

**Attachment I
DES-19-38002**

Chemicals delivered must be in strict conformance with the following specifications and all applicable standards. Chemicals will be ordered as needed in the following quantities:

Item	Description	Quantity per Delivery	Estimated Total per year
1	Del-Pac 1000	22.1 Tons	199 Tons
2	12% Hypochlorite	15,000 lbs	243,120 lbs
3	Hydrated Lime	5,000 lbs	27,000 lbs
4	Non-Copper Based Algaecide	5,300 lbs	10,219 lbs
5	Hydrofluosilicic Acid	2,200 lbs	16,500 lbs
6	Nonionic Coalagulant Polymer	900 lbs	6,300 lbs
7	Corrosion Inhibitor	2,500 lbs	30,096 lbs
8	Potassium Permanganate	2,100 lbs	23,760 lbs
9	Powdered Activated Carbon	3,300 lbs	23,100 lbs
10	Caustic Soda 25%	2,300 lbs	21,850 lbs
11	Glycerin	22.8 Tons	500 Tons
12	Aluminum Sulfate	25 Tons	135 Dry Tons
13	NE-1281 Polymer	9,200 lbs	66,314 lbs
14	NE-1280 Polymer	2,300 lbs	10,512 lbs

ITEM 1

DelPAC 1000 – (No substitutions) Specifications % Al_2O_3 13.5 ± 0.5 , % Al 7.1 ± 0.3 , % Basicity 76 ± 4 , % Chloride 12.5 ± 2.0
Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA and Wastewater Treatment Plant, 15108 Service Lane, Culpeper, VA.

ITEM 2

Hypochlorite-The hypochlorite solution shall be a > 12% strength solution with a pH greater than 11 S.U. The hypochlorite shall be hauled in a 5,000 gallon tanker truck with a standard bulkhead fitting. A maximum size of 1,500 gallons will be required per shipment. The hypochlorite solution shall contain a minimal amount of soluble mineral or organic substances in quantities capable of producing deleterious or injurious effects upon public health or water quality. NSF 60 certification required.
Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA.

ITEM 3

Hydrated Lime – The lime shall be packed in multi wall 50 pound paper bags and conform to AWWA standard B-202-93 or most recent specification. The lime needs to contain a minimum calcium concentration of 51.5%. It shall contain no mineral or organic substances in quantities capable of producing deleterious or injurious effects upon the public health or water quality. NSF 60 certification required.
Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA.

ITEM 4

Non-Copper Based Algaecide (peroxyacetic acid/peroxide based preferred)- This shall be furnished in liquid or solid form in 250 gallon totes, 50 lb buckets or 55 gallon drums with a PAA concentration of 5.3% and a Hydrogen Peroxide concentration of 23%. Recycling of totes is also preferred. NSF 60 certification required.
Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA

ITEM 5

Hydrofluosilicic Acid, (HFS) – HSF shall be furnished in 55 gallon drums and conform to AWWA standard B-703-94 or most recent specification. The material should be at least 23-25% hydrofluosilicic acid. NSF 60 certification required.
Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA.

ITEM 6

Nonionic Coagulant Polymer (Praestol 3100 TR, Superfloc N-1986 or Clarifloc R-N-6310) – Must meet all potable water standards for the use in the coagulations and flocculation process. Delivery in 55 gallon drums. NSF 60 certification required.

Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA

ITEM 7

Corrosion Inhibitor – This shall be furnished in liquid form in 55 or 30 gallon drums with a phosphate concentration of 32-38% and a density of approximately 11.1 lbs/gal. The corrosion inhibitor shall be Sweetwater CP-722, Calgon C4 or approved equal. NSF 60 certification required.

Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA.

ITEM 8

Potassium Permanganate – Potassium Permanganate shall be furnished in granular form and must conform to AWWA standard B603-88 or most recent specification. The material must be 97.5% Potassium Permanganate minimum. It must be free of insoluble material. It shall be furnished in 5 gallon pails. The potassium permanganate shall be Carus Chemical Company; CAIROX Free-Flowing Grade Potassium Permanganate or approved equal. NSF 60 certification required.

Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA.

ITEM 9

Powdered Activated Carbon – Powdered Activated Carbon shall be furnished in bags no greater than 50 pounds and shall conform to AWWA standard B600-05 or most recent specifications. This material should be 100% carbon and free from chips or other foreign matter with a real density of 2.3 g/ml and a packing density of 0.4-0.7 g/ml. It should not contain any insoluble material or organic substances in quantities capable of producing deleterious or injurious effects upon the public health or water quality. NSF 60 certification required.

Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA.

ITEM 10

Caustic Soda 25% – This shall be furnished in liquid form in 55 or 30 gallon drums. The suspended matter in the liquid caustic soda shall not exceed 0.1 percent. The liquid caustic soda supplied under this standard shall be approximately twenty-five percent (25%) by weight. NSF 60 certification required.

Delivery to the Water Treatment Plant, 816 Woodview Rd., Culpeper, VA.

ITEM 11

Glycerin –70% Glycerin (MicroC 2000) Product utilized as a carbon source. Must meet following specifications. Delivery should be made by 4,500 gallon tanker truckloads. The tanker trucks can be offloaded into a 9,000 gallon tank located onsite. Pricing based on price per gallon

Parameter	Target Value	Acceptable Range	Method for Determination
Physical State	Liquid	N/A	N/A
Percent Glycerin	70%	69-71%	ASTM D7637-10
Specific Gravity @ 20C	1.22	1.210-1.230	Precision Hydrometer
Bulk Density (lbs/gal)	10.17	10.09-10.26	Calculation based on Specific Gravity @ 20C
pH	5.50	4.0-7.0	pH Meter with fitted glass electrode
Viscosity cPS @20C @10C @0C	<50 cPs <100 cPs <150 cPs	<50 cPs <100 cPs <150 cPs	Brookfield Viscometer
Solubility in water	≥99%	≥99%	
VOC Concentration	0%	0%	(EPA 8260B)
Freezing Point	Below Zero Fahrenheit	Below Zero Fahrenheit	Freezing point determination
Flash Point	None to Boil	None to Boil	(ASTM D93)
COD Value	1,040,000	1,000,000-1,100,000	EPA 410.3
Methanol Content	≤0.01%	0-0.1% w/w	AOCS Cg 5b-71 or equivalent Measured on crude glycerin
Fatty Acid Content	0.00-0.75% w/w	≤1.0%	AOCS Ca 5b-71 or equivalent Measured on crude glycerin
Insoluble/Nuisance Solids	None	Material cannot contain solids greater than 1000 micron	Sieve analysis

References

In order to demonstrate performance history, supplier shall submit as Addendum X a list of at least 3 current municipal users of its product. Information shall include plant name, contact name, phone number and email address.

Product Quality

In order to demonstrate historical adherence to the above specifications, supplier shall submit as part of their bid response, quality control data representing all production of product for the one year prior to Bid date. Quality control data shall include measurements of (1) Chemical Oxygen Demand (COD), (2) specific gravity, (3) viscosity at 20 C (in centipoises), (4) pH (5) percent fatty acid by weight and (6) percent methanol by weight. Each of the six measurements listed above shall be provided in minimum increments of 200,000 lbs of finish product. For example, if supplier has produced 5 million pounds of finished product within the past year, then at least 25 quality control events (5 million/200,000), each including the 6 parameters shall be supplied. For each of the six parameters, no more than 5% of the reported values shall deviate from the "acceptance range" listed in Table bid specifications. With each delivery provided under the contract, supplier must provide a Certificate of Analysis (COA) that includes, at minimum; point of origin, batch date, specify gravity, pH, COD value, and color and odor check.

Supplier shall retain a sample from each bulk shipment made under the contract. Samples shall be retained for at least three months before destruction.

Supplier to submit one 250 mL sample from three different lots for evaluation by utility.

Delivery to the Wastewater Treatment Plant, 15108 Service Lane, Culpeper, VA.

ITEM 12

Aluminum Sulfate (liquid) - Approximately 48.5% dry aluminum sulfate in water and conforming to AWWA standard B-403-93 or most recent specification. The aluminum sulfate supplied under this contract shall contain no soluble mineral or organic substances in quantities capable of producing deleterious or injurious effects upon the public health or water quality. Liquid alum shall be no less than 8.0% total Al₂O₃. NSF 60 certification required. Pricing to be based on dry alum.

Delivery to the Wastewater Treatment Plant, 15108 Service Lane, Culpeper, VA.

ITEM 13

NE-1281 Polymer, furnished in 250 gallon totes. Cationic polyacrylamide in water-in-oil emulsion/flocculant used as a sludge dewatering agent with Gravity Belt thickener. Any other polymers must be tested for effectiveness for consideration.

Delivery to the Wastewater Treatment Plant, 15108 Service Lane, Culpeper, VA

ITEM 14

NE-1280 Polymer, furnished in 250 gallon totes. Cationic polyacrylamide in water-in-oil emulsion/flocculant used as a sludge dewatering agent with Centrifuge Operation. Any other polymers must be tested for effectiveness for consideration.

Delivery to the Wastewater Treatment Plant, 15108 Service Lane, Culpeper, VA