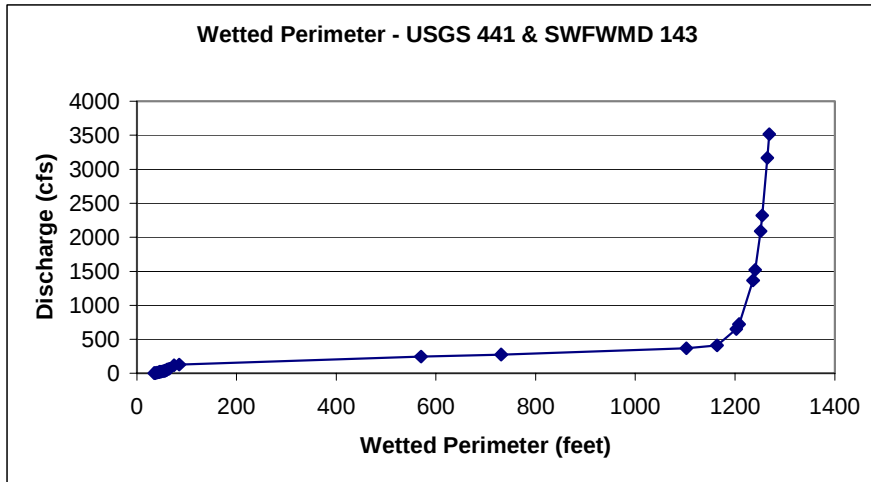
W.P.	Total Q	Total	DeltaWP/DeltaQ
24.63	2.83	8.70318	
29.66	5.67	1.771127	
35.53	11.33	1.037102	
39.81	17	0.75485	
42.04	22	0.446	
42.31	22.67	0.402985	
43.24	25	0.399142	
44.77	29.17	0.366906	
46.75	35	0.339623	
48.5	40.5	0.318182	
50.15	46	0.3	
54.01	52	0.643333	
57.71	57.5	0.672727	
64.83	69	0.61913	
85.83	117	0.4375	
90.12	130	0.33	
260.08	249	1.428235	
264.85	277	0.170357	
315.01	371	0.533617	
358.28	412	1.055366	
545.8	652	0.781333	
545.8	725	0	
545.8	1367	0	
545.8	1519	0	
545.8	2088	0	
545.8	2320	0	
545.8	3165	0	
545.8	3517	0	



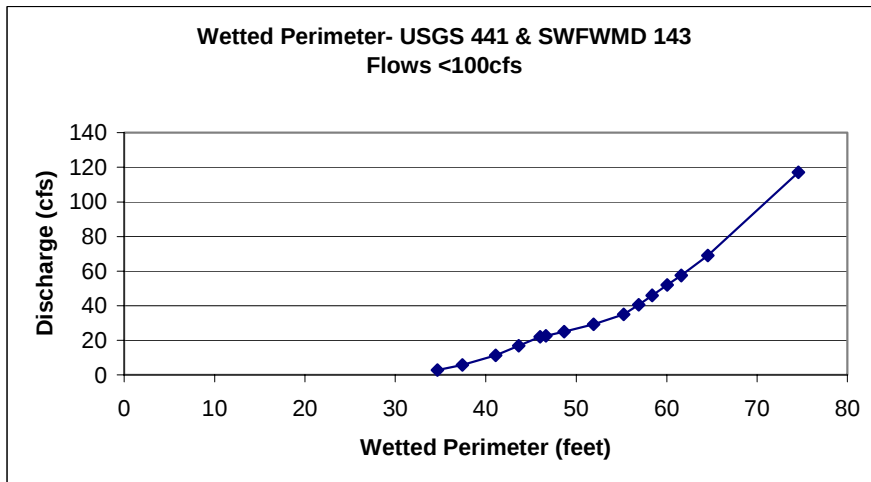


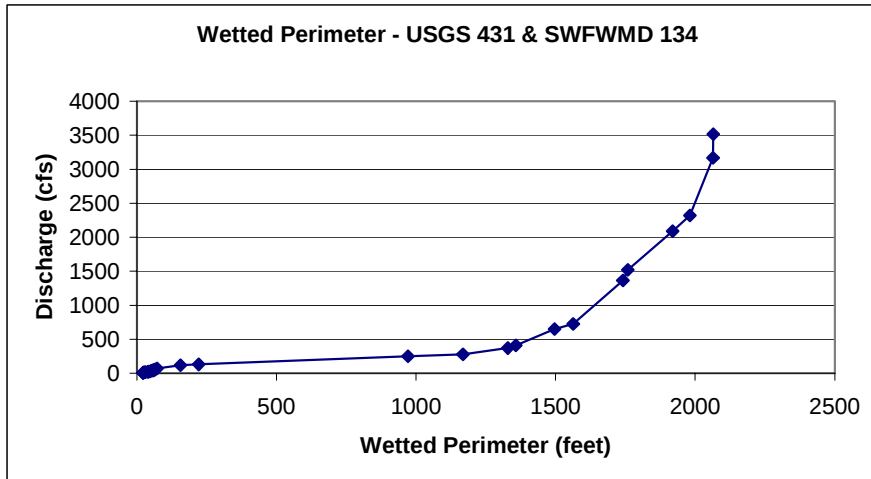
W.P.	Total Q	Total	DeltaWP/DeltaQ
14.67	2.83	5.183746	
22.46	5.67	2.742958	
36.66	11.33	2.508834	
38.57	17	0.336861	
39.99	22	0.284	
40.17	22.67	0.268657	
40.77	25	0.257511	
41.78	29.17	0.242206	
43.05	35	0.217839	
44.12	40.5	0.194545	
45.11	46	0.18	
46.1	52	0.165	
46.94	57.5	0.152727	
48.57	69	0.141739	
97.35	117	1.01625	
103.72	130	0.49	
163.07	249	0.498739	
215.49	277	1.872143	
718.57	371	5.351915	
915.36	412	4.799756	
1184.71	652	1.122292	
1189.65	725	0.067671	
1223.58	1367	0.05285	
1230.36	1519	0.044605	
1252.95	2088	0.039701	
1260.78	2320	0.03375	
1285.47	3165	0.029219	
1294.37	3517	0.025284	



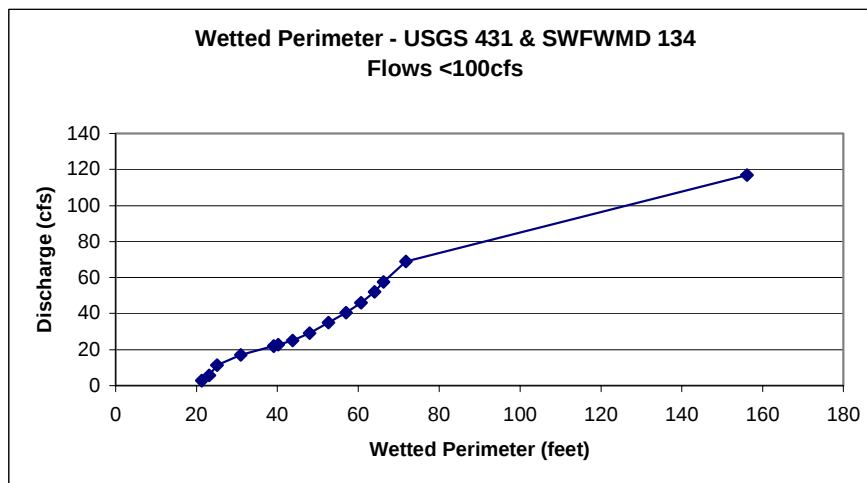


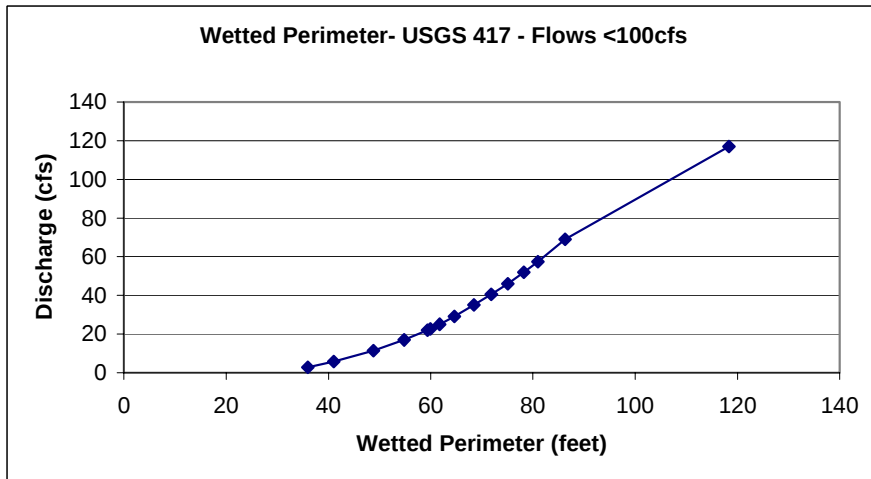
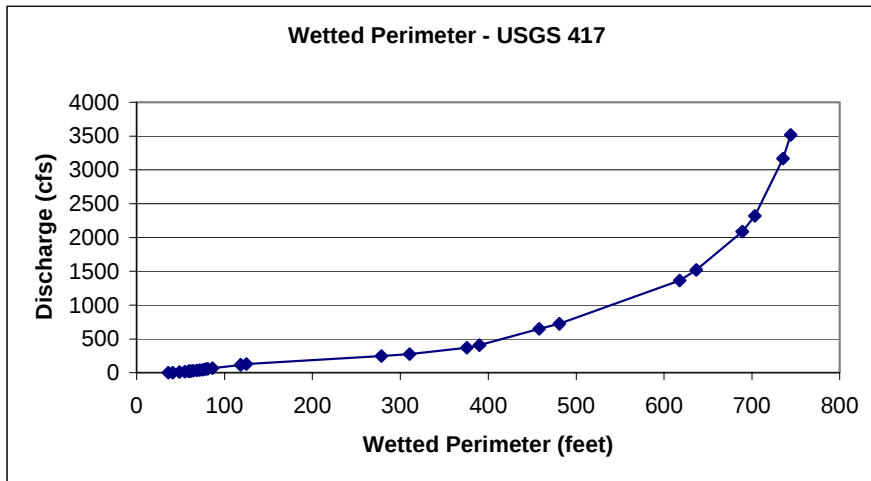
W.P.	Total Q	Total	DeltaWP/DeltaQ
34.67	2.83	12.25088	
37.4	5.67	0.961268	
41.1	11.33	0.65371	
43.62	17	0.444444	
46.02	22	0.48	
46.64	22.67	0.925373	
48.67	25	0.871245	
51.94	29.17	0.784173	
55.26	35	0.569468	
56.89	40.5	0.296364	
58.4	46	0.274545	
60.09	52	0.281667	
61.62	57.5	0.278182	
64.57	69	0.256522	
74.58	117	0.208542	
85.19	130	0.816154	
570.05	249	4.074454	
731.08	277	5.751071	
1102.07	371	3.946702	
1163.82	412	1.506098	
1202.23	652	0.160042	
1207.88	725	0.077397	
1236.15	1367	0.044034	
1240.43	1519	0.028158	
1251.3	2088	0.019104	
1254.58	2320	0.014138	
1264.92	3165	0.012237	
1268.64	3517	0.010568	



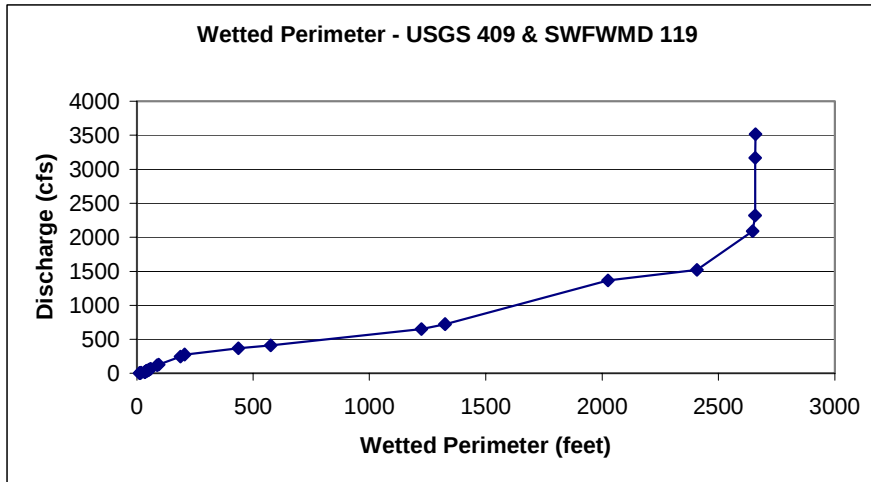


W.P.	Total Q	Total	DeltaWP/DeltaQ
21.3	2.83	7.526502	
23.12	5.67	0.640845	
25.06	11.33	0.342756	
30.9	17	1.029982	
39.11	22	1.642	
40.16	22.67	1.567164	
43.76	25	1.545064	
47.95	29.17	1.004796	
52.61	35	0.799314	
56.95	40.5	0.789091	
60.69	46	0.68	
63.97	52	0.546667	
66.24	57.5	0.412727	
71.76	69	0.48	
156.09	117	1.756875	
221.27	130	5.013846	
971.51	249	6.304538	
1168.26	277	7.026786	
1329.2	371	1.712128	
1358.08	412	0.70439	
1496.07	652	0.574958	
1562.82	725	0.914384	
1741.01	1367	0.277555	
1759	1519	0.118355	
1919.11	2088	0.281388	
1981.71	2320	0.269828	
2064.17	3165	0.097586	
2064.79	3517	0.001761	

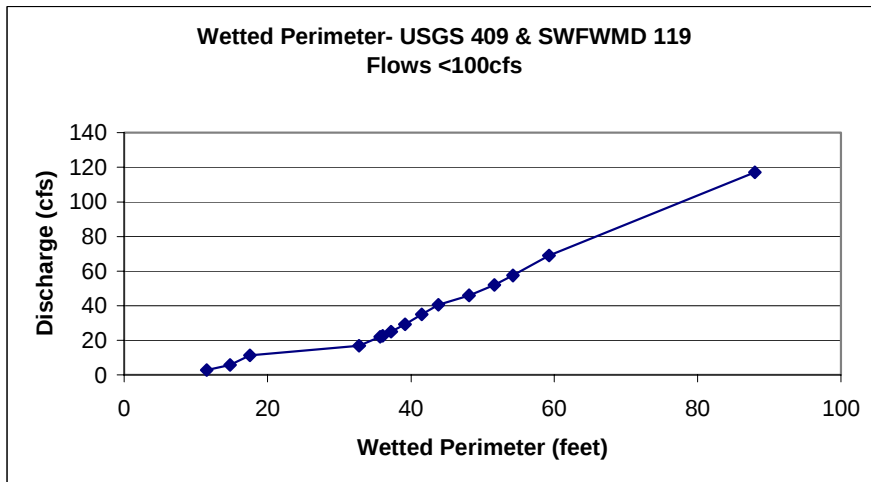


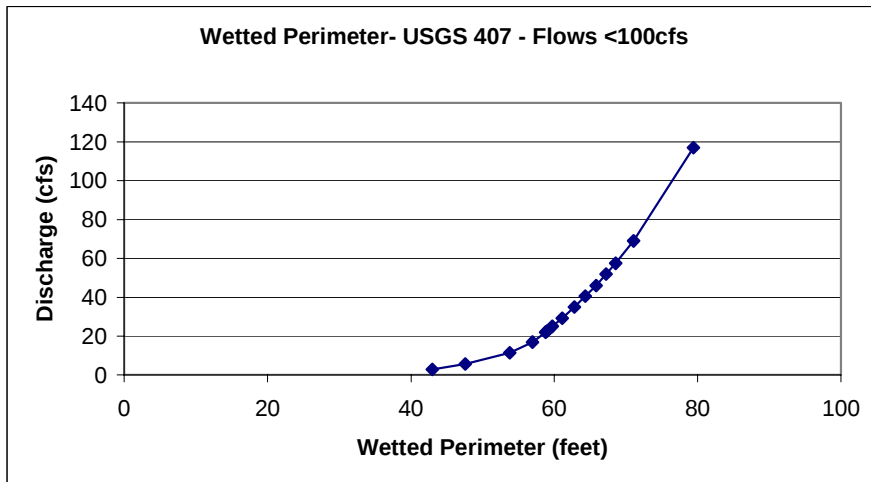
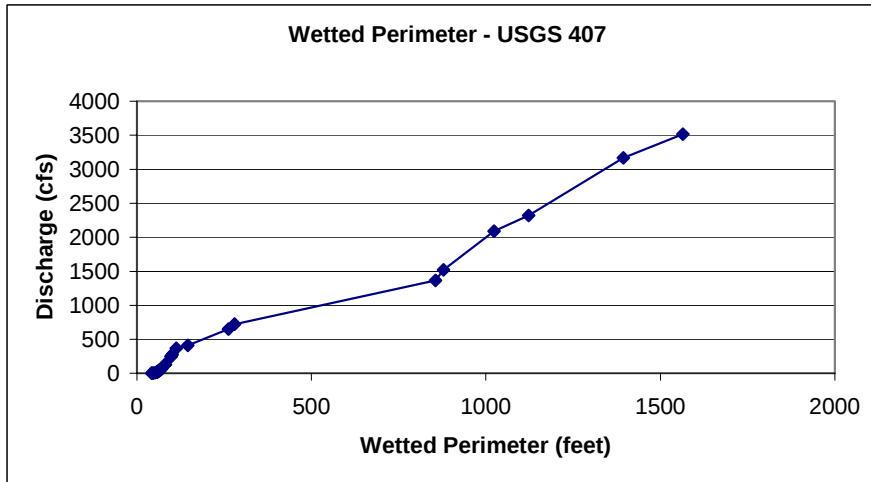


W.P.	Total Q	Total	DeltaWP/DeltaQ
35.97	2.83	12.71025	
41.06	5.67	1.792254	
48.83	11.33	1.372792	
54.78	17	1.049383	
59.38	22	0.92	
59.97	22.67	0.880597	
61.71	25	0.746781	
64.63	29.17	0.70024	
68.49	35	0.662093	
71.87	40.5	0.614545	
75.09	46	0.585455	
78.21	52	0.52	
80.96	57.5	0.5	
86.29	69	0.463478	
118.35	117	0.667917	
124.9	130	0.503846	
278.47	249	1.290504	
310.38	277	1.139643	
375.57	371	0.693511	
390.23	412	0.357561	
458.26	652	0.283458	
480.91	725	0.310274	
617.95	1367	0.213458	
636.81	1519	0.124079	
689.03	2088	0.091775	
703.34	2320	0.061681	
735.56	3165	0.03813	
744.26	3517	0.024716	

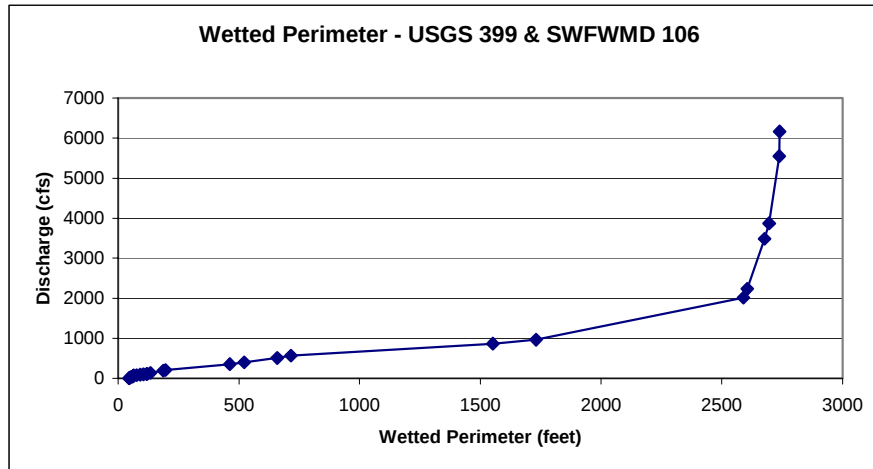


W.P.	Total Q	Total	DeltaWP/DeltaQ
11.5	2.83	4.063604	
14.76	5.67	1.147887	
17.56	11.33	0.4947	
32.77	17	2.68254	
35.72	22	0.59	
36.07	22.67	0.522388	
37.24	25	0.502146	
39.16	29.17	0.460432	
41.5	35	0.401372	
43.83	40.5	0.423636	
48.1	46	0.776364	
51.62	52	0.586667	
54.23	57.5	0.474545	
59.27	69	0.438261	
87.94	117	0.597292	
94.22	130	0.483077	
186.89	249	0.778739	
205.52	277	0.665357	
436.54	371	2.45766	
575.18	412	3.381463	
1224.21	652	2.704292	
1324.78	725	1.377671	
2025.43	1367	1.091355	
2407.54	1519	2.513882	
2646.95	2088	0.420756	
2657.09	2320	0.043707	
2658.83	3165	0.002059	
2659.85	3517	0.002898	

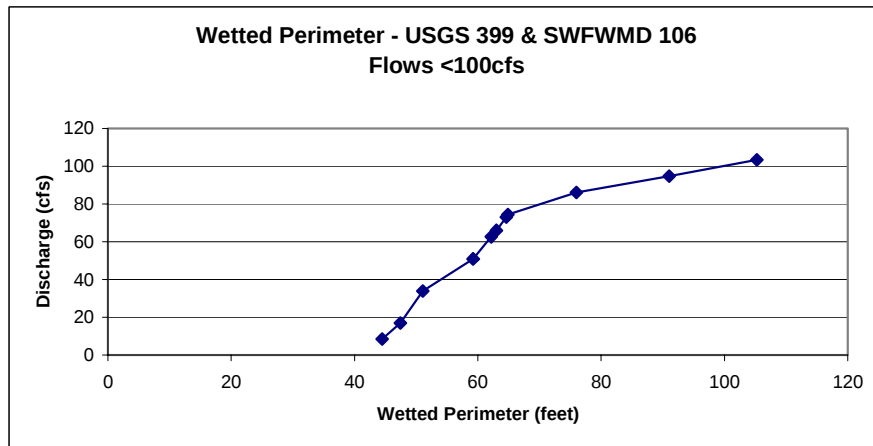


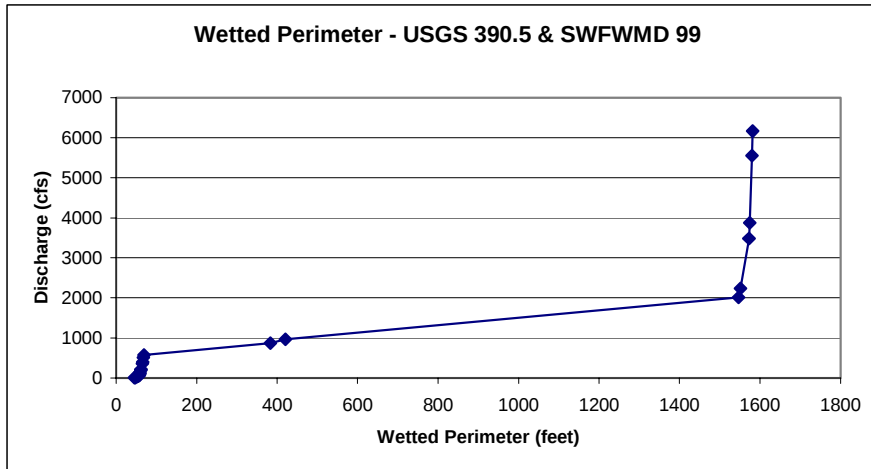


W.P.	Total Q	Total	DeltaWP/DeltaQ
42.97	2.83	15.18375	
47.59	5.67	1.626761	
53.8	11.33	1.097173	
56.94	17	0.553792	
58.81	22	0.374	
59	22.67	0.283582	
59.73	25	0.313305	
61.1	29.17	0.328537	
62.78	35	0.288165	
64.33	40.5	0.281818	
65.82	46	0.270909	
67.23	52	0.235	
68.57	57.5	0.243636	
71.06	69	0.216522	
79.4	117	0.17375	
81.47	130	0.159231	
97.83	249	0.137479	
101.19	277	0.12	
112.71	371	0.122553	
145.88	412	0.809024	
262.77	652	0.487042	
280.2	725	0.238767	
856.48	1367	0.897632	
879.34	1519	0.150395	
1023.55	2088	0.253445	
1122.9	2320	0.428233	
1394.39	3165	0.32129	
1564.3	3517	0.482699	

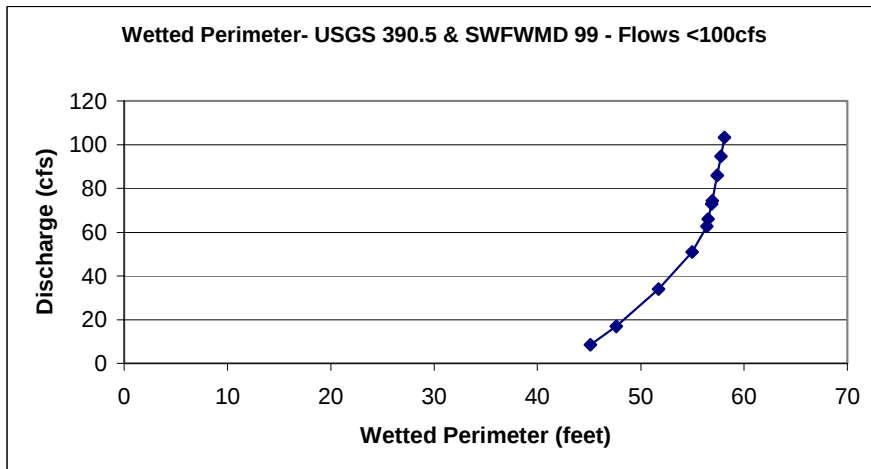


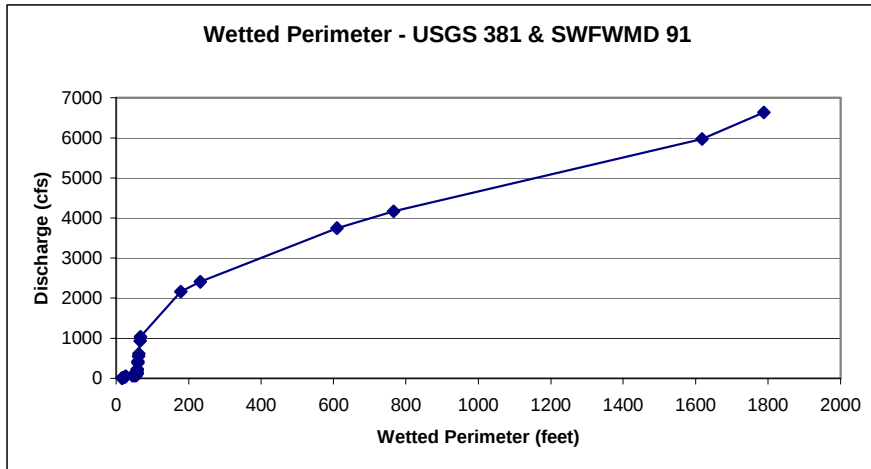
W.P.	Total Q	Total	DeltaWP/DeltaQ
44.47	8.5	5.231765	
47.42	17	0.347059	
51.05	34	0.213529	
59.22	51	0.480588	
62.21	62.67	0.256213	
63	66	0.237237	
64.59	73	0.227143	
64.88	74.33	0.218045	
75.98	86	0.951157	
91.05	94.67	1.738178	
105.24	103.33	1.638568	
117.23	112	1.38293	
120.38	120.67	0.363322	
133.11	138	0.734564	
186.82	195	0.942281	
196.54	217	0.441818	
463.17	357	1.9045	
521.57	397	1.46	
659.7	514	1.180598	
715.06	571	0.971228	
1551.13	870	2.796221	
1731.31	966	1.876875	
2590.05	2016	0.817848	
2605.57	2240	0.069286	
2677.03	3488	0.05726	
2696.29	3875	0.049767	
2738.82	5550	0.025391	
2739.74	6167	0.001491	



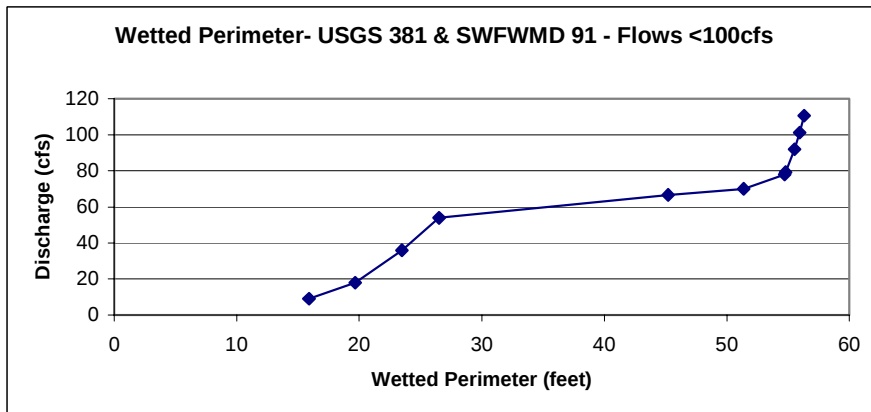


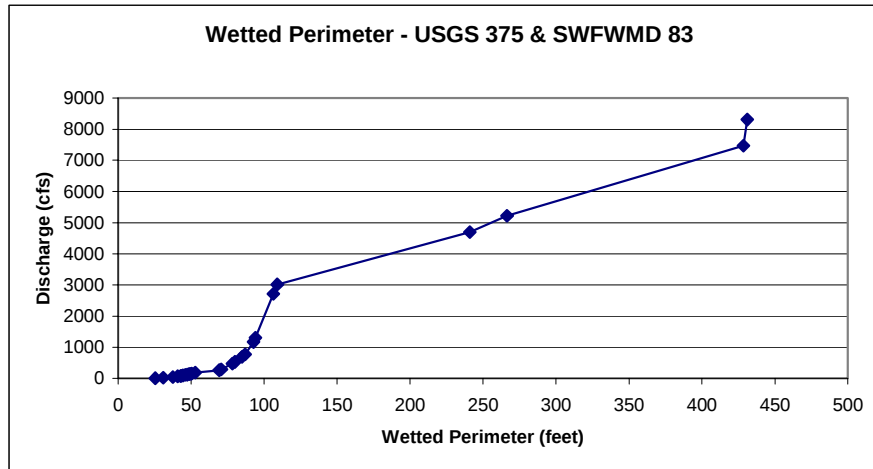
W.P.	Total Q	Total	DeltaWP/DeltaQ
45.13		8.5	5.309412
47.64		17	0.295294
51.72		34	0.24
54.96		51	0.190588
56.39		62.67	0.122536
56.53		66	0.042042
56.86		73	0.047143
56.91		74.33	0.037594
57.41		86	0.042845
57.75		94.67	0.039216
58.08		103.33	0.038106
58.39		112	0.035755
58.69		120.67	0.034602
59.27		138	0.033468
61		195	0.030351
61.58		217	0.026364
64.84		357	0.023286
65.77		397	0.02325
68.16		514	0.020427
69.21		571	0.018421
383.13		870	1.0499
420.7		966	0.391354
1546.14		2016	1.071848
1551.22		2240	0.022679
1572.34		3488	0.016923
1574.15		3875	0.004677
1580.27		5550	0.003654
1581.21		6167	0.001524



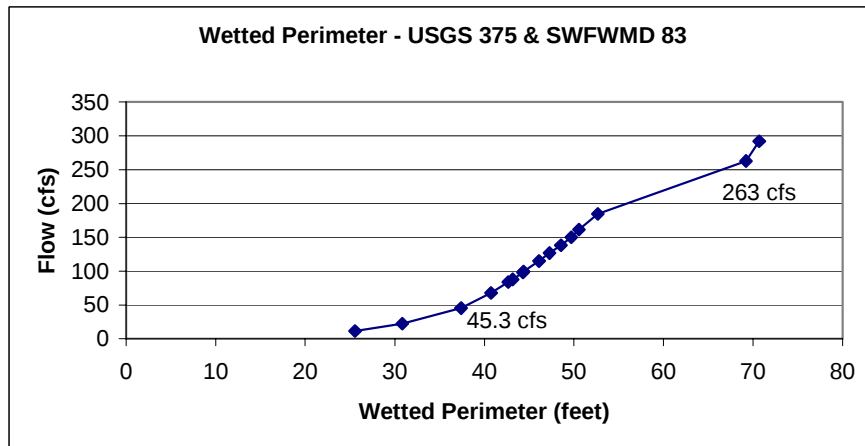


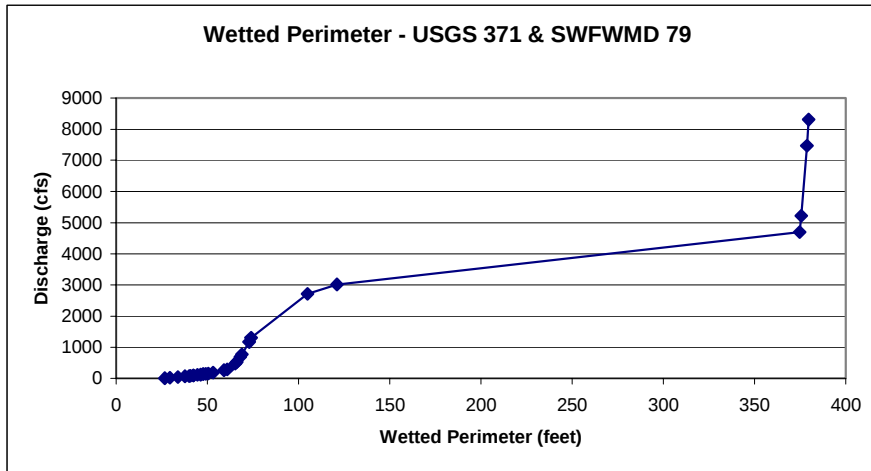
W.P.	Total Q	Total	DeltaWP/DeltaQ
15.89	9	1.765556	
19.67	18	0.42	
23.48	36	0.211667	
26.53	54	0.169444	
45.2	66.67	1.47356	
51.38	70	1.855856	
54.7	78	0.415	
54.81	79.33	0.082707	
55.51	92	0.055249	
55.94	101.33	0.046088	
56.31	110.67	0.039615	
56.94	120	0.067524	
57.36	129.33	0.045016	
57.93	148	0.03053	
58.73	210	0.012903	
58.81	233	0.003478	
59.81	384	0.006623	
60.22	427	0.009535	
61.6	553	0.010952	
62.3	614	0.011475	
65.88	936	0.011118	
66.95	1040	0.010288	
178.31	2169	0.098636	
232.45	2410	0.224647	
609.47	3751	0.281148	
766.25	4168	0.375971	
1617.83	5970	0.472575	
1788.03	6633	0.256712	



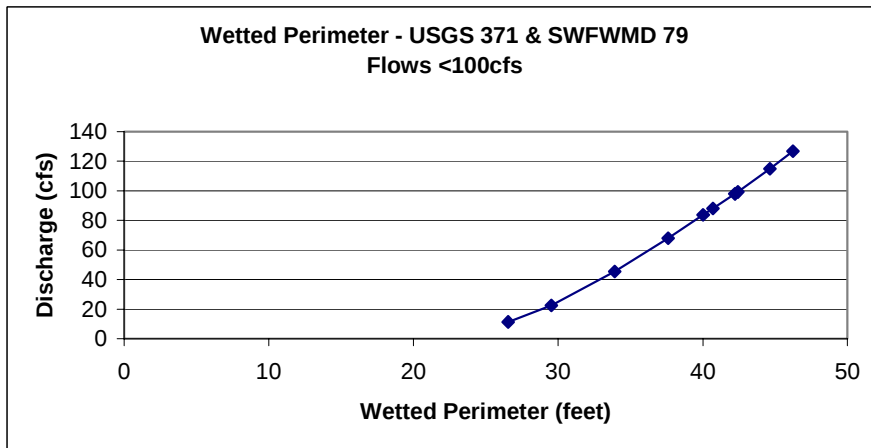


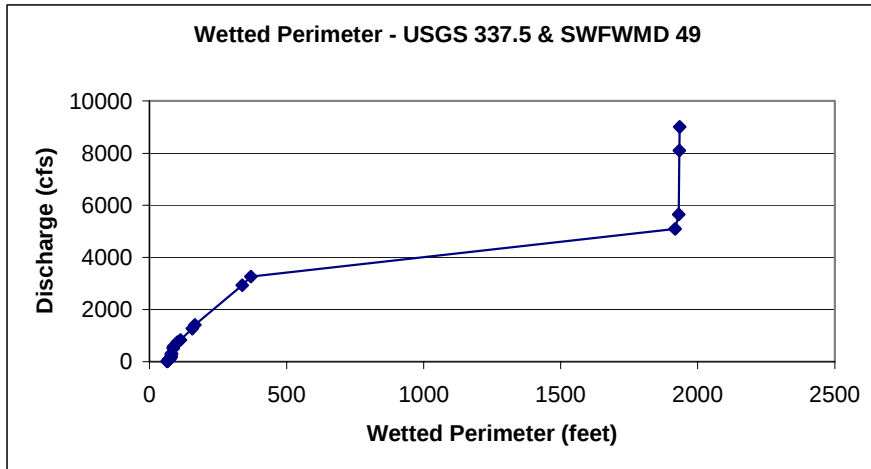
W.P.	Total Q	Total	DeltaWP/DeltaQ
25.57	11.33	2.25684	
30.84	22.67	0.464727	
37.39	45.33	0.289056	
40.76	68	0.148655	
42.65	83.67	0.120613	
43.17	88	0.120092	
44.3	98	0.113	
44.38	99.33	0.06015	
46.1	115	0.109764	
47.3	126.67	0.102828	
48.54	138.33	0.106346	
49.72	150	0.101114	
50.56	161.67	0.071979	
52.69	185	0.091299	
69.23	263	0.212051	
70.71	292	0.051034	
78.2	482	0.039421	
79.94	535	0.03283	
84.82	692	0.031083	
86.97	769	0.027922	
92.85	1172	0.014591	
94.17	1302	0.010154	
106.39	2715	0.008648	
109.08	3017	0.008907	
240.96	4697	0.0785	
266.47	5219	0.04887	
428.59	7475	0.071862	
431.27	8306	0.003225	



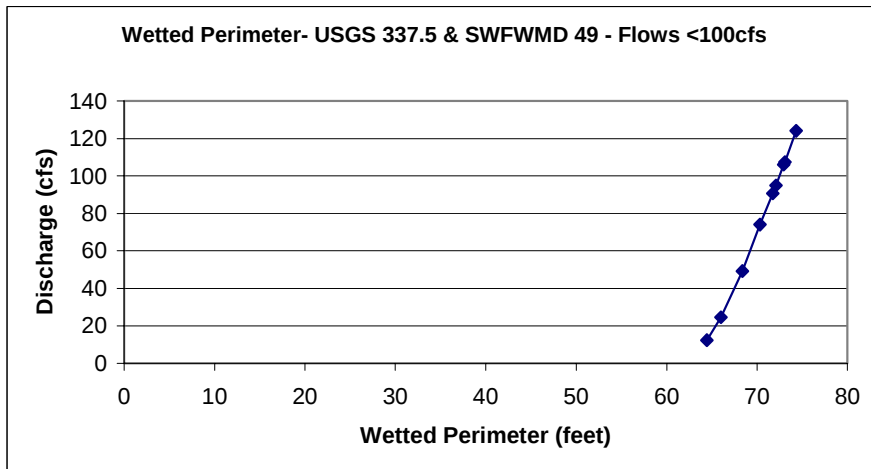


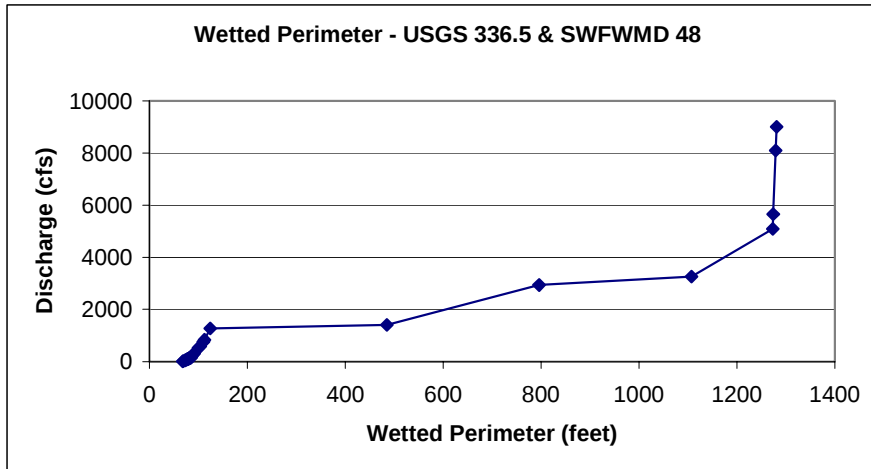
W.P.	Total Q	Total	DeltaWP/DeltaQ
26.55	11.33	2.343336	
29.53	22.67	0.262787	
33.9	45.33	0.192851	
37.6	68	0.163211	
40.02	83.67	0.154435	
40.7	88	0.157044	
42.22	98	0.152	
42.42	99.33	0.150376	
44.65	115	0.14231	
46.22	126.67	0.134533	
47.71	138.33	0.127787	
49.14	150	0.122536	
50.52	161.67	0.118252	
53.13	185	0.111873	
59.13	263	0.076923	
60.88	292	0.060345	
65.36	482	0.023579	
66.11	535	0.014151	
68.08	692	0.012548	
68.95	769	0.011299	
72.89	1172	0.009777	
73.99	1302	0.008462	
104.88	2715	0.021861	
121.02	3017	0.053444	
374.8	4697	0.15106	
375.64	5219	0.001609	
378.68	7475	0.001348	
379.64	8306	0.001155	



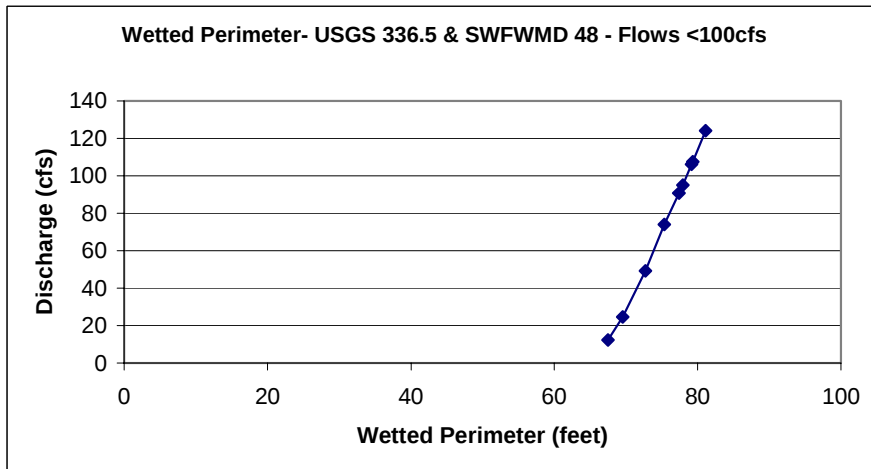


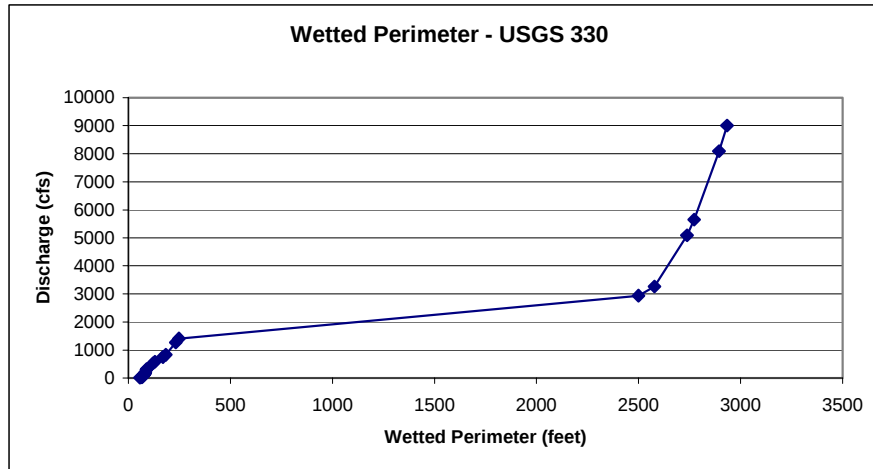
W.P.	Total Q	Total	DeltaWP/DeltaQ
64.43	12.33	5.225466	
66.01	24.67	0.128039	
68.39	49.33	0.096513	
70.33	74	0.078638	
71.74	90.67	0.084583	
72.09	95	0.080831	
72.95	106	0.078182	
73.06	107.33	0.082707	
74.31	124	0.074985	
75.22	136.67	0.071823	
76.09	149.33	0.06872	
76.93	162	0.066298	
77.43	174.67	0.039463	
78	200	0.022503	
79.77	284	0.021071	
80.39	316	0.019375	
86.19	521	0.028293	
87.3	579	0.019138	
101.45	750	0.082749	
113.04	833	0.139639	
156.15	1270	0.09865	
165.07	1410	0.063714	
337.75	2942	0.112715	
369.18	3269	0.096116	
1916.98	5090	0.849973	
1929.94	5655	0.022938	



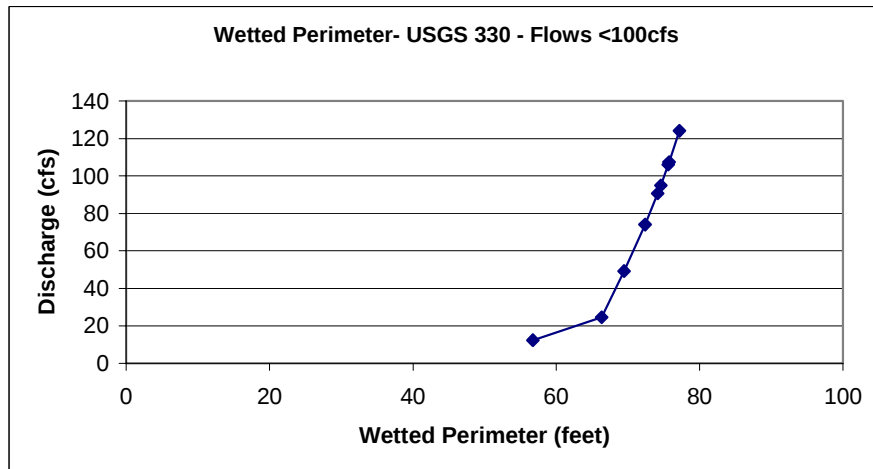


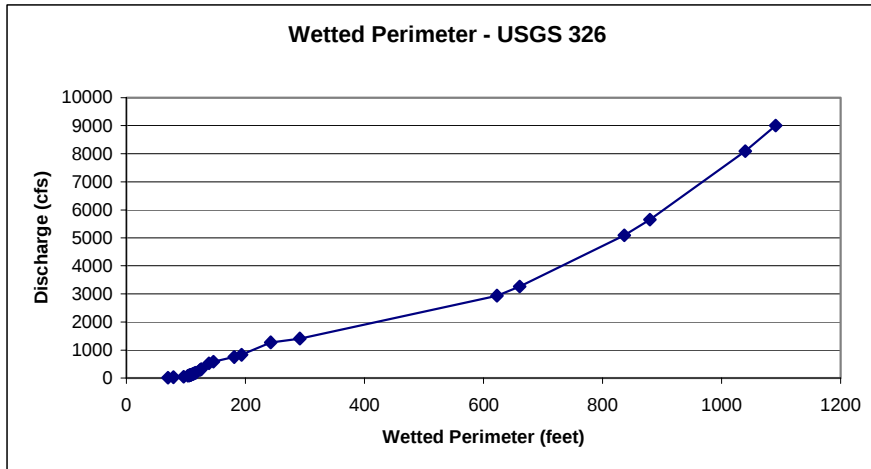
W.P.	Total Q	Total	DeltaWP/DeltaQ
67.48	12.33	5.47283	
69.54	24.67	0.166937	
72.71	49.33	0.128548	
75.35	74	0.107013	
77.39	90.67	0.122376	
77.9	95	0.117783	
79.15	106	0.113636	
79.31	107.33	0.120301	
81.11	124	0.107978	
82.46	136.67	0.106551	
83.6	149.33	0.090047	
84.59	162	0.078137	
85.35	174.67	0.059984	
86.51	200	0.045795	
90.05	284	0.042143	
91.27	316	0.038125	
99.94	521	0.042293	
103.47	579	0.060862	
109.66	750	0.036199	
112.15	833	0.03	
124.05	1270	0.027231	
484.53	1410	2.574857	
796.06	2942	0.203349	
1107.4	3269	0.95211	
1273.18	5090	0.091038	
1274.45	5655	0.002248	
1279.34	8100	0.002	
1280.92	9000	0.001756	



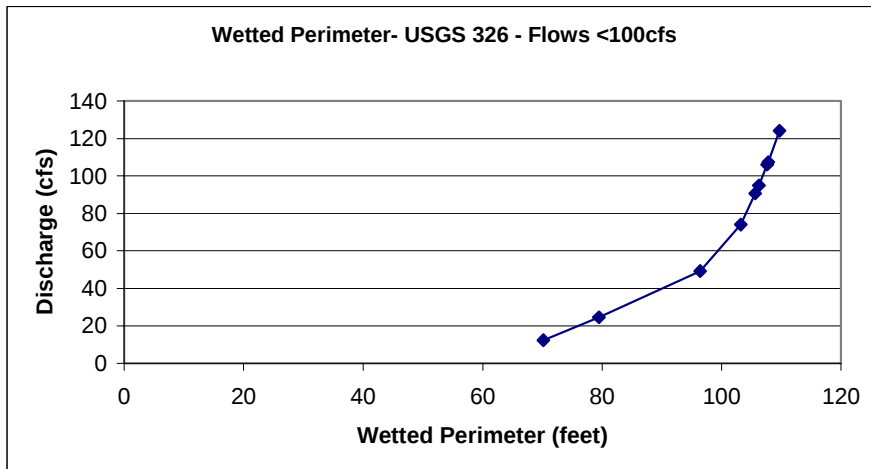


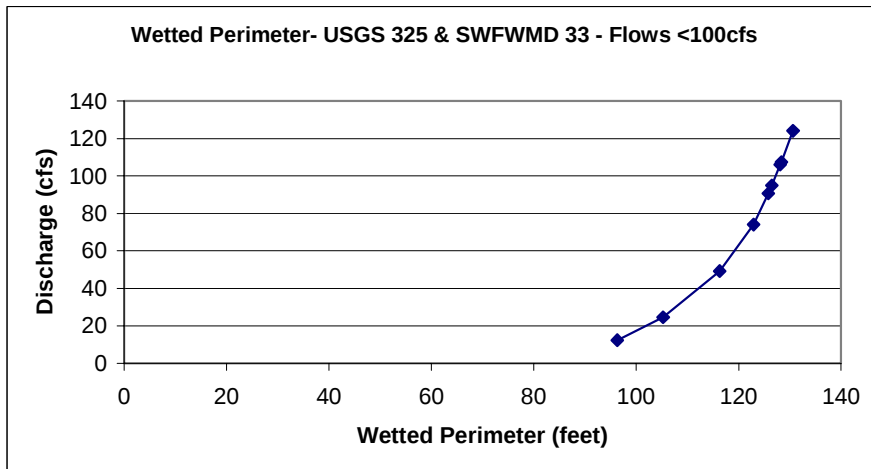
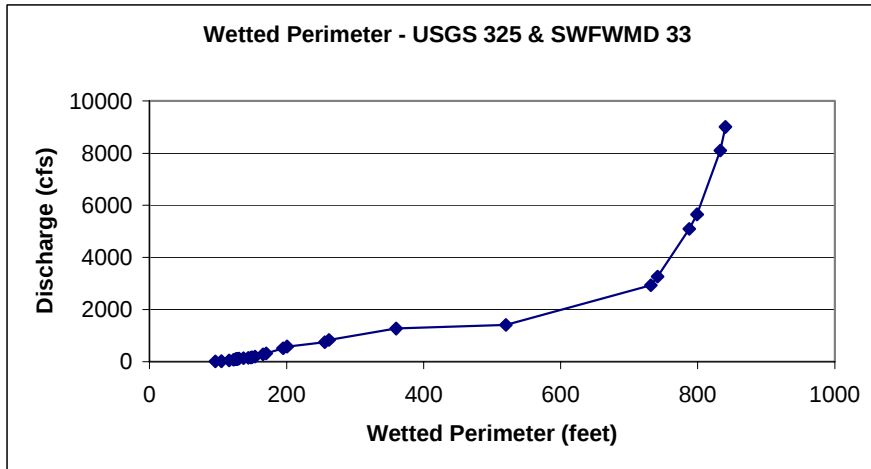
W.P.	Total Q	Total	DeltaWP/DeltaQ
56.71	12.33	4.599351	
66.35	24.67	0.781199	
69.46	49.33	0.126115	
72.38	74	0.118362	
74.13	90.67	0.104979	
74.57	95	0.101617	
75.6	106	0.093636	
75.74	107.33	0.105263	
77.18	124	0.086383	
78.23	136.67	0.082873	
79.22	149.33	0.078199	
80.17	162	0.07498	
81.07	174.67	0.071034	
82.79	200	0.067904	
87.79	284	0.059524	
89.49	316	0.053125	
120.88	521	0.153122	
129.54	579	0.14931	
169.14	750	0.231579	
183.19	833	0.169277	
232.82	1270	0.11357	
247.86	1410	0.107429	
2500.17	2942	1.470176	
2577.78	3269	0.237339	
2737.08	5090	0.087479	
2772.06	5655	0.061912	
2893.91	8100	0.049836	
2932.99	9000	0.043422	



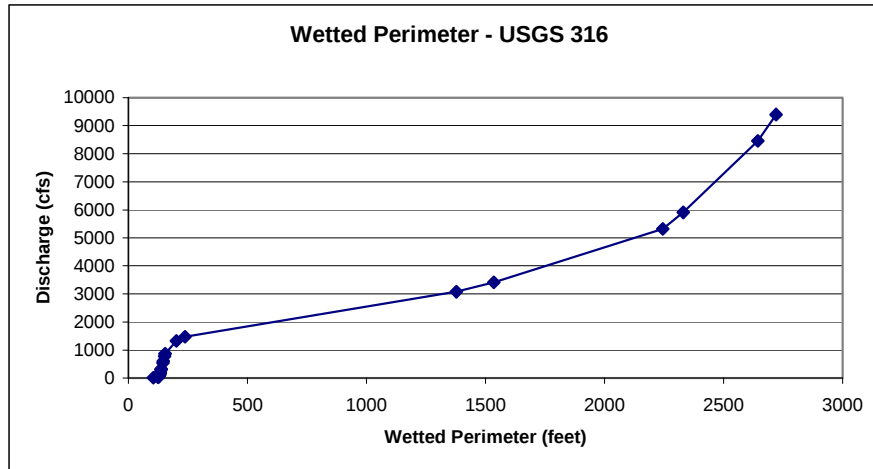


W.P.	Total Q	Total	DeltaWP/DeltaQ
70.19	12.33	5.69262	
79.44	24.67	0.749595	
96.42	49.33	0.688564	
103.21	74	0.275233	
105.62	90.67	0.144571	
106.23	95	0.140878	
107.61	106	0.125455	
107.8	107.33	0.142857	
109.72	124	0.115177	
111.1	136.67	0.108919	
112.4	149.33	0.102686	
113.64	162	0.097869	
114.83	174.67	0.093923	
117.06	200	0.088038	
123.55	284	0.077262	
125.76	316	0.069063	
138.81	521	0.063659	
146.34	579	0.129828	
181.42	750	0.205146	
193.57	833	0.146386	
242.49	1270	0.111945	
291.34	1410	0.348929	
622.31	2942	0.216038	
660.76	3269	0.117584	
836.67	5090	0.096601	
879.74	5655	0.07623	
1040.18	8100	0.06562	
1091.13	9000	0.056611	

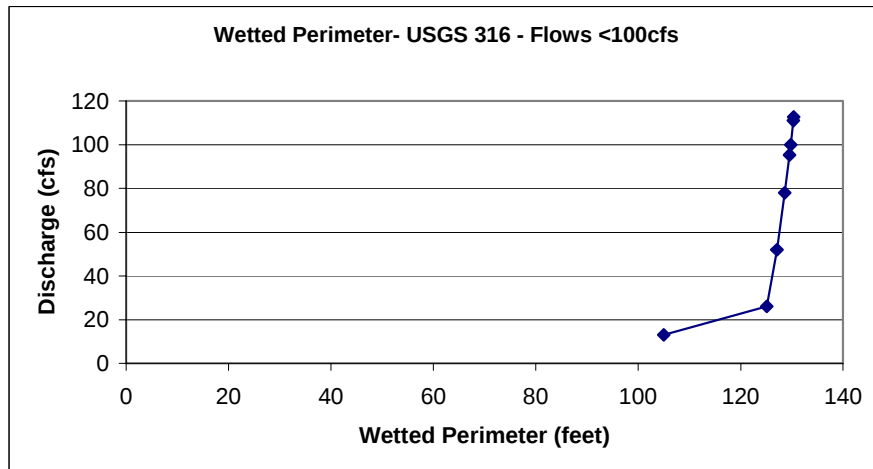


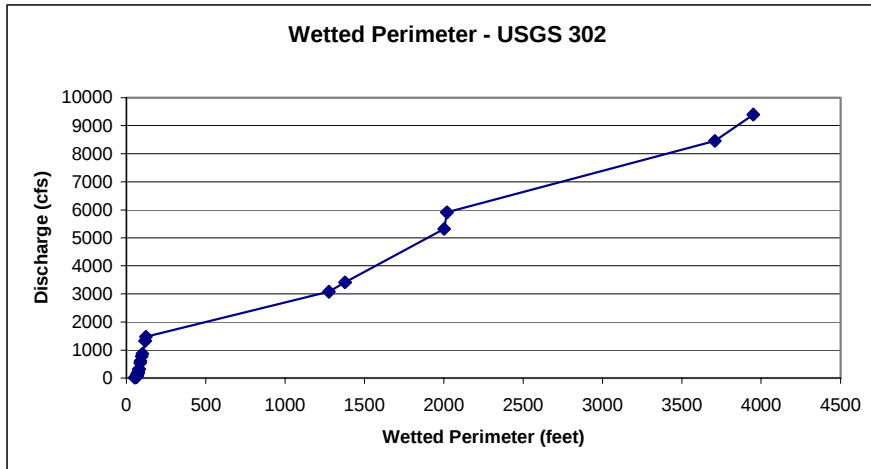


W.P.	Total Q	Total	DeltaWP/DeltaQ
96.33	12.33	7.812652	
105.27	24.67	0.724473	
116.29	49.33	0.446878	
122.91	74	0.268342	
125.77	90.67	0.171566	
126.49	95	0.166282	
128.12	106	0.148182	
128.35	107.33	0.172932	
130.61	124	0.135573	
137.46	136.67	0.540647	
144.25	149.33	0.536335	
147.6	162	0.264404	
149.82	174.67	0.175217	
154.01	200	0.165417	
165.57	284	0.137619	
170.15	316	0.143125	
194.89	521	0.120683	
200.91	579	0.103793	
255.63	750	0.32	
262.03	833	0.077108	
360.05	1270	0.224302	
520.19	1410	1.143857	
731.57	2942	0.137977	
741.69	3269	0.030948	
787.94	5090	0.025398	
799.23	5655	0.019982	
832.81	8100	0.013734	
840.69	9000	0.008756	

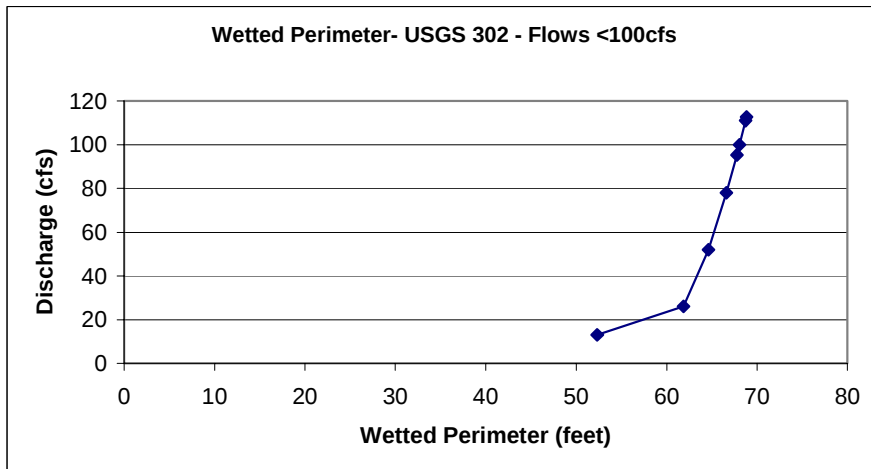


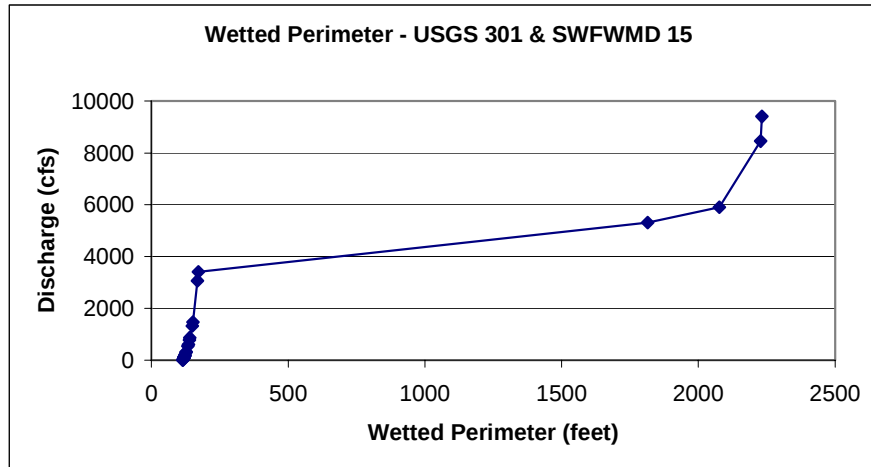
W.P.	Total Q	Total	DeltaWP/DeltaQ
104.99	13	8.076154	
125.08	26	1.545385	
127.05	52	0.075769	
128.6	78	0.059615	
129.53	95.33	0.053664	
129.76	100	0.049251	
130.28	111	0.047273	
130.36	112.67	0.047904	
131.14	130	0.045009	
131.72	143.17	0.044039	
132.24	156.33	0.039514	
132.77	169.5	0.040243	
133.27	182.67	0.037965	
134.22	209	0.036081	
137.04	297	0.032045	
137.98	330	0.028485	
145.38	544	0.034579	
147	605	0.026557	
151.85	783	0.027247	
153.85	870	0.022989	
202.14	1326	0.105899	
238.1	1473	0.244626	
1377.21	3073	0.711944	
1535.27	3414	0.463519	
2244.09	5314	0.373063	
2330.85	5905	0.146802	
2644.18	8458	0.12273	
2721.31	9398	0.082053	



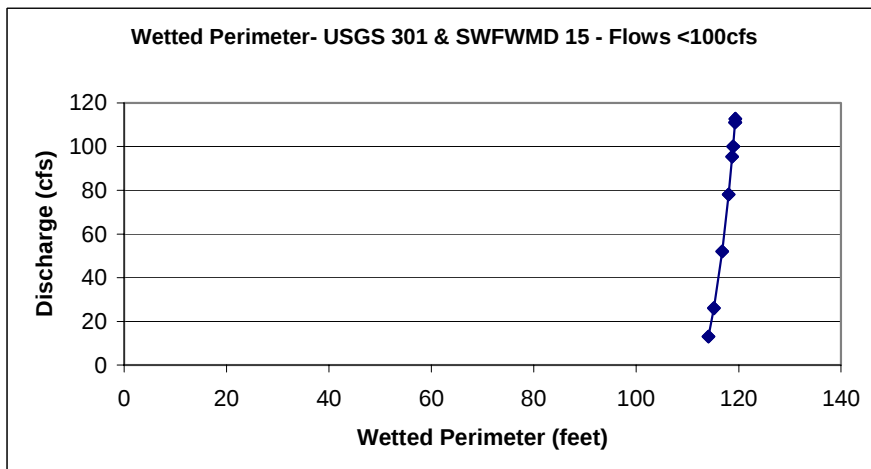


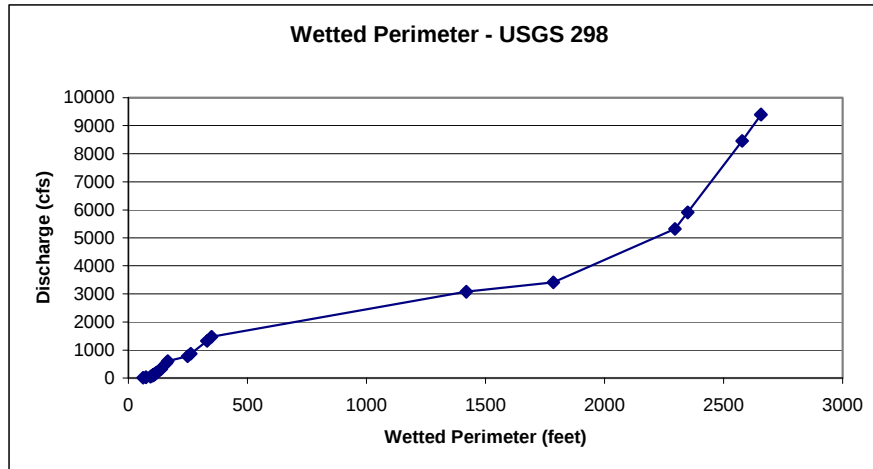
W.P.	Total Q	Total	DeltaWP/DeltaQ
52.32	13	4.024615	
61.87	26	0.734615	
64.61	52	0.105385	
66.6	78	0.076538	
67.77	95.33	0.067513	
68.08	100	0.066381	
68.73	111	0.059091	
68.83	112.67	0.05988	
69.89	130	0.061166	
70.65	143.17	0.057707	
71.37	156.33	0.054711	
72.12	169.5	0.056948	
72.77	182.67	0.049355	
74.05	209	0.048614	
77.91	297	0.043864	
79.27	330	0.041212	
86.86	544	0.035467	
88.76	605	0.031148	
96.99	783	0.046236	
100.67	870	0.042299	
118.32	1326	0.038706	
123.96	1473	0.038367	
1275.64	3073	0.7198	
1378.07	3414	0.300381	
2002.71	5314	0.328758	
2019.95	5905	0.029171	
3707.26	8458	0.660913	
3950.96	9398	0.259255	



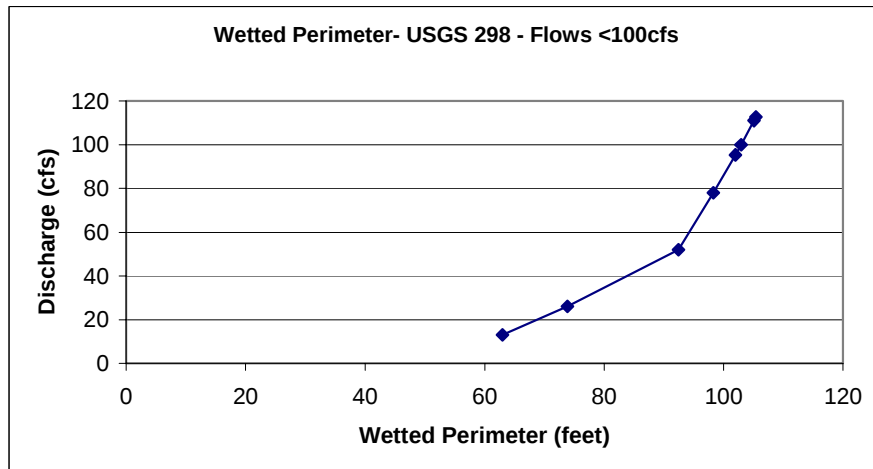


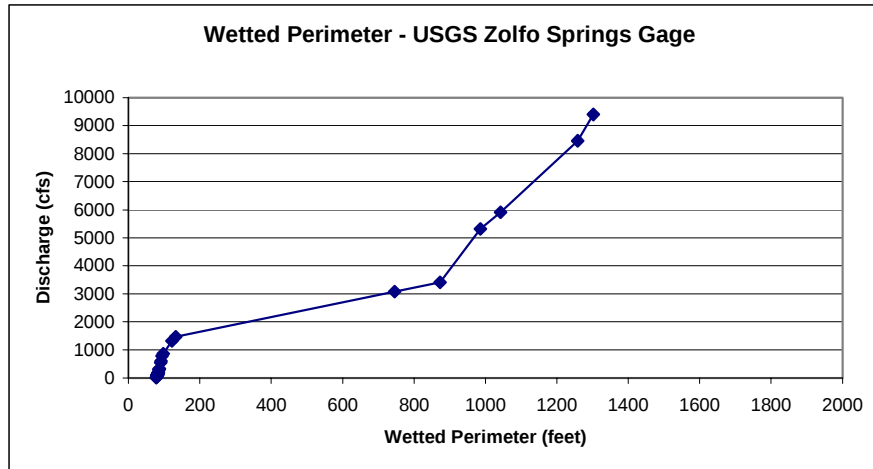
W.P.	Total Q	Total	DeltaWP/DeltaQ
114.07	13	8.774615	
115.17	26	0.084615	
116.81	52	0.063077	
118.02	78	0.046538	
118.73	95.33	0.040969	
118.92	100	0.040685	
119.32	111	0.036364	
119.38	112.67	0.035928	
120.02	130	0.03693	
120.48	143.17	0.034928	
120.91	156.33	0.032675	
121.36	169.5	0.034169	
121.76	182.67	0.030372	
122.54	209	0.029624	
125.92	297	0.038409	
127.24	330	0.04	
133.42	544	0.028879	
134.97	605	0.02541	
138.86	783	0.021854	
140.59	870	0.019885	
148.89	1326	0.018202	
151.31	1473	0.016463	
168.53	3073	0.010763	
171.63	3414	0.009091	
1814.71	5314	0.864779	
2077.16	5905	0.444078	
2227.76	8458	0.058989	
2232.78	9398	0.00534	



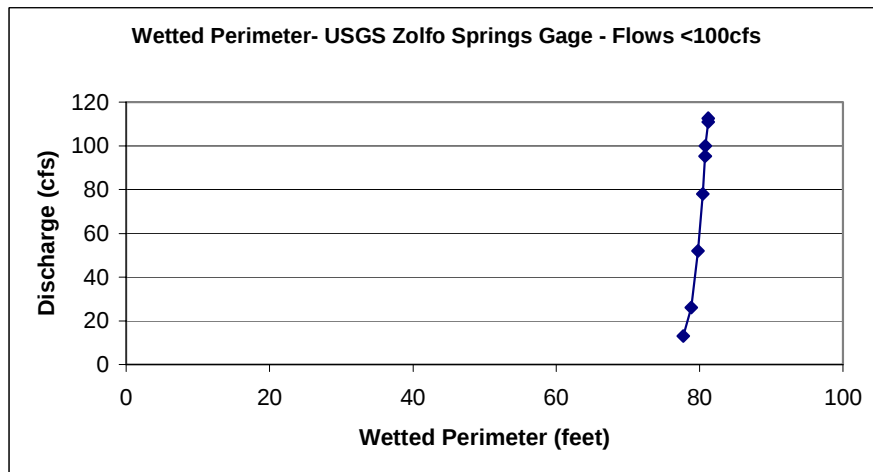


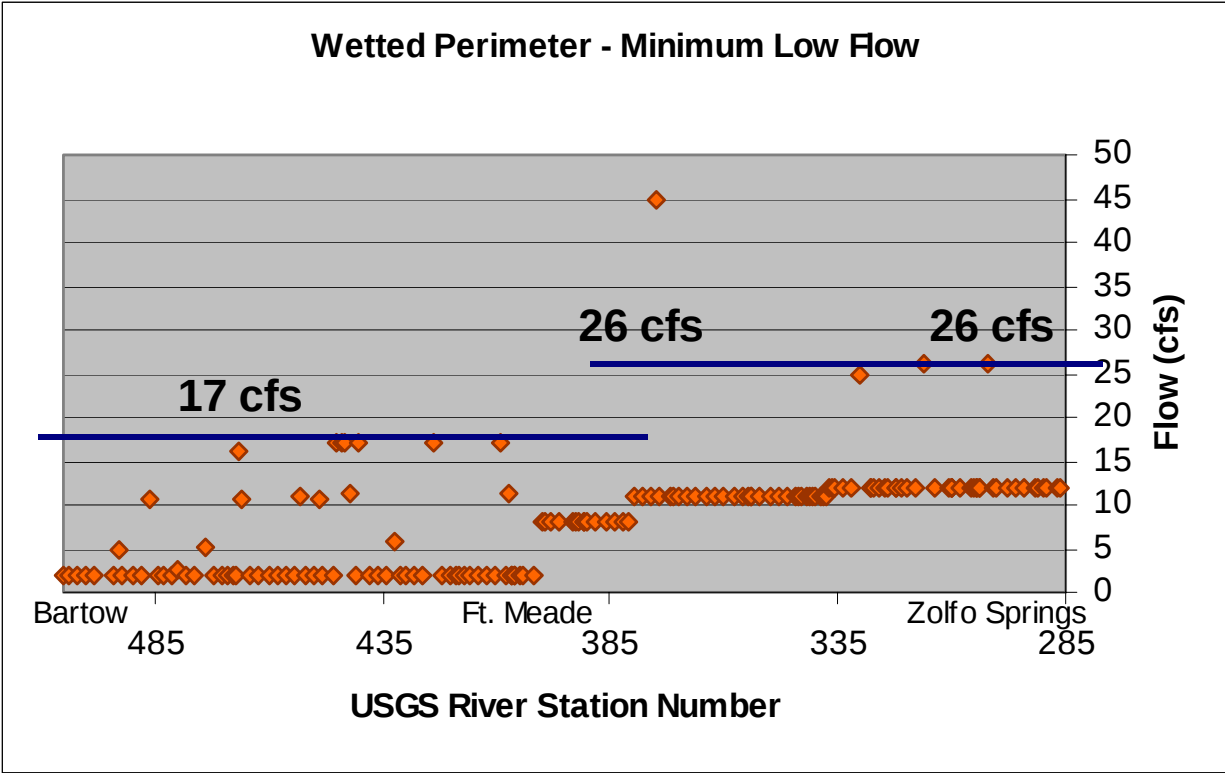
W.P.	Total Q	Total	DeltaWP/DeltaQ
62.97	13	4.843846	
73.88	26	0.839231	
92.44	52	0.713846	
98.3	78	0.225385	
101.97	95.33	0.211771	
102.91	100	0.201285	
105.08	111	0.197273	
105.4	112.67	0.191617	
108.64	130	0.186959	
110.98	143.17	0.177677	
113.25	156.33	0.172492	
115.43	169.5	0.165528	
117.54	182.67	0.160213	
121.55	209	0.152298	
133.46	297	0.135341	
137.44	330	0.120606	
159.97	544	0.10528	
165.53	605	0.091148	
249.12	783	0.469607	
262.43	870	0.152989	
330.06	1326	0.148311	
349.82	1473	0.134422	
1420	3073	0.668863	
1785.83	3414	1.072815	
2294.91	5314	0.267937	
2350.38	5905	0.093858	
2577.66	8458	0.089025	
2656.5	9398	0.083872	





W.P.	Total Q	Total	DeltaWP/DeltaQ
77.71	13	5.977692	
78.82	26	0.085385	
79.76	52	0.036154	
80.42	78	0.025385	
80.75	95.33	0.019042	
80.79	100	0.008565	
81.2	111	0.037273	
81.2	112.67	0	
82.05	130	0.049048	
82.53	143.17	0.036446	
82.86	156.33	0.025076	
83.22	169.5	0.027335	
83.62	182.67	0.030372	
84.16	209	0.020509	
85.76	297	0.018182	
86.42	330	0.02	
90.22	544	0.017757	
91.18	605	0.015738	
93.87	783	0.015112	
97.87	870	0.045977	
121.75	1326	0.052368	
132.91	1473	0.075918	
745.22	3073	0.382694	
872.81	3414	0.374164	
985.77	5314	0.059453	
1042.17	5905	0.095431	
1258.65	8458	0.084794	
1302.17	9398	0.046298	



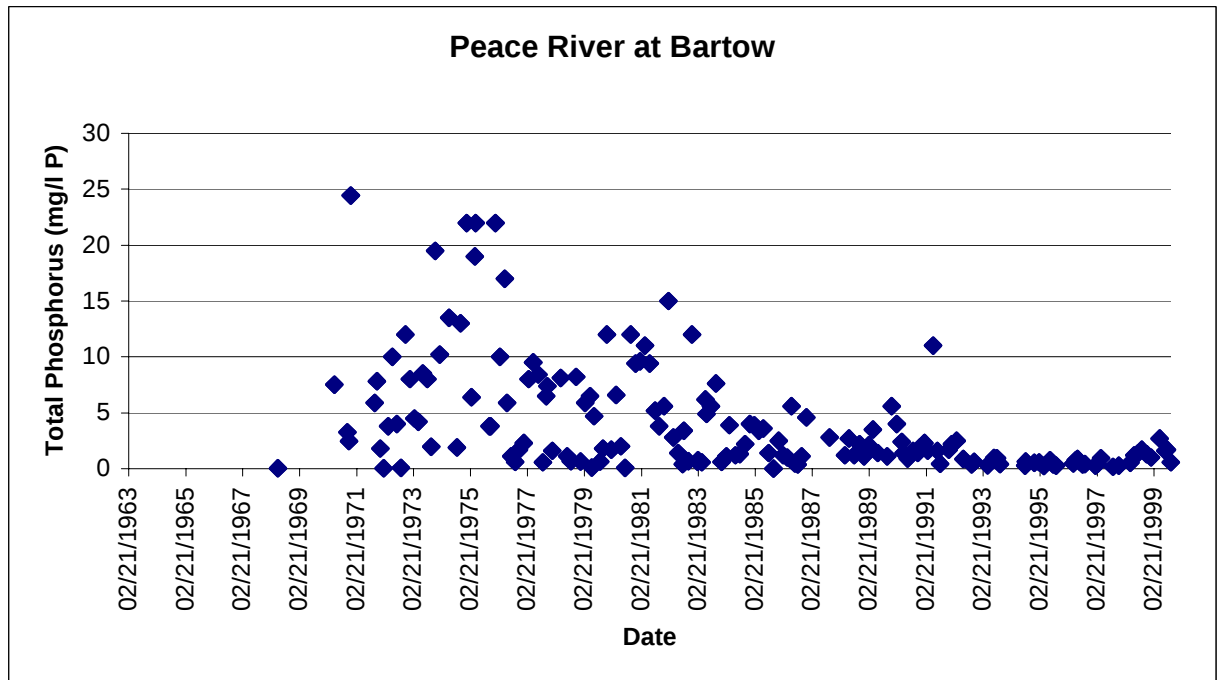
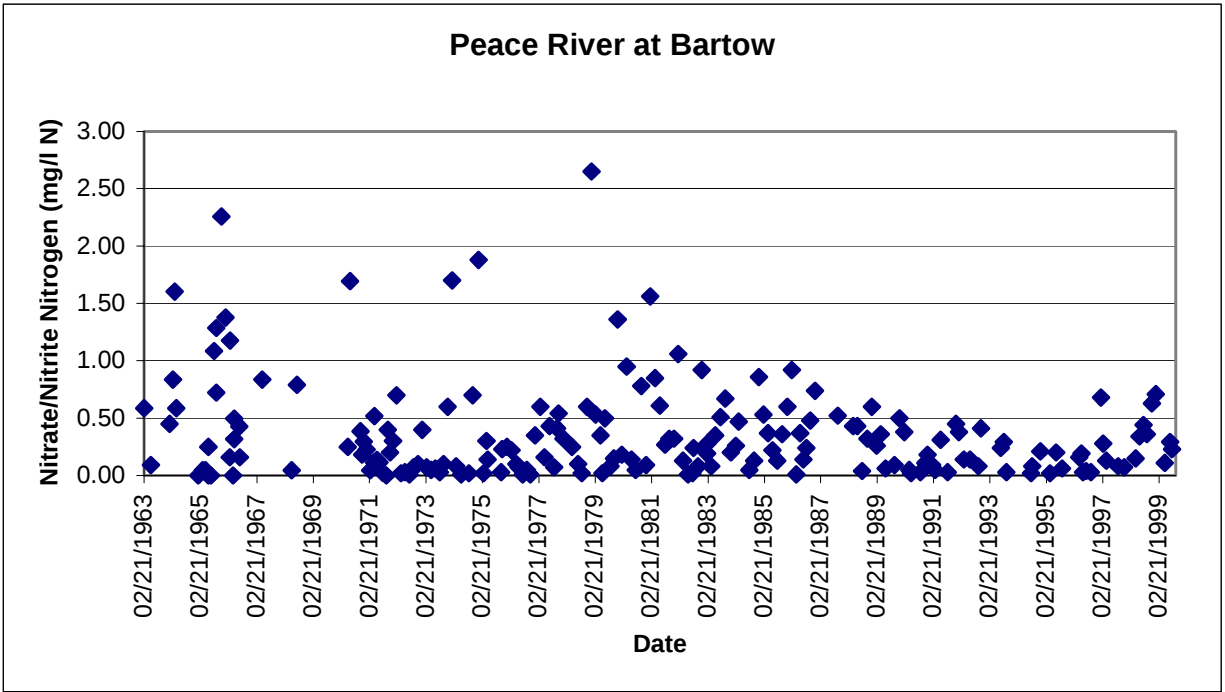


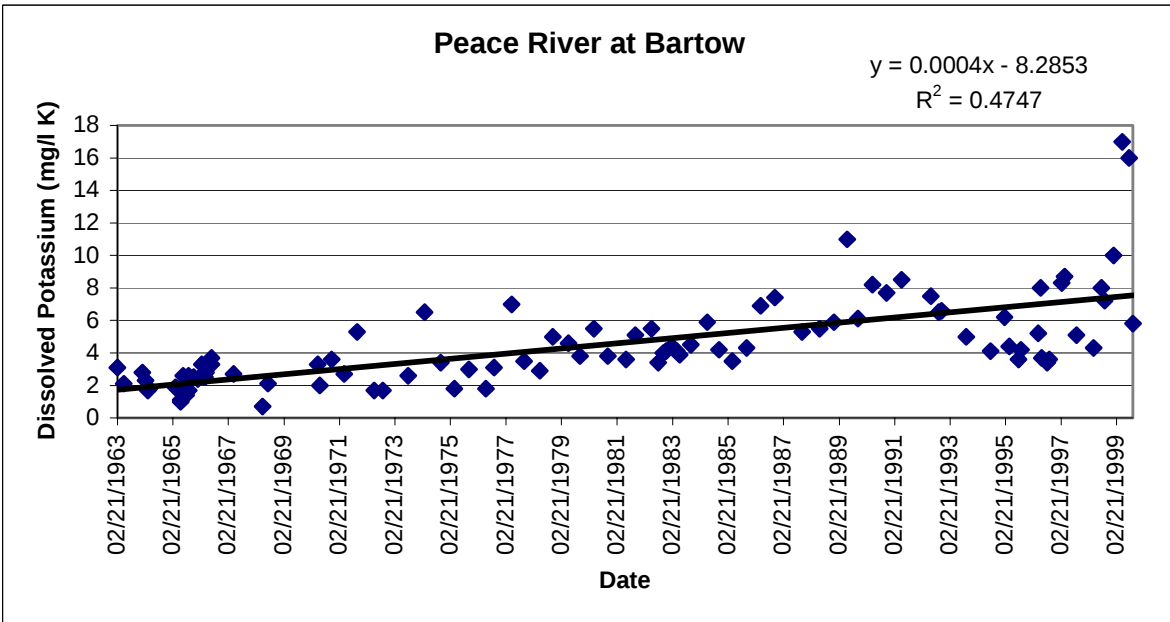
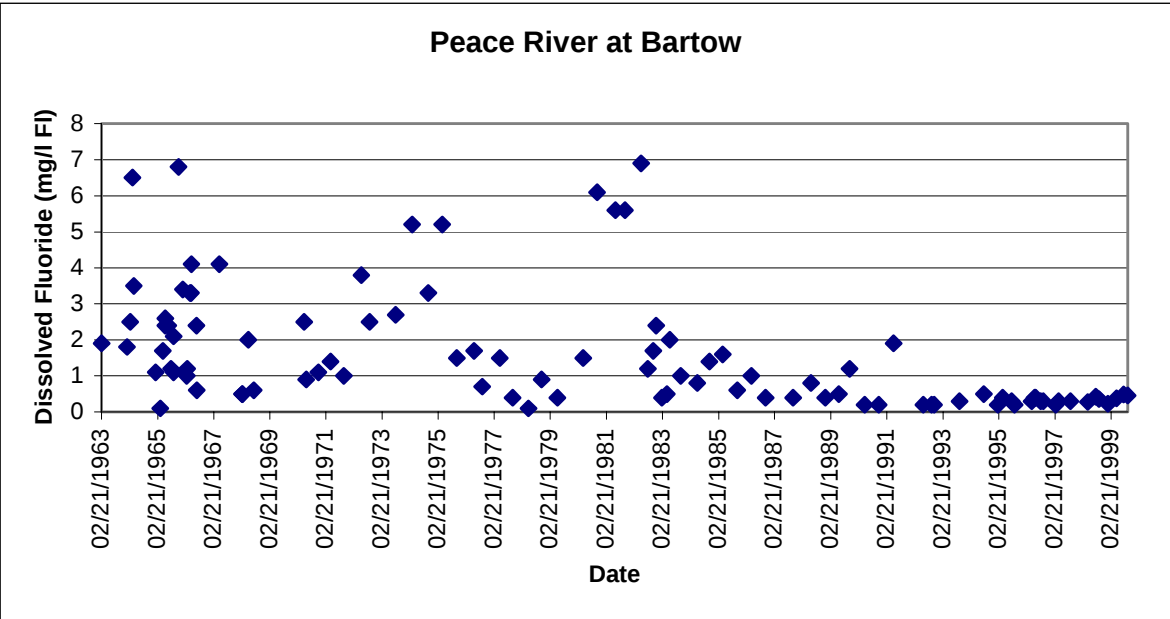
APPENDIX WQ

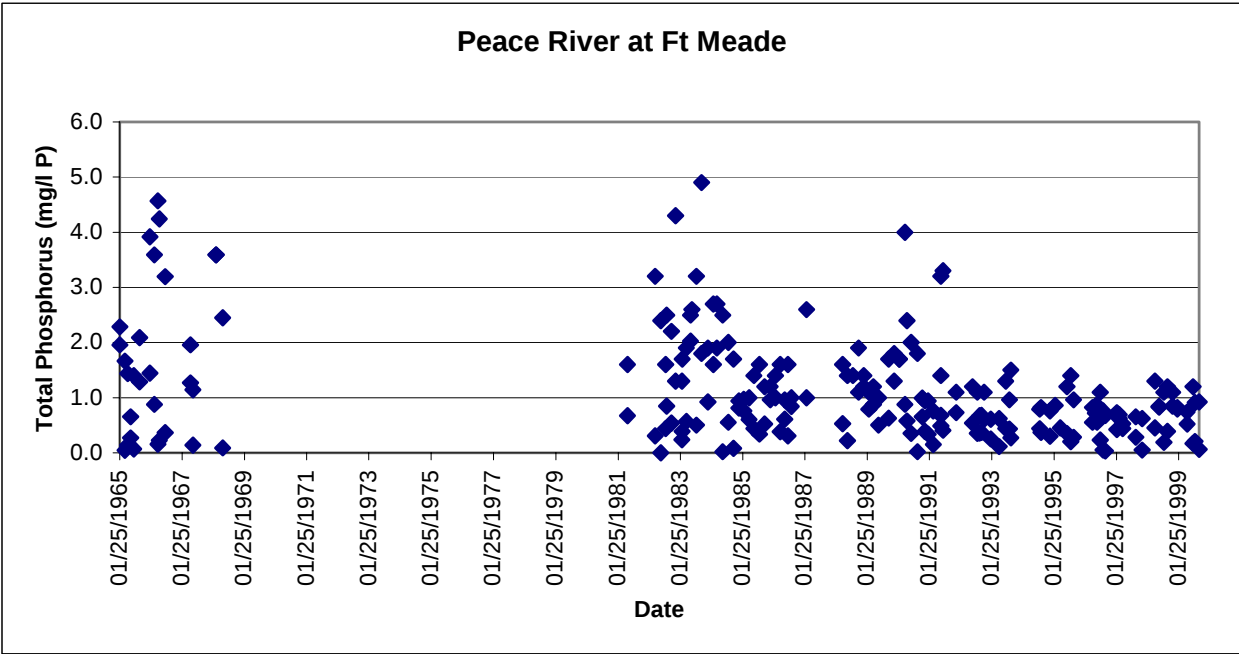
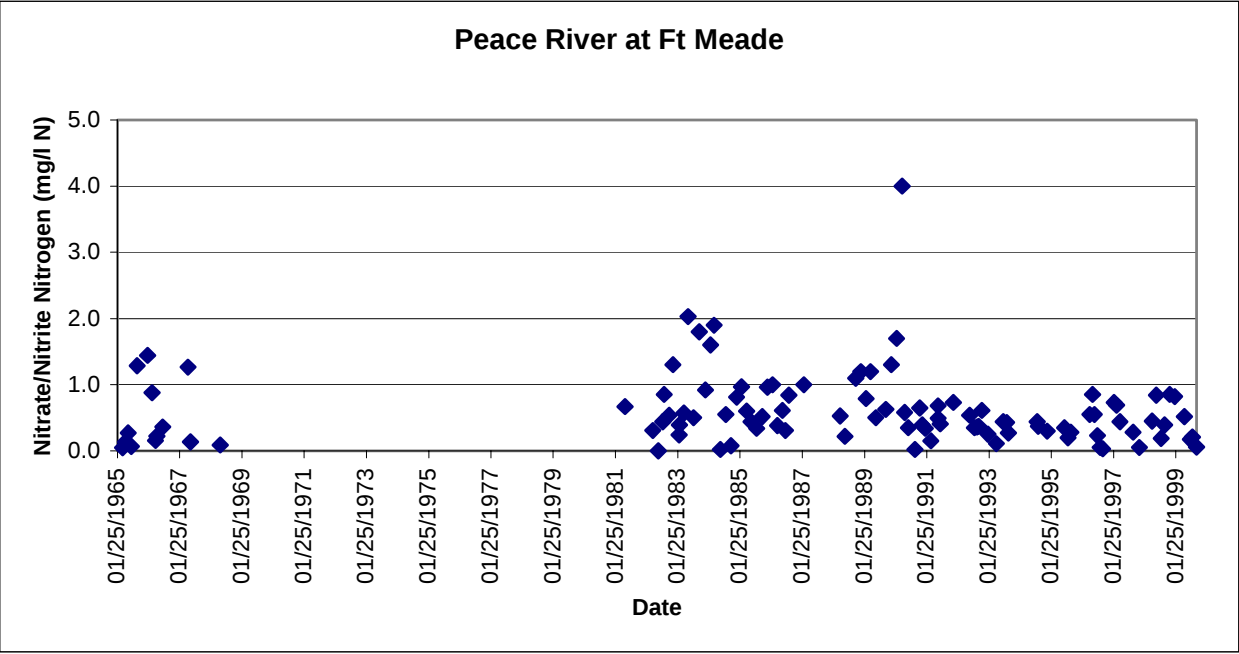
Water Quality - WQ

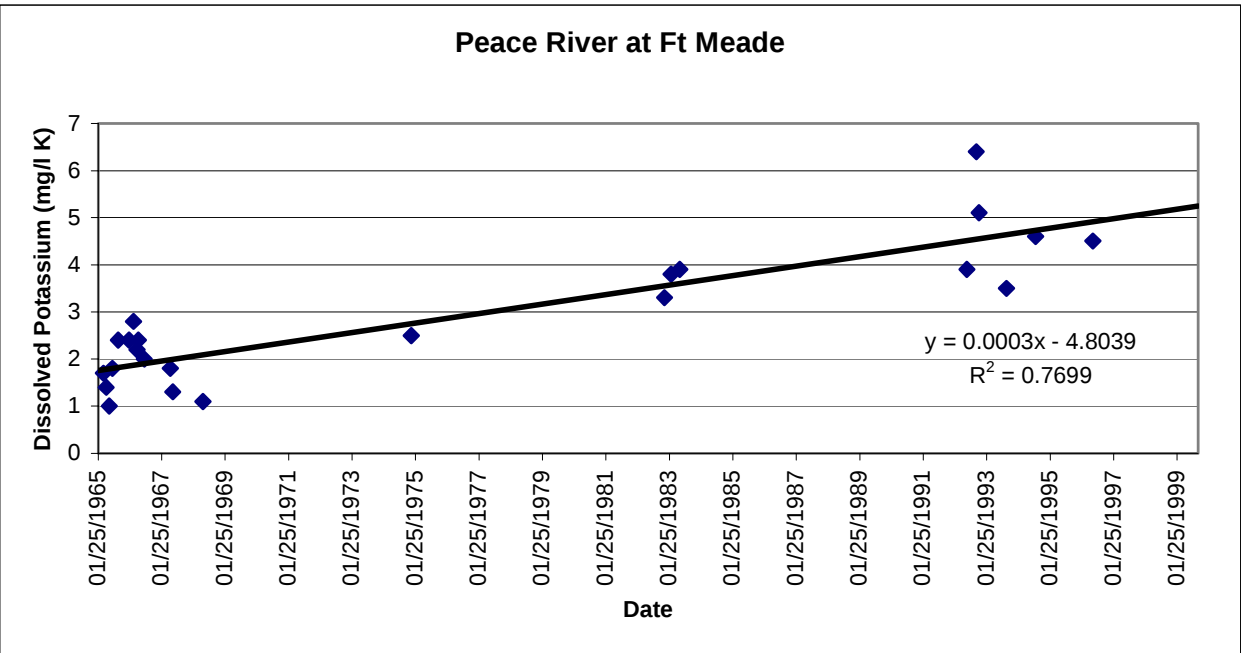
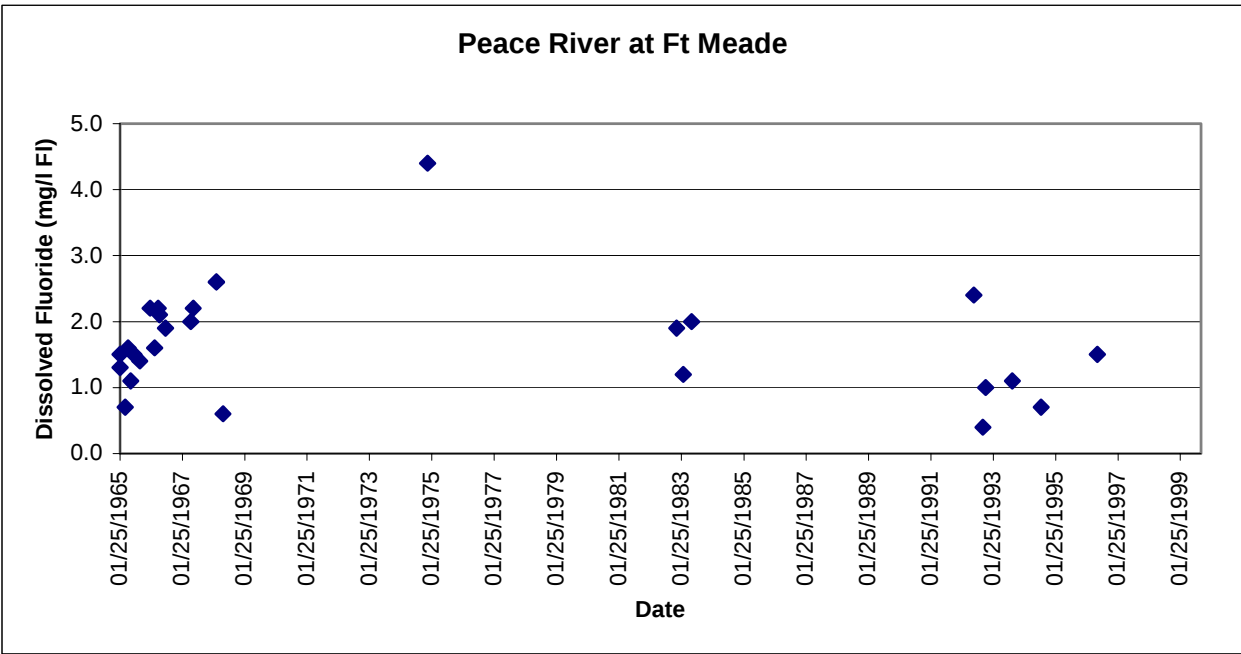
This appendix contains water quality plots for four selected parameters: nitrogen, phosphorus, fluoride and potassium. Plots are included for the four long-term USGS gage sites on the Peace River and for sites on other rivers for comparative purposes. A simple linear regression line was included on the potassium plots for reference. Seasonal Kendall was used to test for significance of increasing potassium trend at the Peace River at Arcadia as discussed in the main text of report. Also included are correlation matrices of selected water quality parameters and flow at Peace River sites and for the Alafia River and Withlacoochee River for comparative purposes.

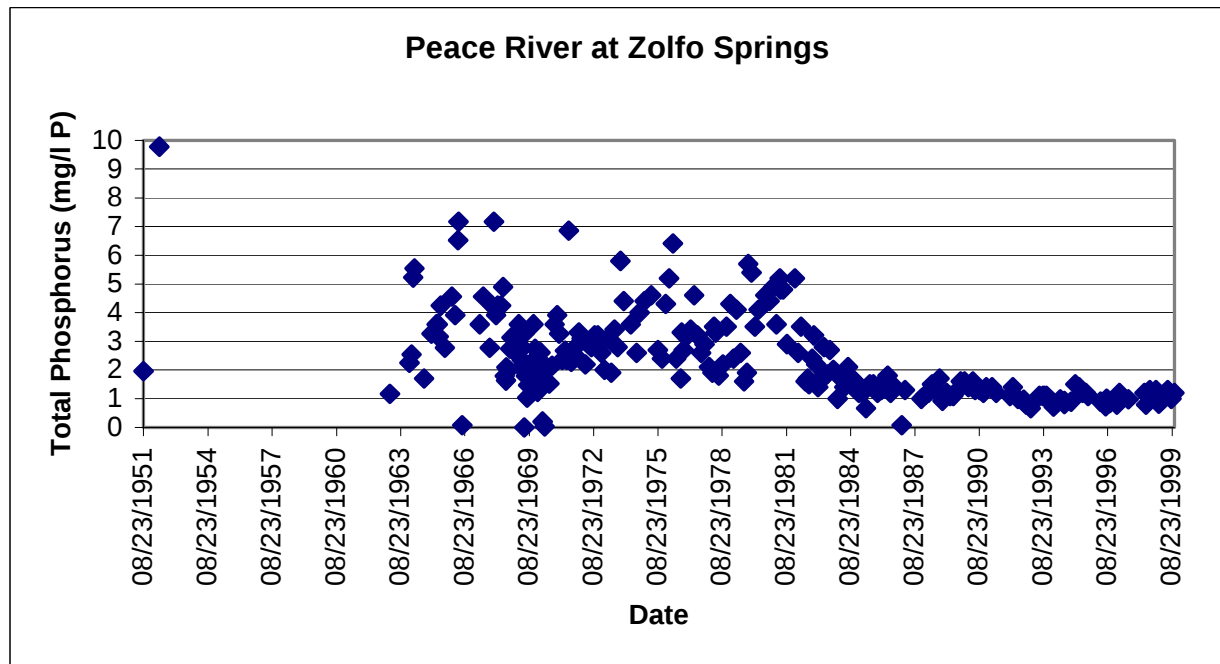
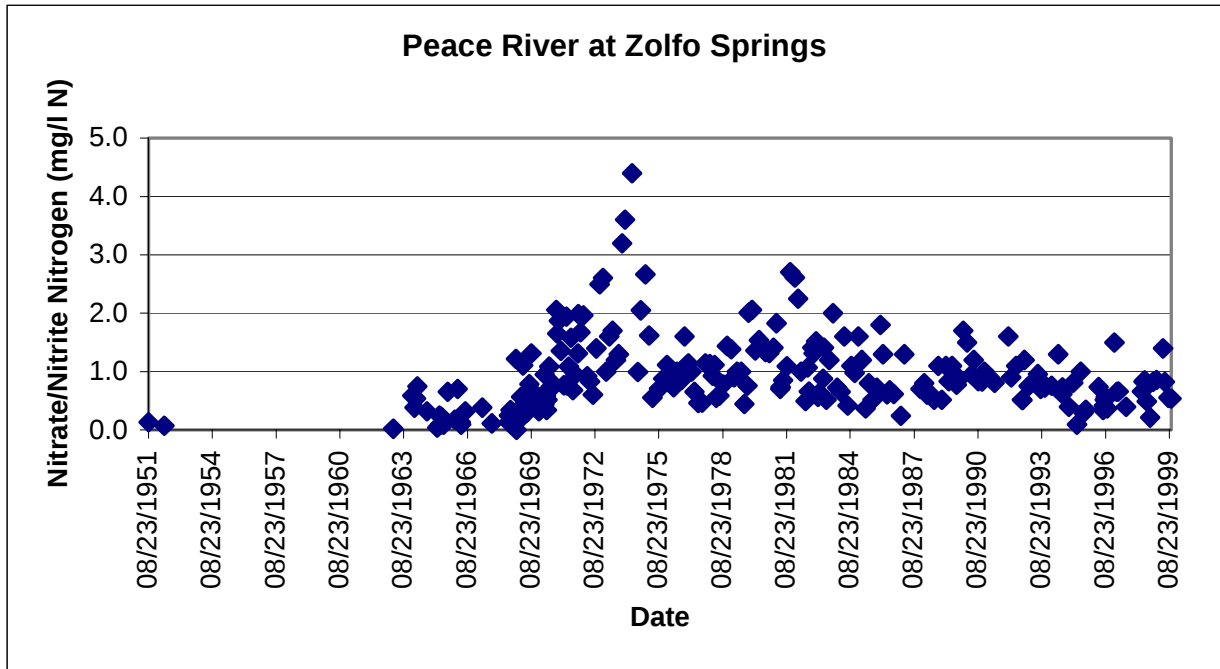
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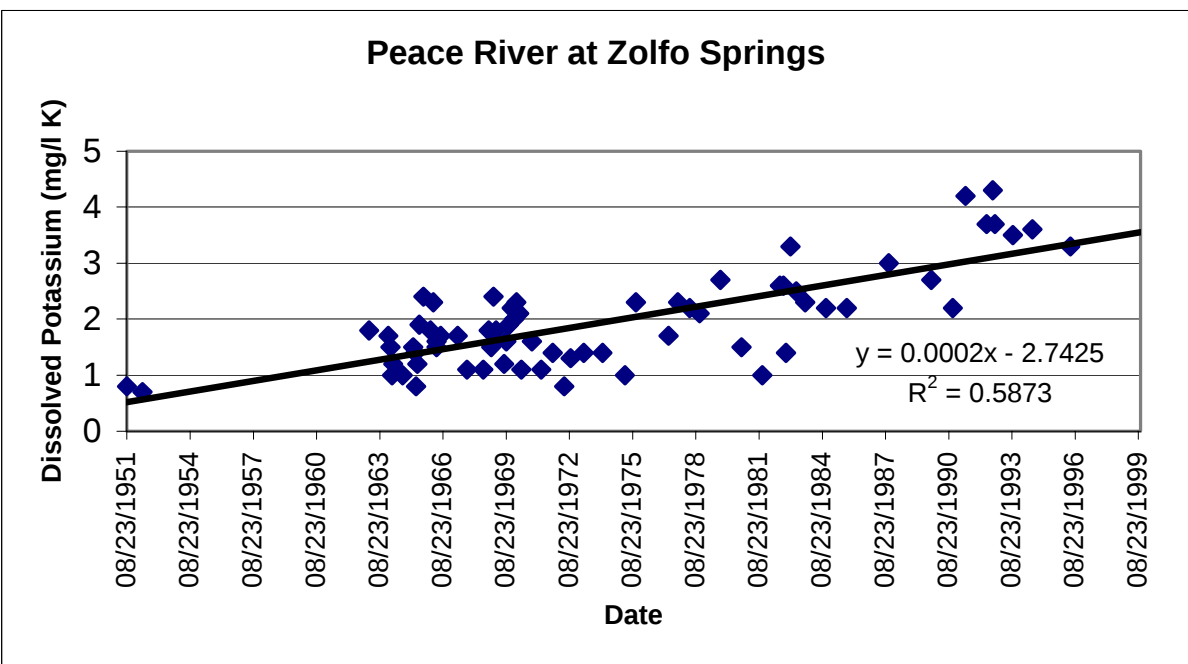
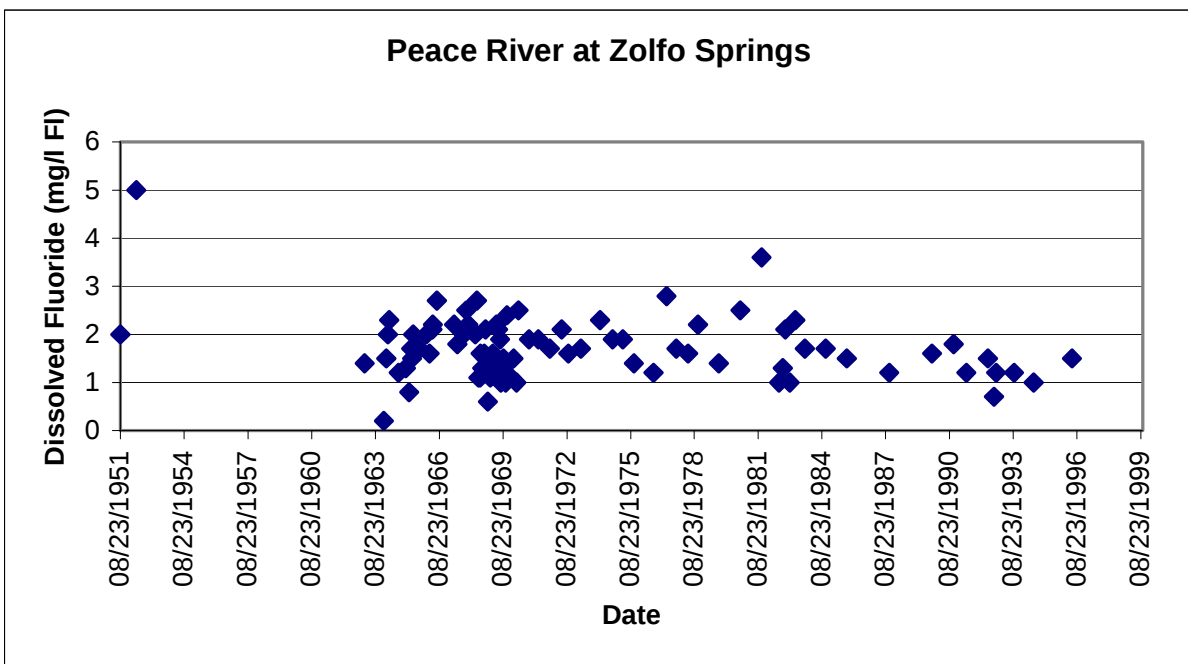


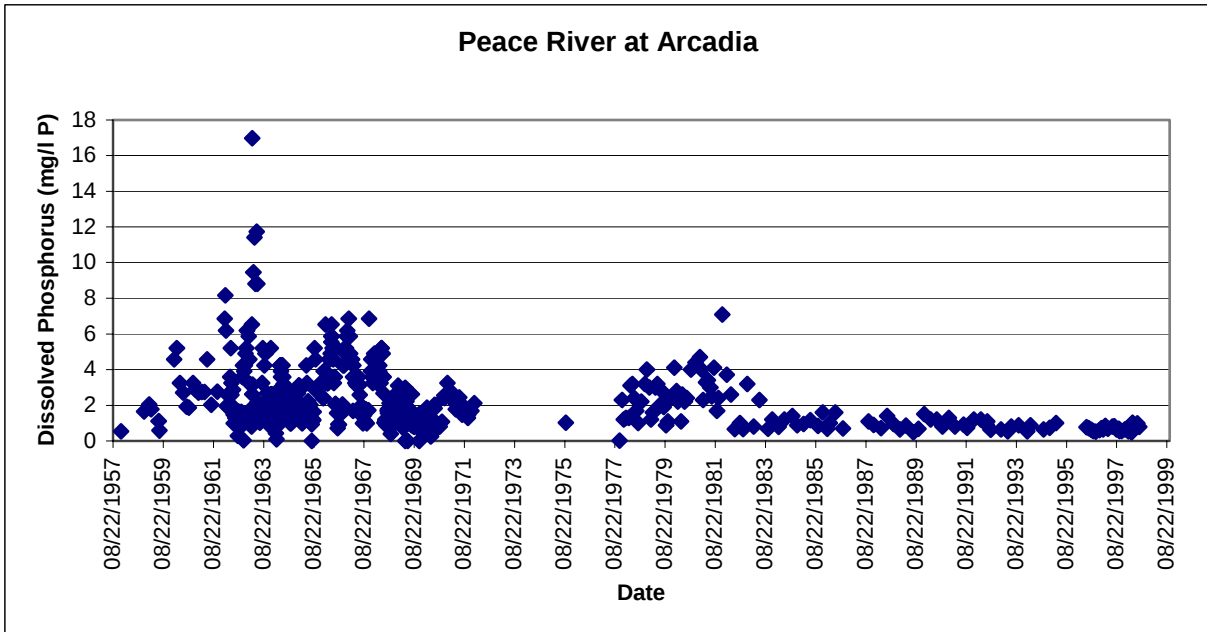
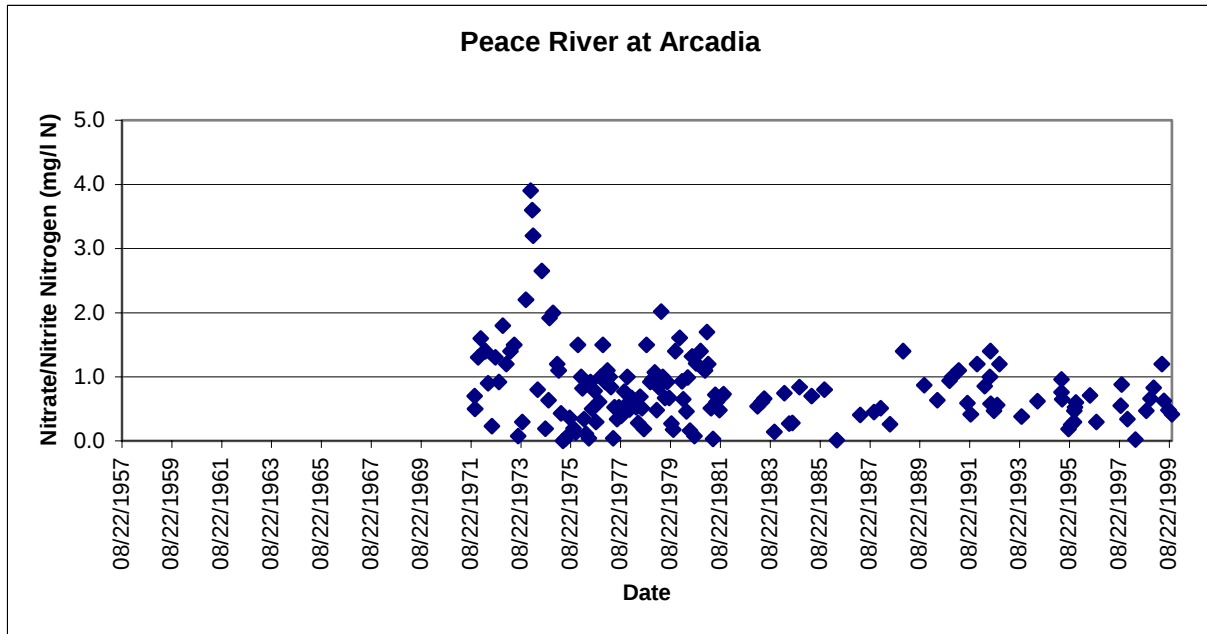


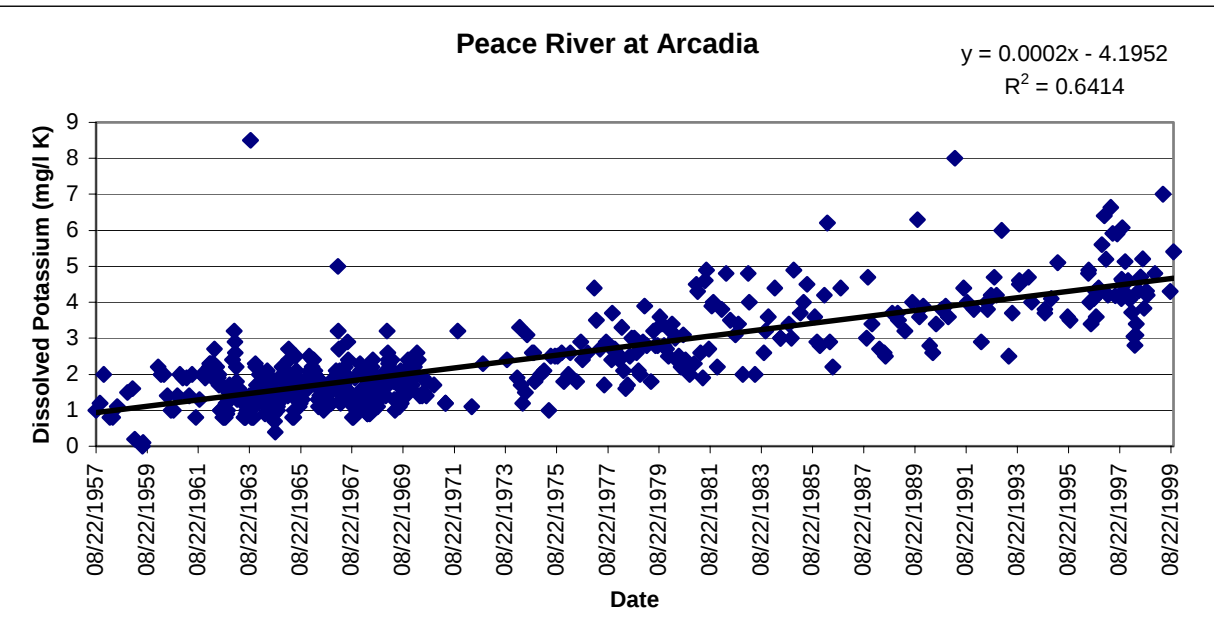
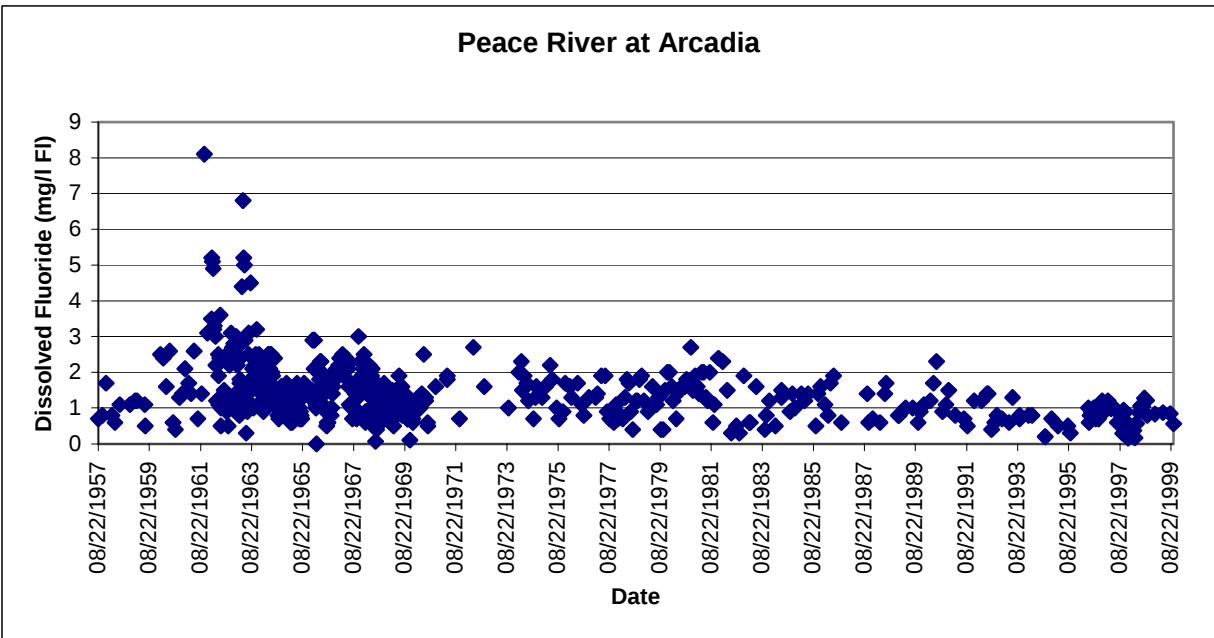


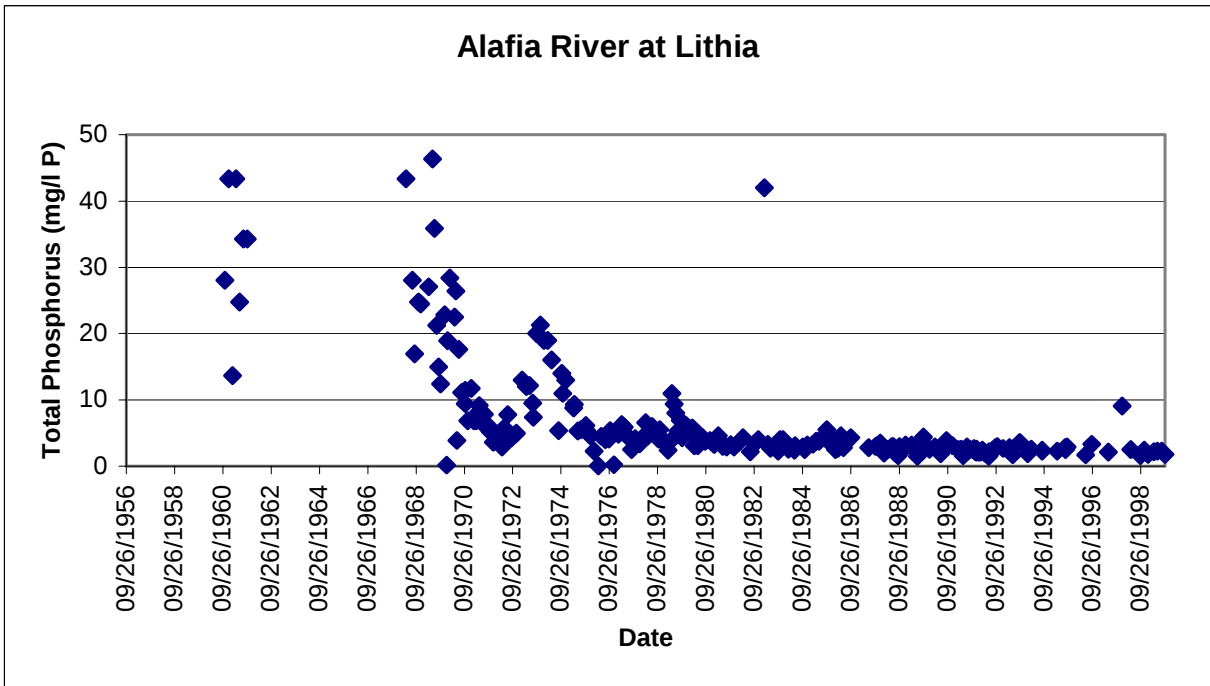
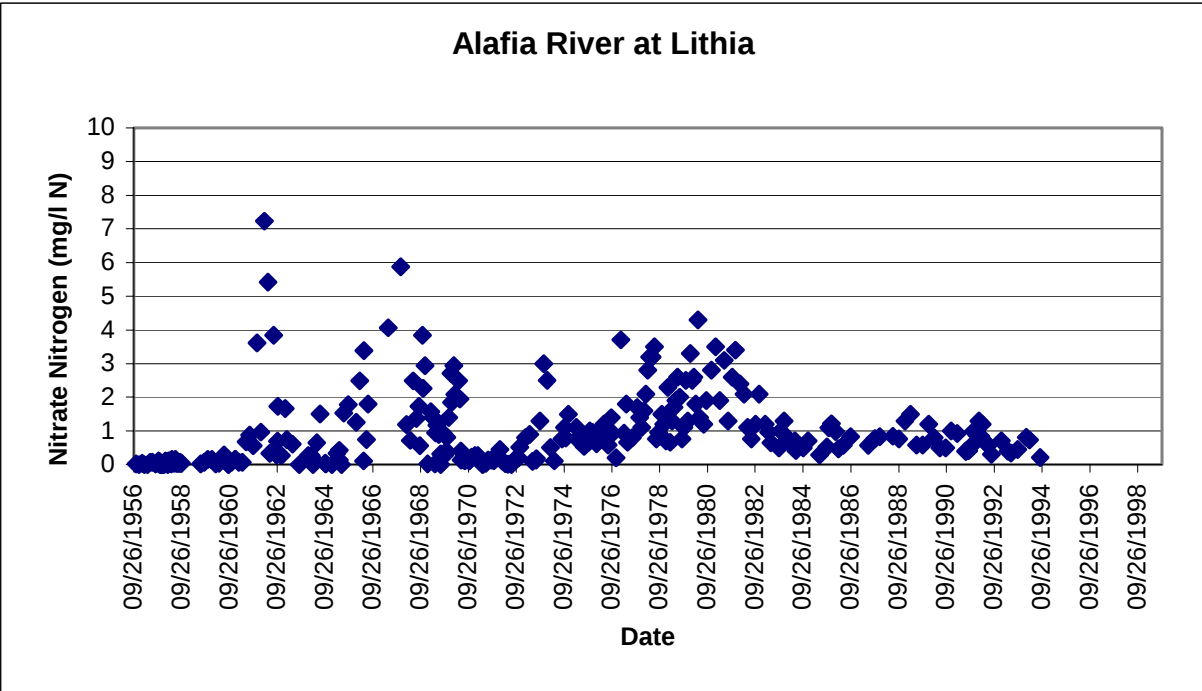


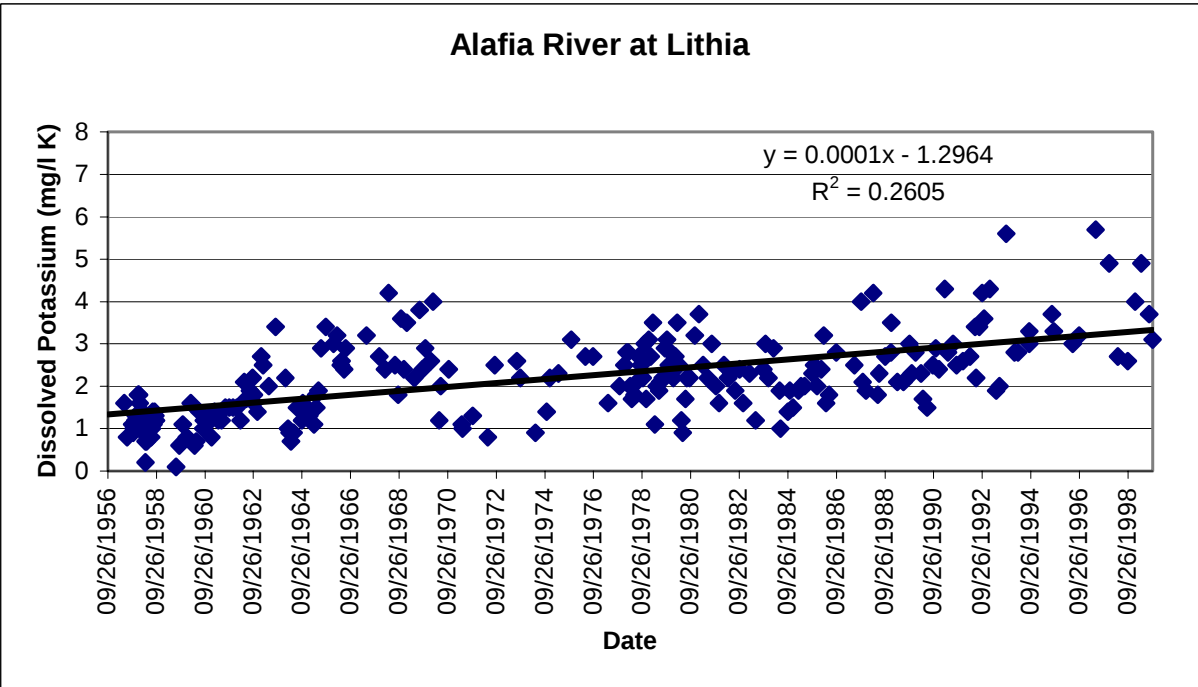
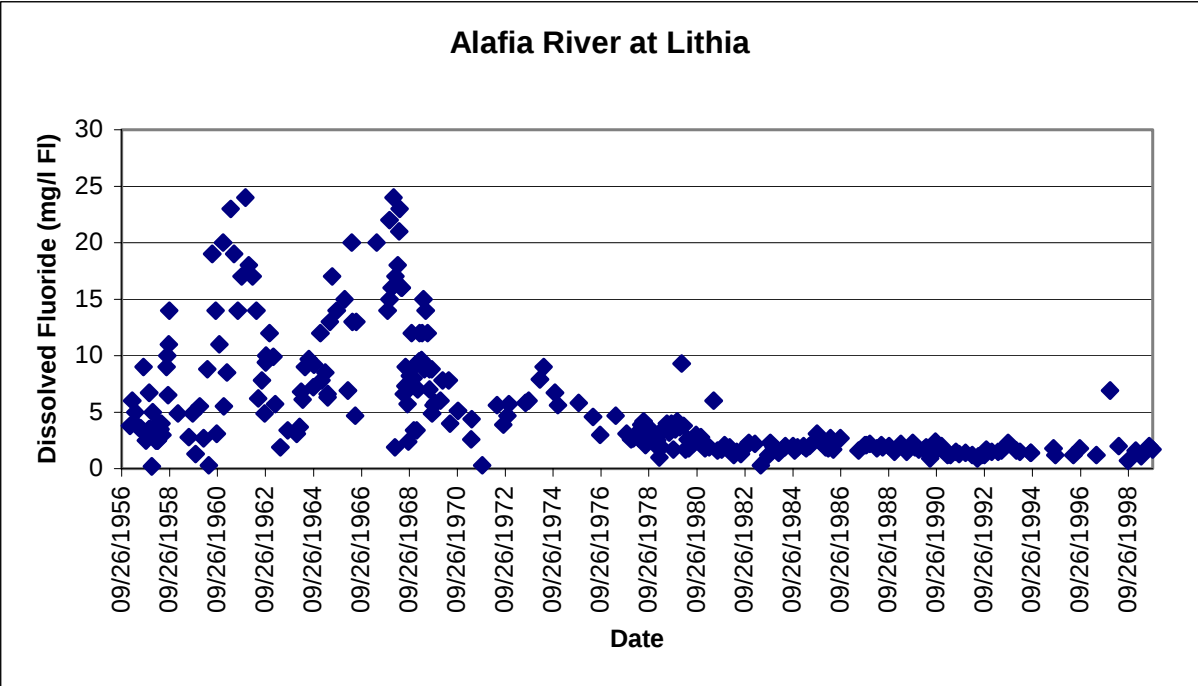


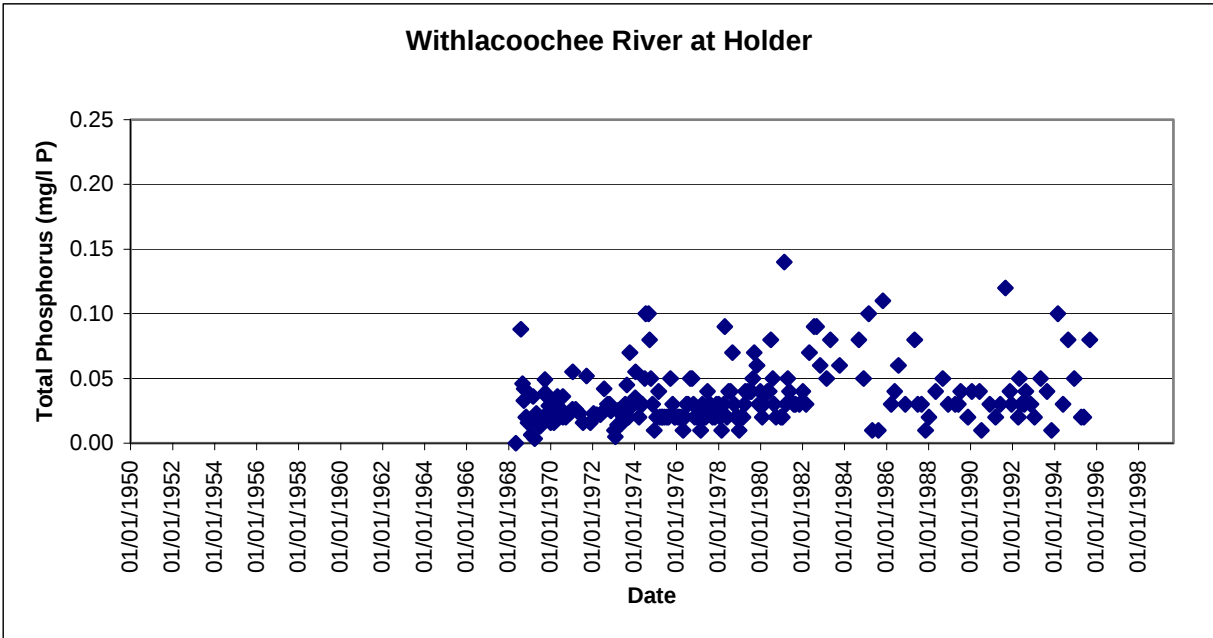
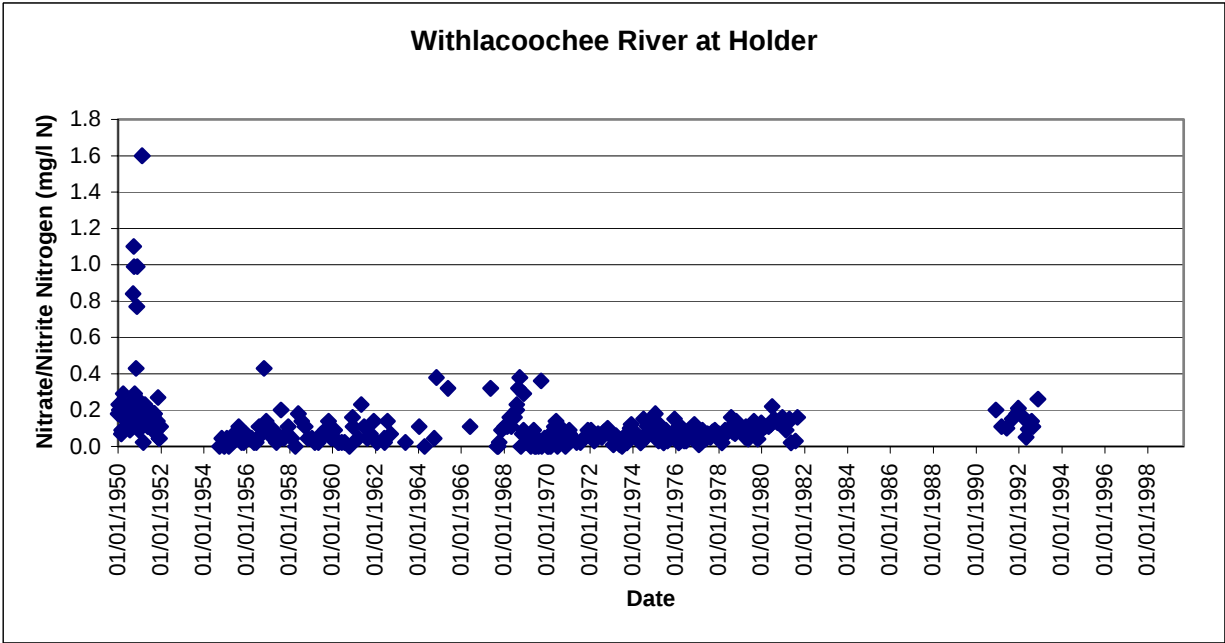


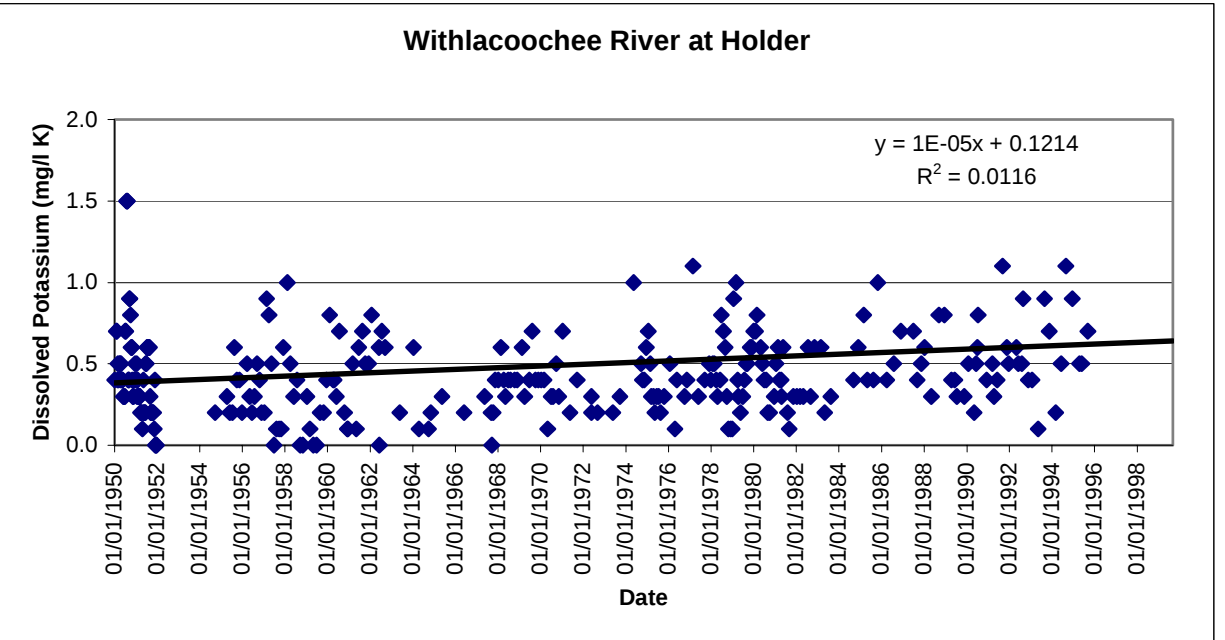
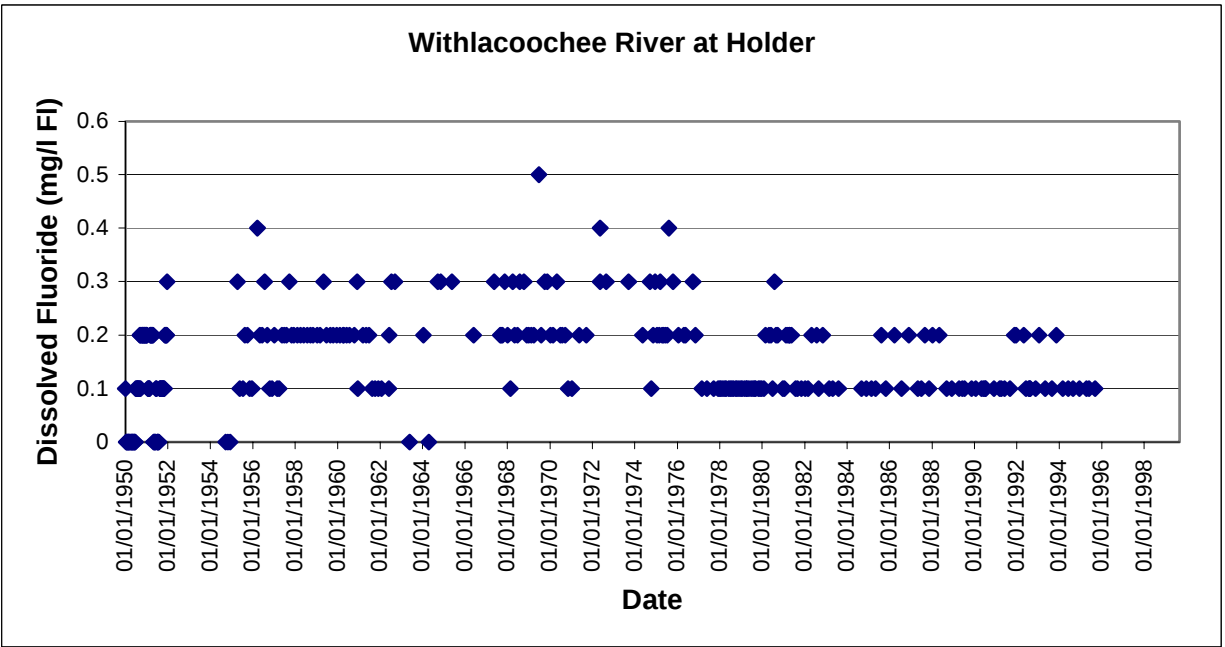












Correlation Matrix for Peace River at Bartow

	Discharge	Conductance	Fluoride	Nitrate/Nitrite	Dissolved Oxygen	pH-field	Phosphorous
Conductance	-0.445 0.000						
Fluoride	-0.200 0.048	0.724 0.000					
Nitrate/Nitrite	-0.050 0.488	0.267 0.000	0.262 0.025				
Dissolved Oxygen	-0.048 0.522	0.174 0.019	0.135 0.277	0.341 0.000			
pH -field	-0.015 0.834	0.047 0.509	-0.081 0.431	-0.108 0.169	0.321 0.000		
Phosphorus	-0.295 0.000	0.657 0.000	0.796 0.000	0.226 0.004	0.137 0.096	-0.094 0.264	
Dissolved Potassium	-0.255 0.012	-0.051 0.623	-0.332 0.001	-0.224 0.057	-0.216 0.076	-0.017 0.867	-0.069 0.636

Correlation Matrix for Peace River at Ft. Meade

	Discharge	Conductance	Fluoride	Nitrate/Nitrite	Dissolved Oxygen	pH-field	Phosphorous
Conductance	-0.589 0.000						
Fluoride	-0.554 0.040	0.449 0.021					
Nitrate/Nitrite	-0.243 0.020	0.267 0.007	0.356 0.113				
Dissolved Oxygen	-0.189 0.019	0.132 0.091	-0.492 0.178	-0.072 0.510			
pH -field	-0.076 0.388	0.162 0.046	0.312 0.113	0.065 0.512	-0.031 0.727		
Phosphorus	-0.069 0.507	-0.054 0.580	0.601 0.001	0.209 0.033	-0.079 0.459	-0.010 0.922	
Dissolved Potassium	0.407 0.189	-0.257 0.248	-0.241 0.269	0.226 0.326	-0.243 0.528	0.258 0.235	-0.227 0.322

Correlation Matrix for Peace River at Zolfo Springs

	Discharge	Conductance	Fluoride	Nitrate/Nitrite	Dissolved Oxygen	pH-field	Phosphorous
Conductance	-0.624 0.000						
Fluoride	-0.399 0.000	0.508 0.000					
Nitrate/Nitrite	-0.325 0.000	0.371 0.000	-0.089 0.476				
Dissolved Oxygen	-0.322 0.000	0.345 0.000	0.366 0.030	0.104 0.207			
pH -field	-0.222 0.001	0.240 0.000	0.043 0.697	-0.025 0.738	0.188 0.020		
Phosphorus	-0.189 0.004	0.198 0.004	0.647 0.000	0.089 0.191	0.000 1.000	0.018 0.191	
Dissolved Potassium	0.105 0.392	-0.139 0.262	-0.486 0.000	0.269 0.051	-0.048 0.791	0.138 0.272	-0.259 0.072

Correlation Matrix for Peace River at Arcadia

	Discharge	Conductance	Fluoride	Nitrate/Nitrite	Dissolved Oxygen	pH-field	Phosphorous
Conductance	-0.662 0.000						
Fluoride	-0.438 0.000	0.483 0.000					
Nitrate/Nitrite	-0.363 0.000	0.324 0.001	0.272 0.009				
Dissolved Oxygen	-0.351 0.000	0.436 0.000	0.357 0.000	0.226 0.025			
pH -field	-0.368 0.000	0.415 0.000	0.221 0.000	0.132 0.175	0.423 0.000		
Phosphorus	-0.325 0.000	0.533 0.000	0.767 0.000	0.299 0.001	0.283 0.000	0.247 0.001	
Dissolved Potassium	-0.014 0.752	0.182 0.000	-0.058 0.452	0.038 0.384	0.182 0.000	0.038 0.384	-0.554 0.000

Correlation Matrix for Alafia at Lithia

	Discharge	Fluoride	Nitrate/Nitrite	Dissolved Oxygen	pH-field	Phosphorous
Fluoride	-0.086 0.151					
Nitrate/Nitrite	0.066 0.601	0.071 0.288				
Dissolved Oxygen	-0.115 0.064	0.834 0.000	0.162 0.012			
pH -field	-0.173 0.002	-0.656 0.000	-0.062 0.324	-0.659 0.000		
Phosphorus	-0.080 0.231	0.921 0.000	-0.080 0.231	0.981 0.000	-0.641 0.000	
Dissolved Potassium	-0.057 0.371	-0.047 0.469	0.132 0.055	-0.081 0.254	0.119 0.065	-0.216 0.009

Correlation Matrix for Withlacoochee at Holder

	Discharge	Conductance	Fluoride	Nitrate/Nitrite	Dissolved Oxygen	pH-field	Phosphorous
Conductance	-0.583 0.000						
Fluoride	0.192 0.001	-0.150 0.011					
Nitrate/Nitrite	0.182 0.001	-0.079 0.162	-0.046 0.476				
Dissolved Oxygen	-0.459 0.000	0.245 0.001	0.098 0.281	0.057 0.537			
pH -field	-0.350 0.000	0.319 0.000	-0.079 0.185	-0.102 0.080	0.300 0.000		
Phosphorus	0.137 0.104	0.114 0.202	-0.088 0.367	-0.082 0.433	0.122 0.221	0.122 0.221	
Dissolved Potassium	0.037 0.527	0.086 0.149	-0.072 0.219	0.020 0.756	-0.168 0.064	0.058 0.333	-0.008 0.938