

**Specifications**  
**Tennessee Wildlife Resources Agency (TWRA)**  
**TWRA Fish Food**  
**Event 32801 - 13429**

This solicitation is for the procurement of a two-year contract for the purchase of fish food as specified below.

**A. Delivery Requirements:**

1. Delivery shall be made during regular business hours. Monday-Friday, 8:00 AM – 4:00 PM, CST Time.
2. No deliveries shall be made on State holidays.
3. Contractor shall provide notification at least 24 hours in advance of expected delivery. A one-hour notification shall be required for Tellico State Fish Hatchery in order to set up an escort by a state employee both in and out of the Cherokee National Forest on River Road. Any delivery without an escort shall be subject to citations from the Forest Service Law Enforcement Officers.
4. All hatcheries are capable of off-loading regular pallets up to 2,000 pounds or 907 kilograms in weight from the tailgate of enclosed trailers or the side of flatbed trailers. Tailgate delivery shall be provided if feed is shipped in an enclosed trailer. TWRA staff will assist with unloading.
5. Feed delivered shall be the size of feed ordered.
6. Feed shall be packaged in moisture resistant containers (bags or buckets) weighing forty-four (44) pounds or twenty (20) kilograms or fifty (50) pounds or 22.73 kilograms.
7. All hatcheries will make all efforts to coordinate ordering to reduce shipping cost.
8. Delivery shall be made within thirty (30) days of purchase order receipt by the contractor.
9. F.O.B. Delivery Sites - Agency will request shipment to one of the following locations with each order that is placed.
10. All delivery charges shall be included in prices bid.

**a. Site # 1:**           **Buffalo Springs Trout Hatchery**  
275 Hatchery Lane  
Rutledge, Tennessee 37861  
Roger Bitz, Manager  
PH: 423/828-5263  
Cold Water Hatchery

**b. Site # 2:**           **Erwin Trout Hatchery**  
475 Banner Springs Road  
Erwin, Tennessee 37650  
Corey Jones, Manager  
PH: 423/743-4842  
Cold Water Hatchery

**c. Site # 3:**           **Tellico Hatchery**  
3193 River Road  
Tellico Plains, Tennessee 37385  
Jon Ellis, Manager

PH: 423/253-2661  
Cold Water Hatchery

- d. Site # 4:**      **Eagle Bend Fish Hatchery**  
1201 Charles Seviers Blvd  
Clinton, Tennessee 37716  
Chris Morton, Manager  
PH: 865/457-5135  
Warm Water Hatchery
- e. Site # 5:**      **Morristown Fish Hatchery**  
4994 Fish Hatchery Road  
Russelville, Tennessee 37860  
PH: 423/586-7971  
Jessica Roe, Manager  
Warm Water Hatchery
- f. Site #6:**      **Humboldt Hatchery**  
221 State Route 152  
Humboldt, Tennessee 38342  
Tom Pratt, Manager  
PH: 731/784-3889  
Warm Water Hatchery
- g. Site # 7:**      **Springfield Hatchery**  
4300 Draughon Road  
Springfield, Tennessee 37172  
Joey Austin, Manager  
PH: 615/382-2428  
Warm Water Hatchery
- h. Site # 8:**      **Normandy Hatchery**  
380 Huffman Road  
Normandy, Tennessee 37360  
Nathan Singer, Manager  
PH: 931/857-3417  
Warm Water Hatchery
- i. Site # 9:**      **Flintville Hatchery**  
65 Fish Hatchery Road  
Flintville, Tennessee 37335  
Steven Day, Manager  
PH: 931/937-8381  
Cold Water Hatchery

## B. General Information

1. The feed shall be manufacturer's off-the-shelf, closed-formula commercial fish feed that matches or exceeds the following specifications.
2. Fish feed shall be milled no more than 90 days prior to delivery and contain vitamin and trace mineral supplements in amounts equal to or greater than industry standards for closed-formula feeds. Feed shall be formulated to meet the minimum vitamin and mineral content for a period of not less than 90 days from delivery.
3. Fish meal shall be increased or decreased depending upon protein content of the meal. However, feed formulation shall contain the overall minimum protein percentage listed for each item.
4. Quantity of added oil shall be adjusted upward or downward so that the finished feed shall contain not less than the percentage of crude fat specified dependent on the fat content of the raw ingredients.
5. Wheat flour, wheat middling, or equivalent filler shall be used to compensate for differences in lipid and protein concentration to maintain target protein energy ratios.
6. The digestible carbohydrate protein of the diet shall not exceed 15% of the dietary energy for finished fish feeds. Feed formulations for other species shall contain higher levels of carbohydrate provided carbohydrate and assimilation shall be adequately studied to ensure excellent growth performance and good health.
7. Fish oil shall be used primarily to top-dress feeds. All fish oil to the diet shall meet the following minimum requirement: 3% Free Fatty Acids, < 1% Nitrogen and < 1% Moisture.
8. The fish oil shall be stabilized using 0.02% BHA-BHT (1:1), Ethoxyquine at 0.01% or equivalent antioxidant system.
9. Sizes shall be given as millimeters in descriptions below. However, inches are also an acceptable measurement. See the conversion table below.

mm	inches decimal	inches fraction
0.5	0.0199	1/64
0.8	0.0315	1/32
1.0	0.0393	3/64
1.2	0.0472	3/64
1.5	0.0590	1/16
2.0	0.0787	5/64

3.0	0.1181	1/8
4.0	0.1575	5/32
5.5	0.2165	7/32
6.0	0.2362	15/64

### C. Fish Food Details

#### 1. Fry Feed

- a. 1000181903 - Fry Feed, #1 Granules (0.5 – 0.8 mm)
- b. 1000181904 - Fry Feed, #2 Granules (0.8 – 1.0 mm)
- c. Guaranteed Analysis:  
Fish Meal shall contain:  
Ash, not more than 12%  
Protein not less than 52%  
Salt not more than 5%  
Fat not less than 15%  
Fiber not more than 2%  
Moisture not more than 10%
- d. Diet shall be standard commercial fish diet in the manufacturer's product line that meets the above specifications, and diet shall not be modified to reduce cost or quality.
- e. Diet shall contain adequate vitamin and mineral additives to assure health and growth of the fish.
- f. Fish feed supplied shall be a proven diet for the species being cultured, meeting the complete nutritional requirements for that species without necessity of supplemental feedings or diets.

#### 2. Slow Sinking Extruded Pellets

- a. 1000181905 - Slow Sinking, 1.2 mm, Pellets, Extruded
- b. 1000181906 - Slow Sinking, 1.5 mm, Pellets, Extruded
- c. 1000181907 - Slow Sinking, 2.0 mm, Pellets, Extruded
- d. 1000181908 - Slow Sinking, 3.0 mm, Pellets, Extruded
- e. Guaranteed Analysis:  
Fish Meal shall contain:  
Ash, not more than 12%  
Protein not less than 47%  
Salt not more than 5%  
Fat not less than 15%  
Fiber not more than 2%  
Moisture not more than 10%
- f. Diet shall be standard commercial fish diet in the manufacturer's product line that meets the above specifications, and diet shall not be modified to reduce cost or quality.
- g. Diet shall contain adequate vitamin and mineral additives to assure health and growth of the fish.
- h. Fish feed supplied shall be a proven diet for the species being cultured, meeting the complete nutritional requirements for that species without necessity of supplemental feedings or diets.

3. Slow Sinking Pigmented Pellets
  - a. 1000181910 – Slow Sinking, Pigmented, 4.0 mm, Pellets, Extruded
  - b. 1000181911 – Slow Sinking, Pigmented, 6.0 mm, Pellets, Extruded
  - c. Shall include the manufacturer standard formulation of carotenoid pigments to enhance fish coloration.
  - d. Guaranteed Analysis:  
Fish Meal shall contain:  
Ash, not more than 12%  
Protein not less than 43%  
Salt not more than 5%  
Fat not less than 15%  
Fiber not more than 2%  
Moisture not more than 10%
  - e. Diet shall be standard commercial fish diet in the manufacturer's product line that meets the above specifications, and diet shall not be modified to reduce cost or quality.
  - f. f. Diet shall contain adequate vitamin and mineral additives to assure health and growth of the fish.
  - g. Fish feed supplied shall be a proven diet for the species being cultured, meeting the complete nutritional requirements for that species without necessity of supplemental feedings or diets.
  
4. Floating Extruded Pellets
  - a. 1000181909 – Floating, 5.5 mm, Pellets, Extruded
  - b. Guaranteed Analysis:  
Fish Meal shall contain:  
Ash, not more than 12%  
Protein not less than 41%  
Salt not more than 5%  
Fat not less than 22%  
Fiber not more than 3%  
Moisture not more than 8%
  - c. Diet shall be standard commercial fish diet in the manufacturer's product line that meets the above specifications, and diet shall not be modified to reduce cost or quality.
  - d. Diet shall contain adequate vitamin and mineral additives to assure health and growth of the fish.
  - e. Fish feed supplied shall be a proven diet for the species being cultured, meeting the complete nutritional requirements for that species without necessity of supplemental feedings or diets.

#### **D. Processing Methods**

1. Grinding: Ingredients shall be carefully, thoroughly mixed and pulverized.
2. Starter # 1 Granules to pass 100% through a U.S. 20 Screen and pass over a U.S. 30 Screen.
3. Starter # 2 Granules to pass 100% through a U.S. 16 Screen and pass over a U.S. 20 Screen.

#### **E. Acceptance**

1. Any order or portion thereof which appears contaminated upon visual inspection of either the outside of bags or the contents of bags shall be rejected.
2. Food that becomes moldy within 90 days of receipt at the Hatchery, when stored to the contractor specifications, shall also be deemed rejected by the State.
3. The State reserves the right to subject any shipment or portion to sampling and analysis to determine whether it complies with contract specifications.
4. If analysis reveals that the shipment or portion thereof does not comply with the contract offering, the non-conforming feed shall be deemed rejected.
5. The decision to undertake sampling and analysis shall be made promptly after evidence of a problem in the quality of the shipment or portion thereof becomes apparent.
6. Analysis is estimated to take 3 weeks.
7. Upon rejection of a shipment or portion thereof, the contractor shall either pick up the rejected fish food at the contractor's expense, or at the election of the State, the rejected fish food shall be returned to the contractor at the contractor's expense.
8. All rejected feed shall be replaced within ten (10) business days of notification from the State of the rejection at no additional cost to the State.
9. The contractor shall be required to pay the cost of all subsequent testing for the term of the contract if an initial test, paid for by Wildlife Resources and conducted by an independent laboratory, documents that fish feed being supplied by the contractor does not meet all listed specifications.