

APPENDIX A

Charlie Craig Hatchery, Arkansas HACCP Plan for Channel Catfish

Revision Date: October 21, 2003

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1. Species Description

Hatchery Name:	Charlie Craig State Fish Hatchery, Arkansas
Hatchery Address:	977 West Fish Hatchery Road P.O. Box 58 Centerton, AR 72719
Species of fish imported:	Channel Catfish (<i>Ictalurus punctatus</i>) Species Code CCF
Cultured, wild harvested, or both:	Cultured
Harvest method:	Earthen ponds drained into kettle and catfish seined
Method of distribution:	Wyoming Game and Fish Department fish distribution unit
Intended use:	Importation into the state of Wyoming for public fisheries management
Risk Level Prior to HACCP:	Level 4, Low Risk – NTS Present in Source (APPENDIX D).
Risk Level After HACCP:	Level 1 – 3, Low Risk—depended if NTS present prior to loading and type of NTS present (APPENDIX D).

2. Past Stocking History

Water Name	Species	Number Stocked	Lbs Stocked	No/Lb	Stocking Date	ANS/NTS Present
N Platte R Glen-Ppl	CCF	8,253	917	9.00	10/02/1997	Unknown
N Platte R Guer-Glen	CCF	1,503	167	9.00	10/02/1997	Unknown
Beck Lake	CCF	1,494	166	9.00	10/02/1997	Unknown
N Platte R Coli-Mill	CCF	8,280	920	9.00	10/02/1997	Unknown
	1997	19,530	2,170			Unknown
Packers Lake	CCF	2,508	228	11.00	05/07/1998	Unknown
Springer Res	CCF	2,508	228	11.00	05/07/1998	Unknown

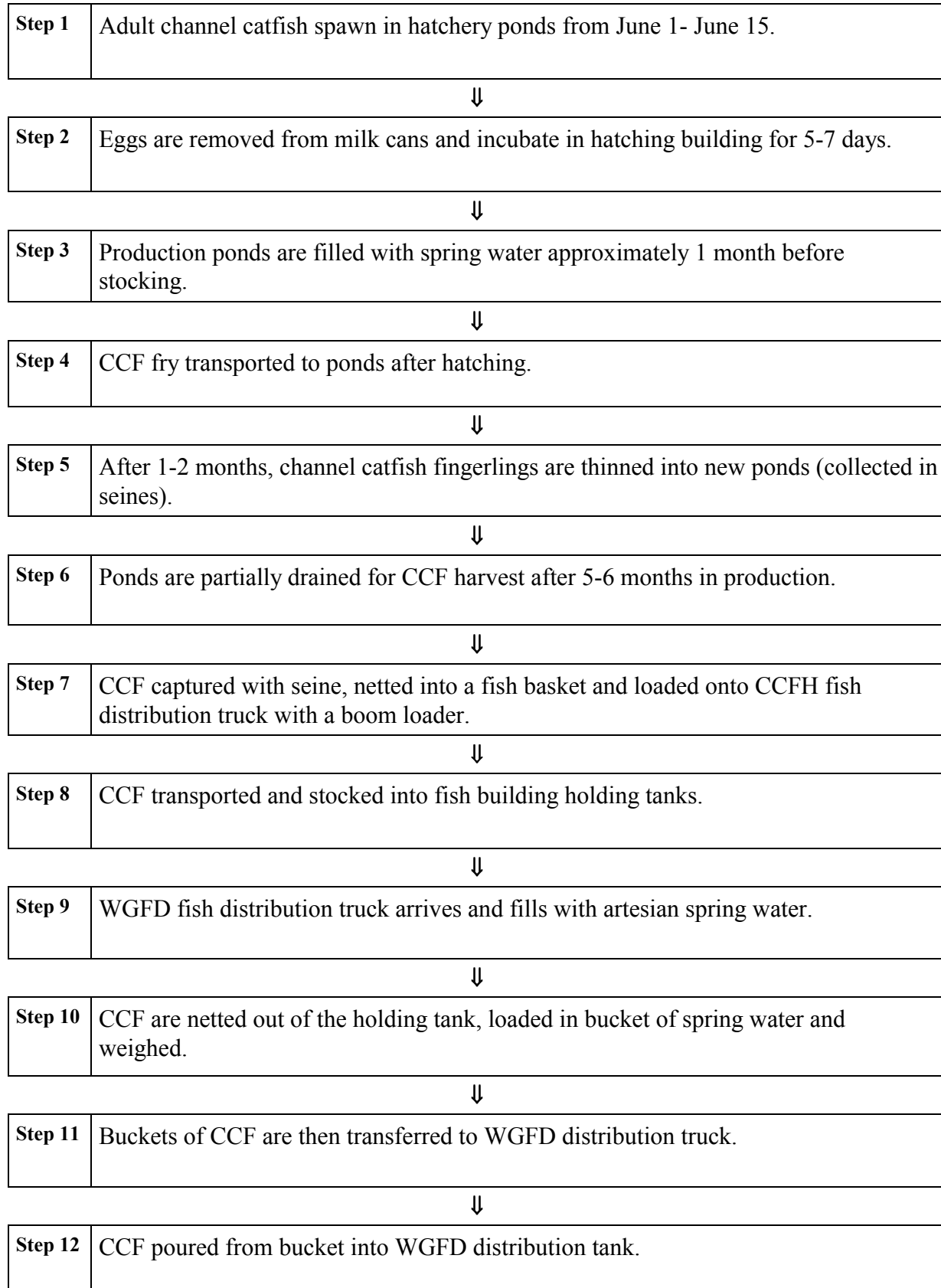
2. Past Stocking History (Continued)

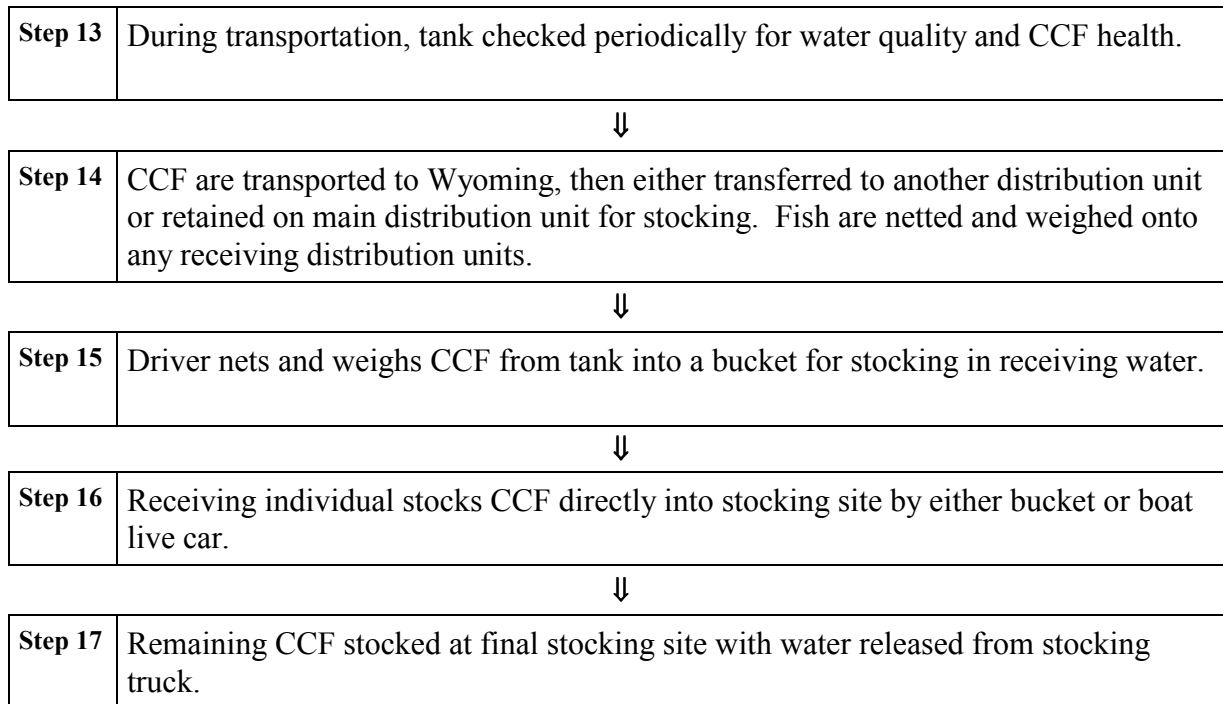
Water Name	Species	Number Stocked	Lbs Stocked	No/Lb	Stocking Date	ANS/NTS Present
Boysen Reservoir	CCF	20,011	1,516	132.00	05/07/1998	Unknown
Hawk Springs Res	CCF	600	546	1.10	05/07/1998	Unknown
Wheatland Res 1	CCF	5,005	455	11.00	05/07/1998	Unknown
Rock Lake	CCF	2,508	228	11.00	05/07/1998	Unknown
Glendo Reservoir	CCF	25,106	1,902	13.20	05/07/1998	Unknown
Festo Lake	CCF	2,508	228	11.00	05/07/1998	Unknown
Grayrocks Res	CCF	13,000	1,182	11.00	05/07/1998	Unknown
Flaming Gorge Res	CCF	5,005	455	11.00	05/07/1998	Unknown
	1998	78,759	6,968			
Festo Lake	CCF	2,502	278	9.00	05/05/1999	Unknown
Grayrocks Res	CCF	7,506	830	9.00	05/05/1999	Unknown
Rock Lake	CCF	2,502	278	9.00	05/05/1999	Unknown
Wheatland Res 1	CCF	3,066	334	9.00	05/05/1999	Unknown
N Platte R Coli-Mill	CCF	6,003	667	9.00	05/06/1999	Unknown
Bump Sullivan Res	CCF	5,004	556	9.00	05/06/1999	Unknown
Packers Lake	CCF	2,502	278	9.00	05/06/1999	Unknown
Hawk Springs Res	CCF	6,003	667	9.00	05/06/1999	Unknown
Springer Res	CCF	2,502	278	9.00	05/06/1999	Unknown
N Platte R Glen-Ppl	CCF	14,103	1,567	9.00	05/06/1999	Unknown
Bryan Stock Trail Res	CCF	1,503	167	9.00	05/07/1999	Unknown
Guernsey Slough	CCF	1,008	112	9.00	05/07/1999	Unknown
N Platte R Neb-Co Li	CCF	1,008	112	9.00	05/07/1999	Unknown
	1999	55,212	6,124	Spring		
Boysen Reservoir	CCF	19,947	932	21.40	10/28/1999	Unknown
Sand Mesa #2	CCF	901	42	21.40	10/28/1999	Unknown
Beck Lake	CCF	1,506	70	21.40	10/28/1999	Unknown
Kinnear Lake	CCF	700	33	21.40	10/28/1999	Unknown
	1999	23,054	1,077	Fall		
Rock Lake	CCF	2,502	55	45.50	10/05/2000	Unknown
N Platte R Neb-Co Li	CCF	1,001	22	45.50	10/05/2000	Unknown
Flaming Gorge Res	CCF	6,643	146	45.50	10/05/2000	Unknown
Festo Lake	CCF	2,502	55	45.50	10/05/2000	Unknown

2. Past Stocking History (Continued)

Water Name	Species	Number Stocked	Lbs Stocked	No/Lb	Stocking Date	ANS/NTS Present
Guernsey Slough	CCF	500	11	45.50	10/05/2000	Unknown
Hawk Springs Res	CCF	3,003	66	45.50	10/05/2000	Unknown
Grayrocks Res	CCF	6,506	143	45.50	10/05/2000	Unknown
Packers Lake	CCF	2,502	55	45.50	10/05/2000	Unknown
N Platte R Guer-Glen	CCF	1,001	22	45.50	10/05/2000	Unknown
Kleenburn Pond 2	CCF	1,001	22	45.50	10/05/2000	Unknown
Kleenburn Pond 1	CCF	200	4	45.50	10/05/2000	Unknown
Boysen Reservoir	CCF	23,196	510	45.50	10/06/2000	Unknown
Beck Lake	CCF	1,502	33	45.50	10/06/2000	Unknown
N Platte R Coli-Mill	CCF	18,000	1,800	10.00	10/26/2000	Unknown
N Platte R Glen-Ppl	CCF	32,410	2,315	14.00	10/26/2000	Unknown
	2000	102,469	5,259			
Hawk Springs Res	CCF	5,825	233	25.00	07/13/2001	Unknown
Bryan Stock Trail Res	CCF	500	20	25.00	07/13/2001	Unknown
Guernsey Slough	CCF	500	20	25.00	07/13/2001	Unknown
Festo Lake	CCF	2,000	80	25.00	07/13/2001	Unknown
Kleenburn Pond 1	CCF	200	8	25.00	07/13/2001	Unknown
Bump Sullivan Res	CCF	3,500	140	25.00	07/13/2001	Unknown
Packers Lake	CCF	2,000	80	25.00	07/13/2001	Unknown
Kinnear Lake	CCF	700	28	25.00	07/13/2001	Unknown
Boysen Reservoir	CCF	20,900	836	25.00	07/13/2001	Unknown
Grayrocks Res	CCF	6,500	260	25.00	07/13/2001	Unknown
Beck Lake	CCF	1,500	60	25.00	07/13/2001	Unknown
Flaming Gorge Res	CCF	6,000	240	25.00	07/13/2001	Unknown
Kleenburn Pond 2	CCF	1,000	40	25.00	07/13/2001	Unknown
	2002	51,125	2,045			

3. Flow Diagram





4. Potential Hazards (List relevant species)

- A. **Aquatic Nuisance Species (ANS) Plants.** None identified in immediate drainage (CONTACT FREQUENCY – NONE).
- B. **Aquatic Nuisance Species (ANS) Fish and Other Vertebrates.** None identified in immediate drainage (CONTACT FREQUENCY – NONE).
- C. **Aquatic Nuisance Species (ANS) Invertebrates.** None identified in immediate drainage (CONTACT FREQUENCY – NONE).
- D. **Non-Target Species (NTS) Plants.** Filamentous algae, not an issue (CONTACT FREQUENCY – VERY LOW).
- E. **Non-Target Species (NTS) Fish.** Occasionally capture mosquitofish (*Gambusia affinis*) in ponds (CONTACT FREQUENCY – VERY LOW).
- F. **Non-Target Species (NTS) Amphibians.** Tadpoles (American Bullfrog) occasionally captured when harvesting ponds. (CONTACT FREQUENCY – VERY LOW).
- G. **Non-Target Species (NTS) Invertebrates.** None captured when harvesting ponds (CONTACT FREQUENCY –NONE).

H. Specific Pathogen of Concern and/or Other Health Concerns: Annual fish health assessments are conducted on channel catfish reared at the CCFH. Channel catfish at CCFH have experienced mild disease outbreaks in the past including, ESC (*Edwardsiella ictaluri*), columnaris (*Flexibacter columnaris*), and winter fungus (CONTACT FREQUENCY – VERY LOW).

5. Hazard Analysis Worksheet

A. ANS Hazard Analysis Worksheet

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential ANS hazards introduced or controlled at this step (1)	(3) Are any potential ANS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
All Steps	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		

B. NTS Hazard Analysis Worksheet

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 1 Adult channel catfish spawn in hatchery ponds from June 1- June 15.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 2. Eggs are removed from milk cans and incubate in hatching building for 5-7 days.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 3. Ponds filled with spring water approximately 1 month before stocking.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		

B. NTS Hazard Analysis Worksheet (Continued)

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 4. Fry transported to ponds after hatching.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 5. After 1-2 months, channel catfish fingerlings are thinned into new ponds (collected in seines).	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	No	Remote Possibility of NTS Present	ID & Remove any NTS Vertebrates From Seine	No
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 6. Ponds are partially drained for CCF harvest after 5-6 months in production.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 7. CCF captured with seine, netted into a fish basket and loaded onto CCFH fish distribution truck with a boom loader.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	No	Remote Possibility of Introduction	ID and Remove any NTS Vertebrates	Yes
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 8. CCF transported and stocked into fish building holding tanks.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 9. WGFD fish distribution truck arrives and filled with artesian spring water.	Fish/Other Vertebrate	No	None Present		
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		

B. NTS Hazard Analysis Worksheet (Continued)

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 10. CCF are netted out of the holding tank, loaded in bucket of spring water and weighed.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	No	NTS Fish May Be Present in Buckets	If Present, ID & Remove Any NTS Vertebrates From Buckets If Possible	No
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 11. Buckets of CCF are then transferred to WGFD distribution truck.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	No	NTS Fish May Be Present in Buckets	NTS Present Controlled at Subsequent Step	No
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 12. CCF poured from bucket into WGFD distribution tank.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	Yes	NTS Fish May Be Present in Buckets	If NTS Present, Run Bucket Over Sort Board Before Loading	Yes
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 13. During transportation, tank checked periodically for water quality and CCF health.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	No	NTS Fish May Be Present in Tank	If NTS Present, Try to Remove If Possible	No
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 14. CCF are transported to Wyoming, then either transferred to another distribution unit or retained on main distribution unit for stocking. Fish are netted and weighed onto any receiving distribution units.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	No	NTS Fish May Be Present in Net	Visual Inspection Of Sampled Fish, Sort Board Fish If NTS Present	No
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		

B. NTS Hazard Analysis Worksheet (Continued)

(1) Harvest or Aquaculture Step (from flow diagram)	(2) Identify potential NTS hazards introduced or controlled at this step (1)	(3) Are any potential NTS hazards significant? (Yes/No)	(4) Justify your decisions for column 3.	(5) What control measures can be applied to prevent the significant hazards?	(6) Is this step a critical control point? (Yes/No)
Step 15. Driver nets and weighs CCF from tank into a bucket for stocking in receiving water.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	Yes	If NTS ID'd By Step 12, NTS May Be Present In Bucket	Visual Inspection Of Bucket, Sort If NTS Identified	Yes
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 16. Receiving individual stocks CCF directly into stocking site by either bucket or boat live car.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	Yes	NTS Fish May Be Present In Bucket	If NTS ID'd At Steps 7 & 15, Visual Review Of Bucket Before Stocking	No
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		
Step 17. Remaining CCF stocked at final stocking site with water released from stocking truck.	Fish/Other Vertebrate <i>Gambusia affinis</i> American Bullfrog	Yes	NTS Fish May Still Be Present in Distribution Tank	If NTS ID'd At Step 14 Or 15, Empty Tank Into Net And Run Remaining CCF Over Sort Board If NTS Is Of Concern	Yes
	Invertebrate	No	None Present		
	Plant	No	None Present		
	Parasites and Pathogens	No	None Present		

6. ANS-HACCP Plan Form – Preventative Measures

(1) Critical Control Point: Step 7. CCF captured with seine, netted into a fish basket and loaded onto CCFH fish distribution truck with a boom loader.	
(2) Significant Hazard(s): First opportunity to examine CCF for NTS vertebrates or plant introduction. If no NTS present, risk level reduced significantly.	
(3) Limits for Each Control Measure: Identify any NTS vertebrate present. WGFD representatives informed of NTS prior to their arrival for loading.	
Monitoring	(4) What: If NTS identified, requires focused HACCP due to increased risk level. Identified NTS may be acceptable for destination and considered lower risk level after review of WGFD NTS Acceptance List (APPENDIX C, “Stocking Guide for Non-Target Species Management”).
	(5) How: If NTS is identified and a concern, additional examination of fish loaded to the hatchery is required to determine extent of NTS presence. Sorting and removal may be required in subsequent steps if NTS not acceptable for destination; or confirm load not accepted for importation.
	(6) Frequency: Depended on NTS concern. NTS species may be acceptable for destination, if so, subsequent monitoring required reaffirming identified species only NTS present. If NTS species not acceptable, load not imported to Wyoming if subsequent steps cannot effectively remove NTS by bucket and sorting board.
	(7) Who: Charlie Craig State Fish Hatchery personnel upon sampling, assisted by WGFD personnel if NTS removal is warranted by Step 12.
(8) Corrective Actions: Upon identifying NTS, Charlie Craig hatchery personnel contact WGFD representative for NTS acceptance verification. WGFD representative contacts Assistant Fish Culture Supervisor (307-473-3416) for NTS verification and final decision. Apply removal procedures if feasible or lot not accepted.	
(9) Verification: Communication with WGFD representative to confirm NTS present. WGFD importation procedures enacted if NTS load accepted.	
(10) Records: AGFC stocking record and WGFD stocking slip – identify any NTS under “Remarks” if load accepted.	
(1) Critical Control Point: Step 12. CCF poured from bucket into WGFD distribution tank.	
(2) Significant Hazard(s):	
<p style="margin-left: 40px;">A. If acceptable NTS identified in Step 7, load bucket directly into distribution unit, monitoring each bucket through Steps 10-11 to assure no other NTS species are present.</p> <p style="margin-left: 40px;">B. If NTS not acceptable, but the load is accepted, continue monitoring at Step 10 and remove NTS by sorting board during Step 12 before fish are loaded.</p>	
(3) Limits for Each Control Measure: Running each bucket over sort board and complete inventory sorting provides opportunity to identify and remove unacceptable NTS if present.	

7. HACCP Step Summary

NTS occurrences in ponds are extremely rare and in very low incidence levels. If mosquitofish (*Gambusia affinis*) and/or American bullfrog tadpoles are present, they can be easily identified and removed during fish harvest and loading (Steps 5, 7 and 12). Step 8 to hold harvested fish in the fish building holding tanks increases the opportunity for further NTS assessment under a controlled environment that greatly enhances the ability to confirm the load NTS free.

ANS/NTS introduction with channel catfish from Charlie Craig Fish Hatchery is considered a “very low” concern due to drainage location and water source (underground spring) of the hatchery. The steps throughout this HACCP identifying vertebrate NTS are provided as a precautionary process on the rare occasion NTS are encountered.