TIER 2

Public Works

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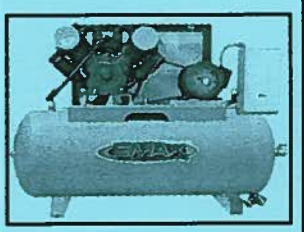
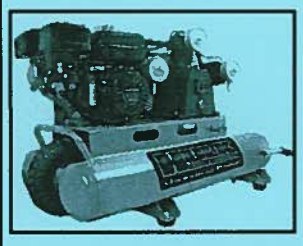
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: AIR COMPRESSOR - TYPE V - OTHER							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (See Tier 1 Typing)**	**TYPE V**	**TYPE VI**	**TYPE VII**	**TYPE VIII**	**OTHER**
COMPONENT:	**METRIC:**						
Equipment	Description		Self contained, gasoline or diesel powered, portable	Self contained, gasoline or diesel powered, able to transport			
Capacity	CFM		21 to 100	1 to 20			
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8010 - 8017						

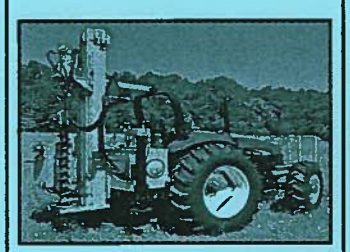
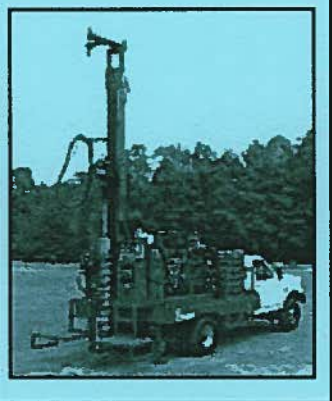
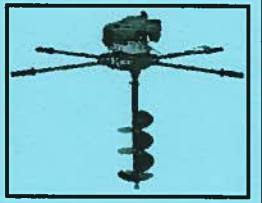
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: ARTICULATED TRUCK								
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment	
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**TYPE V**	**OTHER**
COMPONENT:	**METRIC:**							
Operating Power	kW/hp		341/457	304/408	242/325	232/310		
Operating Weight (max)	lb		72,400	66,690	50,376	49,075		
Haul Capacity (heaped)	m^3/yd^3		21.2m/27.7yd &up	17.0 to 21.1m/22.2 to 27.6yd	14.5 to 16.9m/18.9 to 22.1yd	14.4m/18.8yd & under		
Number of Cylinders			6	6	6	6		
Fuel Tank Capacity	L/gal		560/148	560/148	360/95	360/95		
EXAMPLE:								
COMMENTS:								
FEMA Cost Code:								

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: AUGER							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Diameter	inches		36"	24"	18"	18"	
Description			Tractor Mounted	Truck Mounted	Trailer Mounted	Hand Held	
EXAMPLE:							
COMMENTS:	Note Max Diameter						
FEMA Cost Code:	Tractor Mntd: 8062 Truck Mntd: 8063 Portable: 8060 and 8061						

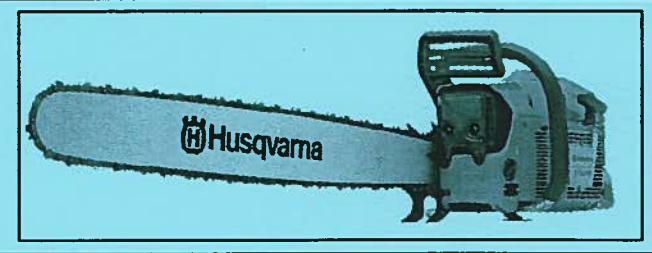
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: BREAKER, PAVEMENT							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Description			Machine Mounted	Hand Held			
Impact Energy	lbs		100 +	100 -			
Blows per Minute			300 +	100 +			
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8419 or 8420						

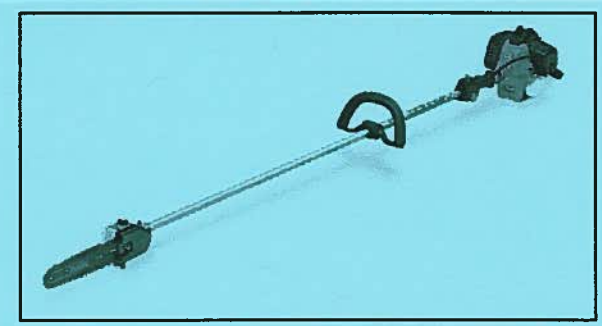
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: CHAIN SAW									
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment		
MINIMUM CAPABILITIES:			**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**TYPE V**	**TYPE VI**	**OTHER**
COMPONENT:	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**							
Bar Length	Inches		55"	45"	35"	25"	15"	12"	
EXAMPLE:									
COMMENTS:	Gas powered								
FEMA Cost Code:	8190 or 8191								

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: CHAIN SAW, POLE									
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment		
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**TYPE V**	**TYPE VI**	**OTHER**
COMPONENT:	**METRIC:**								
Bar Length	Inches		10-12"	10-12"	10-12"	10-12"			
Length	Inches		135"	105"	90"	65"			
EXAMPLE:									
COMMENTS:	Gas powered; note if any additional extensions are available								

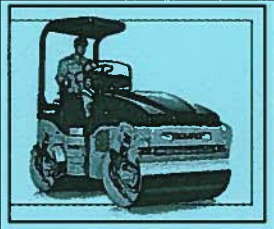
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: COMPACTOR, SANITATION (GARBAGE TRUCK)							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:			**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Description			Garbage truck				
EXAMPLE:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**					
COMMENTS:							
FEMA Cost Code:	8225 - 8227						

TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: COMPACTOR (VIBRATORY - DOUBLE DRUM)							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Operating Power	kW/hp		171/230	97.69/131	61.15/82	35.05/47	
Operating Weight (max)	Kg/lbs		13809/37000	9331/25000	6680/179000	3717/9960	
Drum Width	mm/in		2159/85	2006/79	1574/62	1447/57	
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	Need to check (8221, 8222, 8223, 8228)						

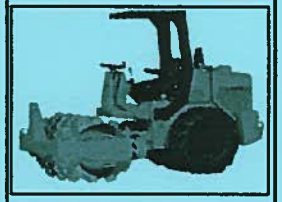
TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: COMPACTOR (VIBRATORY - SINGLE SMOOTH DRUM)							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Operating Power	kW/hp		129/173	112/150	75/103	62/83	
Operating Weight (max)	Kg/lbs		16700/36000	11120/30000	6745/15000	4390/10000	
Drum Width	mm/ft		2130/7'	2130/7'	1680/5'6"	1270/4'2"	
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	Need to check (8221, 8222, 8223, 8228)						

TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: COMPACTOR (VIBRATORY - SINGLE PADDED DRUM)							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Operating Power	kW/hp		129/173	112/150	97/103	62/83	
Operating Weight (max)	Kg/lbs		13607/30000+	12700/28000	9979/22000	4535/10000	
Drum Width	mm/ft		2130/7'	2130/7'	2130/7'	1270/4'2"	
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	Need to check (8221, 8222, 8223, 8228)						

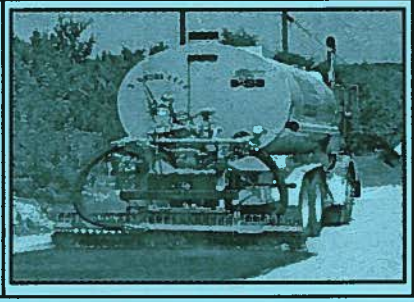
TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: COMPACTOR (VIBRATORY - PNEUMATIC TIRE)							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Operating Weight	lbs		30000+	18801-29999	9001-18800	Up to 9000	
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	Need to check (8221, 8222, 8223, 8228)						

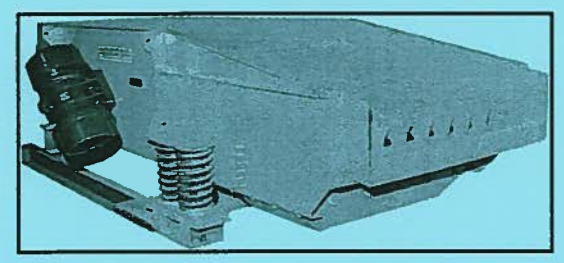
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: DISTRIBUTOR, ASPHALT							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
Description			Truck	Trailer Mntd			
EXAMPLE:							
COMMENTS:	Note the tank capacity						
FEMA Cost Code:	8580, 8581, 8582						

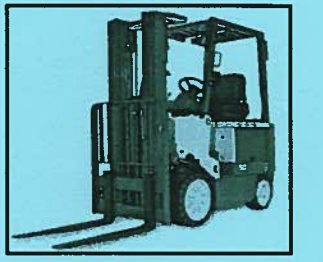
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: FEEDER, GRIZZLY							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Horsepower			55 +	1 to 54			
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8240 - 8242						

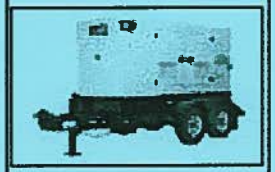
TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: FORKLIFT							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
Fuel Type			Gas or Diesel	Gas or Diesel	Electric		
Tires			Solid, Pneumatic	Pneumatic or Cushion	Cushion		
EXAMPLE:							
COMMENTS:	Note any attachments and weight able to lift						
FEMA Cost Code:	8300 - 8303						

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: GENERATORS								
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment	
MINIMUM CAPABILITIES:		**TYPE I - TYPE V (See Tier 1 Typing)**	**TYPE VI**	**TYPE VII**	**TYPE VIII**	**TYPE IX**	**TYPE X**	**OTHER**
COMPONENT:	**METRIC:**							
Power	kW		100	40	15	5		
EXAMPLE:								
COMMENTS:								
FEMA Cost Code:	Need to check which one: 8310 - 8321							

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: HYDRAULIC EXCAVATOR (COMPACT - STANDARD 1.75cy to .61cy BUCKETS)								
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment	
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**TYPE V**	**OTHER**
COMPONENT:	**METRIC:**							
Engine	kW/hp		37.2/49.8	26/34.9	17.1/23.3	11.3/15.4		
Operating Weight	kg/lbs		5500/12125	3540/7805	2790/6149	1735/3825		
Bucket Capacity	l/ft3		70-265/2.47-46.2					
Max Drawbar Pull	daN/lbf		4480/10071	3630/8160	2530/5693	1260/2835		
Fuel Tank Capacity	L/gal		90/23.8	66/17.4	49/13	21/5.5		
Max Digging Depth	Mm/ft		3820/12'6"	3170/10'5"	2520/8'3"	2050/6'9"		
Max Reach at Ground Level	Mm/ft		5980/19'7"	5130/16'10"	4460/14'7"	3610/11'10"		
Max Loading Height	Mm/ft		4090/13'5"	3530/11'7"	3130/10'3"	2480/8'2"		
Overall Width	Mm/ft		1920/7'5"	1650/5'5"	1530/5'	1350/4'5"		
Height to Top of Cab	Mm/ft		2560/8'4"	2460/8'1"	2390/7'10"	2250/7'5"		
EXAMPLE:								
COMMENTS:								
FEMA Cost Code:								

TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: HYDRAULIC EXCAVATOR (WHEELED MASS EXCAVATION)							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:			**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Equipment	hp	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	150	138	54		
Operating Weight (max)	lbs		43660	38580	11685		
Bucket Capacity	ft^3		1.44	1.09			
Fuel Tank Capacity	gal		79	66	23.8		
Max Digging Depth	ft		19"	18'1"	12'6"		
Max Reach at Ground Level	ft		29'10"	28'10"	19'8"		
Max Loading Height	ft		21'	20'4"	13'5"		
Overall Width	ft		8'4"	8'4"	6"		
Height to Top of Cab	ft		10'3"	10'2"	8'4"		
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:							

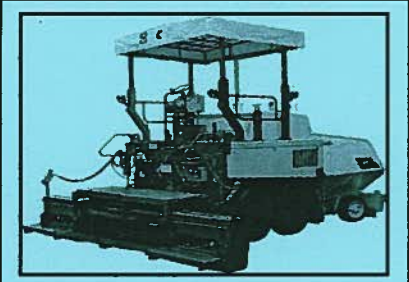
TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: MOTOR GRADER (ALL WHEEL DRIVE)							
CATEGORY:	Public Works and Engineering (ESF #3)				**KIND:**	Equipment	
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Gross Power	kW/hp		134/180	123/165			
Operating Weight	Kg/lbs		15270/34560	16280/35890			
Cylinders			6	6			
Blade Length	M/ft		4.27/14	3.66/12			
Blade Height	M/ft		686/2'3"	610/2'			
Fuel Tank Capacity	L/gal		397/105	397/105			
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:							

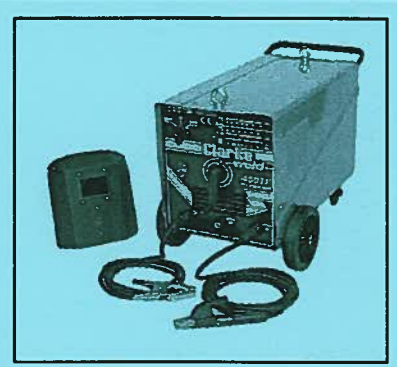
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: PAVER, ASPHALT							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
Description			Truck	Towed			
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8430 - 8434						

TIER 2

Idaho Bureau of
Homeland Security
January 2010

RESOURCE: PORTABLE WELDER							
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
Amp			400+	180-399	Under 180		
Engine Type			Diesel	Diesel	Electric		
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	Need to compare: 8770, 8771, 8772, 8773						

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: SANDBAGS									
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment		
MINIMUM CAPABILITIES:			**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**TYPE V**	**TYPE VI**	**OTHER**
COMPONENT:	**METRIC:**								
Dimensions	inches (")	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	18" x 27"	17" x 27"	14" x 26"	12" x 18"	14" x 26"		
Material			Woven polypropylene, polyethylene or polyamide fabric	Woven polypropylene, polyethylene or polyamide fabric	Woven polypropylene, polyethylene or polyamide fabric	Woven polypropylene, polyethylene or polyamide fabric	Burplap (10oz material)		
Capacity	lbs		65 lbs	60 lbs	50 lbs	33 lbs	50 lbs		
Burst Strength	psi		300 psi	300 psi	300 psi	300 psi			
EXAMPLE:									
COMMENTS:	All sandbag fill material shall be non-cohesive, Class 1 or Class 2 permeable material free from clay and deleterious material								

References: Army Corp of Engineers, CalTrans, United Bags

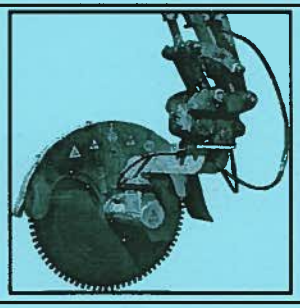
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: SAW, CONCRETE							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
Description			Machine operated	Handheld			
Blade Diameter			25 +	1 to 24			
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8510 - 8512						

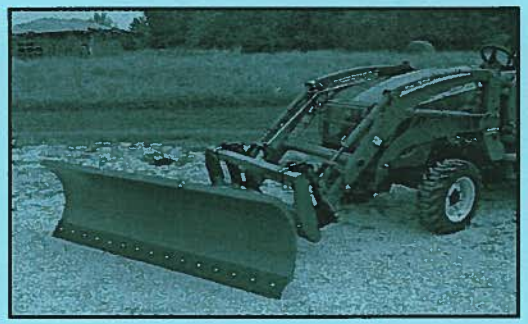
TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: SAW, ROCK							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Description			Large attachment	Arm attchment			
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8513, 8514						

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: SNOW PLOW, GRADER MOUNTED								
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment	
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**TYPE V**	**OTHER**
Blade Width	ft		14	10				
EXAMPLE:								
COMMENTS:	Note the width							
FEMA Cost Code:	8450, 8451							

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: SNOW PLOW, TRUCK MOUNTED									
CATEGORY:	Public Works and Engineering (ESF #3)					**KIND:**	Equipment		
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**TYPE V**	**TYPE VI**	**TYPE VII**
COMPONENT:	**METRIC:**								
Blade Width	Inches		120"	114"	108"	102"	96"	90"	80"
Blade Height	Inches		31"	29"	30"	29"	29"	24"	21"
Width at angle	Inches		103"	99"	93"	88"	83"	78"	70"
EXAMPLE:									
COMMENTS:	Make note if blade is standard or a v-plow, and if there is a leveling wing attachment.								
FEMA Cost Code:	8452, 8453								

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: TRUCK, CONCRETE MIXER							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES:		**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
COMPONENT:	**METRIC:**						
Description			Able to mix concrete				
Mixer Capacity			10				
EXAMPLE:							
COMMENTS:	Note mixer capacity						
FEMA Cost Code:	8680						

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: TRUCK, FLATBED							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
Max GVW	lbs		15000	25000	30000	45000	
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8700 - 8703						

TIER 2

Idaho Bureau of Homeland Security
January 2010

RESOURCE: TRUCK, PICKUP							
CATEGORY:	Public Works and Engineering (ESF#3)					**KIND:**	Equipment
MINIMUM CAPABILITIES: / **COMPONENT:**	**METRIC:**	**TYPE I - TYPE IV (N/A in Tier 1 Typing)**	**TYPE I**	**TYPE II**	**TYPE III**	**TYPE IV**	**OTHER**
Capacity			1 3/4 ton	1 1/2 ton	1 1/4 ton	1 ton	1/2 ton
EXAMPLE:							
COMMENTS:							
FEMA Cost Code:	8800 - 8805						

RESOURCE: WATER PRODUCTION FACILITIES DAMAGE ASSESSMENT, REPAIR AND START-UP TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of process repair capability	Pre-chem, post-chem, gaseous chlorination, chloramination, ozonation, MIOX, GAC, PAC, conventional filtration, membrane filtration, RO and UV	Pre-chem, post-chem, gaseous chlorination, chloramination, ozonation, GAC, PAC and conventional filtration, membrane filtration and RO	Pre-chem, post-chem, liquid chlorination, chloramination, MIOX, GAC, PAC and conventional filtration	Assessment only or components of Type I – III Teams
Ideal Team Size	Total persons	5+	4 - 5	4 - 5	1 - 3
Team Composition	Team member capabilities for assessment and repairs indicated	1+ Qualified mechanic 1+ Qualified electrician 1+ Plant operator 2+ Repair technicians (mechanic or electrician serves as team leader)	1+ Qualified mechanic 1+ Qualified electrician 1+ Plant operator 1+ Repair technicians (mechanic or electrician serves as team leader)	1+ Qualified mechanic 1+ Qualified electrician 1+ Plant operators 1+ Repair technicians (mechanic or electrician serves as team leader)	Any portion of other types that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	2+ Heavy-duty pick-up trucks, one with equipment boom	2+ Heavy-duty pick-up trucks, one with equipment boom	2+ Heavy-duty pick-up trucks, one with equipment boom	Any portion of other types that can be provided
Other Equipment	Other specific equipment	Compressor, welder, small electrical generator, infrared camera, laser alignment tool, vibration analyzer and other necessary hand tools and diagnostic equipment	Same	Same	Any portion of other types that can be provided
Materials	As needed for repairs indicated	Expendable supplies needed	Expendable supplies needed	Expendable supplies needed	NA

This team is responsible for the assessment and repair of all types of water production facilities, regardless of size, with various settling systems, including intake facilities, raw water conveyance facilities, treatment plants and pump stations, excluding structural and similar scale repairs. Pump repairs are addressed as a separate team. Requestor to supply lead operator familiar with the treatment process and plant shut down and start up, as well as plant schematics. Requestor should specify treatment processes used and any materials that should be provided by the responders.

Types of facilities / processes in need of assessment and repair: _____

Materials that should be provided by responders: _____

Specific control systems used: Electronic _____ Pneumatic _____ Hydraulic _____ Facility capacity (MGD): _____

RESOURCE: WATER PRODUCTION FACILITIES OPERATIONS PERSONNEL AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of process operations capability	Pre-chem, post-chem, gaseous chlorination, chloramination, ozonation, MIOX, GAC, PAC, conventional filtration, membrane filtration, RO and UV	Pre-chem, post-chem, gaseous chlorination, chloramination, ozonation, GAC, PAC and conventional filtration, membrane filtration and RO	Pre-chem, post-chem, chlorination, chloramination, MIOX, GAC, PAC and conventional filtration	Components of Type I – III Teams
Ideal Team Size	Total persons	3	3	2	1-2
Team Composition	Team member capabilities for operation of processes indicated	1 Senior operator 2 Operators	1 Senior operator 2 Operators	1 Senior operator 1 Operator	Any portion of other types that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	Any portion of other types that can be provided
Other Equipment	Other specific equipment	Diagnostic lab equipment	Diagnostic lab equipment	Diagnostic lab equipment	Any portion of other types that can be provided
Materials	As needed	Expendable supplies needed	Expendable supplies needed	Expendable supplies needed	Any portion of other types that can be provided

These personnel are responsible for the operation of all types of water production facilities, regardless of size, with various settling systems, including wells, intake structures (excluding those that require boats), raw water conveyance facilities, treatment plants and pump stations. Requestor should specify treatment processes used and in which expertise is needed, as well as any materials that should be provided by the responders. Operators can be provided in any agreed-upon quantity, with a minimum of two.

Specific types of facilities and processes in need of operation: _____

Specific equipment or materials that should be provided by responders: _____

Specific control systems used: Electronic _____ Pneumatic _____ Hydraulic _____ Facility capacity (MGD): _____

RESOURCE: WATER PUMP FACILITIES DAMAGE ASSESSMENT AND REPAIR TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of repair and start-up capability	Raw, finished and booster pump stations with largest motor over 400 HP	Raw, finished and booster pump stations with largest motor 26 - 400 HP	Raw, finished and booster pump stations with largest motor less than 26 HP	Components of Type I – III Teams
Ideal Team Size	Total persons	4+	2 - 4	2 - 4	1-2
Team Composition	Team member capabilities for assessments and repairs indicated	1+ Qualified mechanic 1+ Qualified electrician 2+ Repair technicians (mechanic or electrician serves as team leader)	1+ Qualified mechanic 1+ Qualified electrician 0 – 2 Repair technicians (mechanic or electrician serves as team leader)	1+ Qualified mechanic 1+ Qualified electrician 0 - 2 Repair technicians (mechanic or electrician serves as team leader)	Any portion of Type II that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	2 Heavy-duty pick-up trucks, 1 with equipment boom	2 Heavy-duty pick-up trucks, 1 with equipment boom	1 - 2 Heavy-duty pick-up trucks, 1 with equipment boom	Any portion of Type II that can be provided
Other Equipment	Other specific equipment	Necessary tools and equipment	Necessary tools and equipment	Necessary tools and equipment	Any portion of Type II that can be provided
Materials	As needed for repairs indicated	Expendable Supplies	Expendable Supplies	Expendable Supplies	NA

This team is responsible for the assessment and repair of all types of water pump facilities, regardless of size, including intake facilities (excluding those that require boats), raw water conveyance facilities, treatment plants and pump stations, excluding structural and similar scale repairs. Requestor should specify types of pump facilities in need of assessment and repair in which expertise is needed, as well as any materials that should be provided by the responder. Major repair materials provided by requestor or others.

Specific types of pump facilities in need of assessment and repair: _____

Specific materials that should be provided by responders: _____

Specific control systems used: Electronic _____ Pneumatic _____ Hydraulic _____ Facility capacity (MGD): _____

Maximum pump voltages: 4160 _____ 480 _____

RESOURCE: WATER LAB SUPPORT PERSONNEL AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Personnel					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Water laboratory analysis	Chemist capable of running wet chemical, organic and inorganic analyses	Biologist capable of running cryptosporidium and giardia analyses	Lab technician capable of running BOD and basic microbiological analyses	NA
Personnel	Total persons	1	1	1	NA
Team Composition	Team member capabilities for work indicated	1 Water lab chemist	1 Water lab biologist	1 Water lab technician	NA
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	NA
Other Equipment	Other specific equipment	As needed	As needed	As needed	NA
Materials	As needed	As needed	As needed	As needed	NA

Comments and Definitions: Requestor should check condition of laboratory and make an equipment assessment before requesting water lab support personnel.

RESOURCE: WATER DISTRIBUTION SYSTEM FLUSHING, FLOW TESTING, SAMPLING AND FIELD ANALYSIS TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: X Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of water distribution flushing or sampling and field analysis	Distribution system flow testing and flushing from hydrants and blow-offs	Sampling and field analysis where possible of bac-t, pH, turbidity, and chlorine residual	Sample transportation	Support only
Ideal Team Size	Total persons	2	2	1	1-2
Team Composition	Team member capabilities for work indicated	1 Lead flushing technician 1 Flushing technician	1 Water sampling technician 1 Water sampling assistant	1 Water sampling assistant	Any portion of other type that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Light-duty pick-up truck, 2 preferred	1 4X4 SUV or pick-up truck with enclosed bed	1 4X4 SUV or pick-up truck with enclosed bed	Any portion of other type that can be provided
Other Equipment	Other specific equipment	Diffuser, dechlorinator, flow-testing gauges and other necessary tools and small equipment	Necessary transport coolers and analytical testing equipment, sampling pump if needed	Necessary transport coolers	Any portion of other type that can be provided
Materials	As needed	As needed	Appropriate sampling containers, reagents and other supplies for two weeks of sampling work	As needed	NA

Comments and Definitions: Flushing personnel can be provided in any agreed-upon quantity, with a minimum of two. Requestor should provide a representative familiar with the hydraulics of the affected distribution system to accompany the team. Ice to be provided by requestor or others, as needed. HAZMAT should be used where samples may be hazardous.

RESOURCE: WATER DISTRIBUTION SYSTEM DAMAGE ASSESSMENT AND REPAIR TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Diameter (in.) of mains repaired	24"+	10"-22"	2"- 8", including services and small meters	Portion of Type I – III Teams
Ideal Team Size	Total persons	6 - 8	5 - 7	4 - 5	1 - 3
Team Composition	Team member capabilities for assessments and repairs indicated	1 Team leader 1 Backhoe-loader operator 1 - 2 Tandem dump truck drivers 1 Lead repair technician 1 - 2 Utility workers 1 Welder if steel mains indicated	1 Team leader 1 Backhoe operator 1 - 2 Dump truck drivers 1 Lead repair technician 1 - 2 Utility workers 1 Welder if steel mains	1 Team leader 1 Backhoe operator 1 Dump truck driver 1 - 2 Utility workers 1 Welder (if steel)	Any portion of Type III that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Medium track excavator 1 Backhoe-loader 1 - 2 Tandem Dump trucks 1 Team / equipment tk. w/ boom	1 Medium track excavator 1 Backhoe-loader 1 - 2 Tandem Dump trucks 1 Team / equip. tk. w/ boom	1 Backhoe-loader 1 - 2 Tandem Dump trucks 1 Team / equip. tk.	Any portion of Type III that can be provided
Other Equipment	Other specific equipment	Air compressor, mud pump, welder (if steel) and necessary pneumatic, small power tools and hand tools for repairs indicated	Air compressor, mud pump, welder (if steel) and necessary pneumatic, small power tools and hand tools for repairs indicated	Air cmprssr., mud pump, welder (if steel) and needed pneumatic, small power tools and hand tools for repairs	Any portion of Type III that can be provided
Materials	As needed for repairs indicated	Repair couplings, sleeves and associated materials and expendable supplies for 60 assorted main repairs	Repair couplings, sleeves and associated materials and expendable supplies for 60 assorted main repairs	Repair couplings, sleeves and assctd. mtrls. & expendable supplies for 60 assorted main repairs	NA

This team is responsible for the assessment and repair of all types of water distribution facilities including mains, valves, hydrants and storage facilities (assessment and light repairs only), including excavation through backfill. Pump repairs are addressed as a separate team. Requestor should specify facilities in which repair expertise is needed, specific water main materials and size ranges in need of repair, and typical depth of facilities and soil conditions, as well as any materials that should be provided by the responders. Requestor to provide plans showing water main locations and coordinate notification of "call-before-you dig" service used in region. Traffic control considerations to be coordinated by requestor and responding utility. Pipe provided by requestor or others.

Specific types of system components in need of assessment and repair: _____ Main sizes and materials: _____

Typical depth: _____ Soil conditions: _____ Hydrant makes / models: _____

Specific materials that should be provided by responders: _____

RESOURCE: WATER VALVE OPERATIONS TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of valve operations capability	Valve box cleaning and valve operation	Valve operation	NA	Portion of Type I – III Teams
Ideal Team Size	Total persons	2	2	NA	1-2
Team Composition	Team member capabilities for work indicated	1 Team Leader 1 Utility worker with valve experience	1 Lead valve technician 1 Valve technician	NA	Any portion of other types that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Truck with truck-mounted or trailer-mounted vacuum unit and power valve operator	1 Truck with truck-mounted or trailer-mounted power valve operator	NA	Any portion of other types that can be provided
Other Equipment	Other specific equipment	Necessary tools and equipment	Necessary tools and equipment	NA	Any portion of other types that can be provided
Materials	As needed	Expendable Supplies	Expendable Supplies	NA	NA

Comments and Definitions: Requestor should provide system maps and indicate condition of valve boxes in need of location and operation. If possible, GPS coordinates should also be made available to the responder. The requestor should provide for debris removal over valves to expedite work. Requestor should also provide a licensed operator to turn valves if required by the requestor's state.

RESOURCE: WATER MAINS LEAK LOCATION TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Level of leak locating technology	Electronic noise correlation leak locating	Geophones leak locating	Basic audio leak locating	Components of Type I – III Teams
Ideal Team Size	Total persons	2	2	1-2	1-2
Team Composition	Team member capabilities for work indicated	1 Lead leak locator 1 Leak location assistant	1 Lead leak locator 1 Leak location assistant	1 Lead leak locator 0 - 1 Leak location assistant	Any portion of Type I that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Light duty truck with noise correlation leak locating system	1 Light duty truck	1 Light duty truck	Any portion of Type I that can be provided
Other Equipment	Other specific equipment	Necessary hand tools, lighting and safety equipment	Necessary hand tools, lighting and safety equipment	Necessary hand tools, lighting and safety equipment	Any portion of Type I that can be provided
Materials	As needed	As needed	As needed	As needed	As needed

Comments and Definitions: Teams may need to work in dark conditions.

RESOURCE: WASTEWATER TREATMENT FACILITIES DAMAGE ASSESSMENT, REPAIR AND START-UP TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of repair and start-up capability	Physical / chemical and biological treatment, activated sludge, nutrient removal, tertiary filtration, gaseous chlorination, membranes, UV, dewatering and biosolids handling	Physical / chemical and biological treatment, activated sludge, tertiary filtration, gaseous chlorination, dewatering and biosolids handling	Physical / chemical and biological treatment, liquid chlorination, and dewatering	Septic systems, trickling filtration, sand filtration, biological lagoons and constructed wetlands
Ideal Team Size	Total persons	6+	4+	4+	1-4
Team Composition	Team member capabilities for assessments and repairs of processes indicated	1 Qualified mechanic 1 Qualified electrician 1+ Operator 1 Instrumentation tech. 2 Repair technicians (mechanic or electrician serves as team leader)	1 Qualified mechanic 1 Qualified electrician 1+ Operator 1 - 2 Repair technicians (mechanic or electrician serves as team leader)	1 Qualified mechanic 1 Qualified electrician 1+ Operator 1 - 2 Repair technicians (mechanic or electrician serves as team leader)	1+ Qualified mechanic or electrician 0 - 2 Repair technicians
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 or 2 Heavy-duty pick-up trucks or equivalent, one with equipment boom	1 or 2 Heavy-duty pick-up trucks or equivalent, one with equipment boom	1 or 2 Heavy-duty pick-up trucks or equivalent, one with equipment boom	1 or 2 Heavy-duty pick-up trucks
Other Equipment	Other specific equipment	Necessary tools and safety equipment (e.g., air monitors)	Necessary tools and safety equipment (e.g., air monitors)	Necessary tools and safety equipment (e.g., air monitors)	Necessary tools and safety equipment (e.g., air monitors)
Materials	As needed for repairs indicated	Expendable supplies needed	Expendable supplies needed	Expendable supplies needed	Expendable supplies needed

Comments and Definitions: This team is responsible for the assessment and repair of all types of wastewater treatment facilities, regardless of size, with various treatment systems, conveyance facilities, treatment plants and pump stations, excluding structural and similar scale repairs. Pump and lift station repairs are addressed as a separate team. Requestor to supply lead operator familiar with the treatment process and plant shut down, as well as start up and schematics of pipes and valves. Requestor should specify treatment processes used, as well as any materials that should be provided by the responders.

Specific types of facilities and processes in need of assessment and repair: _____

Specific materials that should be provided by responders: _____

Specific control systems used: Electronic _____ Pneumatic _____ Hydraulic _____ Facility capacity (MGD): _____

RESOURCE: WASTEWATER TREATMENT FACILITIES OPERATIONS PERSONNEL AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Personnel					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of operations capability	Physical / chemical and biological treatment, activated sludge, nutrient removal, tertiary filtration, gaseous chlorination, membranes, UV, dewatering and biosolids handling	Physical / chemical and biological treatment, activated sludge, tertiary filtration, gaseous chlorination, dewatering and biosolids handling	Physical / chemical and biological treatment, liquid chlorination, and dewatering	Septic systems, trickling filtration, sand filtration, biological lagoons and constructed wetlands
Personnel	Total persons	3	3	3	1-2
Team Composition	Team member capabilities for operation of processes indicated	1 Lead operator 2 Operators	1 Lead operator 2 Operators	1 Lead operator 2 Operators	1 Lead operator 0 – 1 Operator
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred
Other Equipment	Other specific equipment	Monitoring Equipment	Monitoring Equipment	Monitoring Equipment	Monitoring Equipment
Materials	As needed	Expendable supplies	Expendable supplies	Expendable supplies	Expendable supplies

These personnel are responsible for the operation of all types of wastewater treatment facilities, regardless of size, with various systems, conveyance facilities, treatment plants and pump stations. Pump and lift station repairs are addressed as a separate team. Requestor should specify treatment processes used and in which expertise is needed, as well as any materials that should be provided by the responders. Equipment for monitoring and testing of the process should be provided by the responder unless confirmed that requestor can supply. Schematics of piping and valving shall be provided by the requestor. Operators can be provided in any agreed-upon quantity, with a minimum of two.

Specific types of facilities and processes in need of operation: _____

Specific equipment or materials that should be provided by responders: _____

Specific control systems used: Electronic _____ Pneumatic _____ Hydraulic _____ Facility capacity (MGD): _____

RESOURCE: WASTEWATER LAB SUPPORT PERSONNEL AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Personnel					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Wastewater laboratory analysis	Chemist capable of running wet chemistry and nutrient analyses	Lab technician capable of running BOD, solids, fecal coliform, total coliform and E-coli analyses	NA	NA
Personnel	Total persons	1	1	NA	NA
Team Composition	Team member capabilities for work indicated	1 Wastewater lab chemist	1 Wastewater lab technician	NA	NA
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	Light-duty vehicle preferred	Light-duty vehicle preferred	NA	NA
Other Equipment	Other specific equipment	NA	NA	NA	NA
Materials	As needed	NA	NA	NA	NA

Comments and Definitions: : Requestor should check condition of laboratory and make an equipment assessment before requesting wastewater lab support personnel.

RESOURCE: WASTEWATER LIFT AND PUMP STATIONS DAMAGE ASSESSMENT, REPAIR AND START-UP TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of repair and start-up capability	Screw, submersible, wetwell / drywell and vertical-turbine solids-handling pumps greater than 400 HP	Screw, submersible, wetwell / drywell, vertical-turbine solids-handling pumps and suction-lift pumps 26 – 400 HP	Submersible, suction-lift, grinder, LPP, vacuum and STEP pumps, 25 HP or smaller	Components of Type I – III Teams
Ideal Team Size	Total persons	4	4	2	1-2
Team Composition	Team member capabilities for assessments and repairs indicated	1 Qualified mechanic 1 Qualified electrician 2 Repair technicians (mechanic or electrician serves as team leader)	1 Qualified mechanic 1 Qualified electrician 2 Repair technicians (mechanic or electrician serves as team leader)	1 Qualified mechanic 1 Qualified electrician 2 Repair technicians (mechanic or electrician serves as team leader)	Any portion of other types that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 or 2 Heavy-duty 4X4 pick-up trucks or equivalent, one with equipment boom 1 30-ton+ crane preferred	1 or 2 Heavy-duty 4X4 pick-up trucks or equivalent, one with equipment boom	1 or 2 Heavy-duty 4X4 pick-up trucks or equivalent, one with equipment boom	Any portion of other types that can be provided
Other Equipment	Other specific equipment	Necessary tools and equipment	Necessary tools and equipment	Necessary tools and equipment	Any portion of other types that can be provided
Materials	As needed for repairs indicated	Necessary materials as indicated	Necessary materials as indicated	Necessary materials as indicated	NA

Comments and Definitions: This team is responsible for the assessment and repair of all types of wastewater lift station and pump facilities, regardless of size, including conveyance facilities, treatment plants and pump stations, excluding structural and similar scale repairs. Requestor should specify types of pump facilities in need of assessment and repair in which expertise is needed, as well as any materials that should be provided by the responder. Major materials provided by requestor or others.

Specific types of pump facilities in need of assessment and repair: _____

Specific materials that should be provided by responders: _____

Specific control systems used: Electronic _____ Pneumatic _____ Hydraulic _____ Facility capacity (MGD): _____

Maximum pump voltages: 4160 _____ 480 _____

RESOURCE: WASTEWATER SAMPLING AND FIELD ANALYSIS TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Wastewater collection and stream sampling and field analysis	Capability of samples for BOD, solids, fecal coliform, total coliform and E-coli analyses, and field analyses where possible	NA	NA	Support only
Ideal Team Size	Total persons	2	NA	NA	1-2
Team Composition	Team member capabilities for work indicated	1 Sampling technician 1 Sampling assistant	NA	NA	Any portion of Type I that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Heavy-duty 4X4 SUV or pick-up truck with enclosed bed	NA		Any portion of Type I that can be provided
Other Equipment	Other specific equipment	Necessary tools and field lab testing equipment	NA	NA	Any portion of Type I that can be provided
Materials	As needed	Bottles and other materials for two weeks of sampling work	NA	NA	NA

Comments and Definitions: Ice to be provided by requestor or others, as needed. HAZMAT should be used where samples may be hazardous.

RESOURCE: SEWER MAINS DAMAGE ASSESSMENT AND REPAIR TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Diameter (in.) of mains repaired	Greater than 24"	14" – 24"	Up to 12"	Components of Type I – III Teams
Ideal Team Size	Total persons	8	7 - 8	5 - 7	1-5
Team Composition	Team member capabilities for assessments and repairs indicated	1 Team leader 1 Excavator operator 1 Backhoe-loader operator 2 Tandem dump truck drivers 1 Lead repair technician 2 Repair technicians	1 Team leader 1 Excavator operator 1 Backhoe-loader operator 1 - 2 Tandem dump truck drivers 1 Lead repair technician 2 Repair technicians	1 Team leader 1 Backhoe-loader operator 1 - 2 Tandem dump truck drivers 1 Lead repair technician 1 - 2 Repair technicians	Any portion of Type III that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Large track excavator 1 Backhoe-loader 2 Tandem dump trucks 1 Team / equipment tk. 1 Supervisor's light truck	1 Large track excavator 1 Backhoe-loader 2 Tandem dump trucks 1 Team / equipment tk. 1 Supervisor's light truck	1 Backhoe-loader or medium track excavator 2 Tandem Dump trucks 1 Team / equipment tk. 1 Supervisor's light truck	Any portion of Type III that can be provided
Other Equipment	Other specific equipment	Necessary pneumatic and hand tools for repairs indicated	Necessary pneumatic and hand tools for repairs indicated	Necessary pneumatic and hand tools for repairs indicated	Any portion of Type III that can be provided
Materials	As needed for repairs indicated	Repair couplings, sleeves and associated materials and expendable supplies for specified number of assorted sewer main repairs	Repair couplings, sleeves and assctd. mtrls. and expendable supplies for specified nbr. of assrtd. sewer main repairs	Repair couplings, sleeves and assctd. mtrls. and expendable supplies for specified nbr. of assrtd. sewer main repairs	NA

This team is responsible for the assessment and repair of all types of wastewater collection, stormwater collection, and reclaim water distribution facilities, including gravity mains, force mains, aerial mains, and manholes, including excavation through backfill. Pump repairs are addressed as a separate team. Requestor should specify facilities in which repair expertise is needed, specific main materials and size ranges in need of repair, and typical depth of facilities and soil conditions, as well as any materials that should be provided by the responders. Requestor to provide plans showing main locations and coordinate notification of "call-before-you dig" service used in region. Traffic control considerations to be coordinated by requestor and responding utility. Pipe provided by requestor or others.

Specific types of facilities in need of assessment and repair: _____ Main sizes and materials: _____

Typical depth range: _____ Soil conditions: _____

RESOURCE: SEWER MAINS AND MANHOLES CLEANING AND SSO / CSO CLEAN-UP TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of cleaning capability	Sewer jet / vac truck cleaning	Sewer jet truck or trailer cleaning	Sewer power rod truck cleaning	SSO / CSO clean-up team
Ideal Team Size	Total persons	2	2	2	2 - 6
Team Composition	Team member capabilities for work indicated	1 Lead sewer cleaning technician 1 Sewer cleaning technician	1 Lead sewer cleaning technician 1 Sewer cleaning technician	1 Lead sewer cleaning technician 1 Sewer cleaning technician	1 Team leader 1 Backhoe operator 1 – 4 Utility workers
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Jet / vac truck	1 Jet truck or jet trailer with suitable tow vehicle	1 Sewer power rod truck	1 4 X 4 heavy duty pick-up 1 backhoe / loader
Other Equipment	Other specific equipment	Necessary tools and equipment	Necessary tools and equipment	Necessary tools and equipment	Necessary rakes, shovels and other small tools
Materials	As needed	Expendable supplies	Expendable supplies	Expendable supplies	Lime and straw

Comments and Definitions: Requestor should indicate degree of main and manhole cleaning needed. Requestor to identify areas for cleaning and disposal site(s), and provide system maps to responder.

RESOURCE: WATER / WASTEWATER EMERGENCY AND GENERAL MANAGEMENT SUPPORT PERSONNEL AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Personnel					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Ability to step into utility management role to supplement on-site personnel	Utility emergency management support team	Utility general manager / director / deputy director or operations level of capability	Individual with experience in Water / Wastewater disaster response and recovery work documentation	Components of Type I – III
Personnel	Total persons	2 - 4	1 - 2	1	1
Team Composition	Team member capabilities for work indicated	Qualified incident commander and individuals experienced in other NIMS / ICS roles	1 – 2 Qualified water / wastewater agency or operations manager	Individual with ability to provide assistance with record-keeping to meet FEMA reimbursement requirements	Components of Type I – III
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 – 2 Light-duty vehicles preferred	1 Light duty vehicle preferred	1 Light duty vehicle preferred	NA
Other Equipment	Other specific equipment	2- 4 Laptop computers	1 – 2 Laptop computers	Laptop computer	NA
Materials	As needed	NA	NA	NA	NA

Comments and Definitions: These personnel resource types will often be provided in combination with one-another. While personnel capable of fulfilling Type III will often be provided in groups of more than one, they are not in a team framework and are defined in the individual mode. These personnel may often be provided by a responder in support of other resources provided. When command personnel are provided by a responder, authorities and responsibilities must be clearly established with the requestor.

RESOURCE: WATER / WASTEWATER PUBLIC INFORMATION OFFICER (PIO) PERSONNEL AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Personnel					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Draft press releases, coordinate media briefings and inquiries	Draft press releases, coordinate media briefings, public notices and inquiries	Assist with drafting press releases, coordinate media briefings, public notices and inquiries	Assist with language translation.	NA
Personnel	Total persons	1 - 2	1	1	NA
Team Composition	Team member capabilities for work indicated	1 – 2 Qualified Public Information Officer, NIMS and crisis communications training and message mapping experience preferred	Qualified assistant Public Information Officer, NIMS and crisis communications training and message mapping experience preferred	Technical specialist with foreign language capability	NA
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	1 Light-duty vehicle preferred	NA
Other Equipment	Other specific equipment	Laptop computer	Laptop computer	Laptop computer	NA
Materials	As needed	Draft message templates and other PIO resources that can be provided	Draft message templates and other PIO resources that can be provided	Translate draft message templates and other PIO resources that can be provided into preferred language other than English	NA

Comments and Definitions: Requestor should indicate any multi-lingual requirements.

RESOURCE: WATER AND SEWER MAIN, VALVE AND MANHOLE LOCATING AND SEWER CCTV TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Main and valve locating	Locating of water mains, sewer mains, valves and manholes	Sewer mains CCTV	NA	Components of Type I Team
Personnel	Total persons	2	2	NA	1-2
Team Composition	Team member capabilities for work indicated	2 Locating technicians	1 Sewer CCTV lead technician 1 Sewer CCTV technician	NA	Any portion of Type I that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	2 Light-duty pick-up trucks	1 Sewer CCTV truck	NA	Any portion of Type I that can be provided
Other Equipment	Other specific equipment	Locating equipment GPS equipment, if possible	Necessary CCTV support equipment	NA	Any portion of Type I that can be provided
Materials	As needed	Marking Paint and expendable supplies	As needed	NA	NA

Comments and Definitions: Requestor should provide system maps and indicate type of mains in need of location. GPS coordinate information should be provided when possible. These teams may often be provided by a responder in support of other resources provided. Locators may be provided in any quantity, with a minimum of two. CCTV team may need to be supported by a jet / vac truck team. Supervision and coordination by a representative of the requestor is strongly preferred.

Types of main materials to be located: _____

RESOURCE: WATER / WASTEWATER HEALTH AND SAFETY AND ENVIRONMENTAL COMPLIANCE PERSONNEL AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Personnel					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Ability to provide necessary compliance indicated and oversight of on-site personnel and activities	Qualified Water / Wastewater health and safety compliance officer	Qualified Water / Wastewater environmental compliance officer	NA	NA
Personnel	Total persons	1	1	NA	NA
Team Composition	Team member capabilities for work indicated	1 Qualified water / wastewater health and safety compliance officer, trained in HAZWOPER and other applicable requirements	1 Qualified water / wastewater environmental compliance officer, with expertise in SDWA, CWA, CAA, RCRA, and other CFR 49	NA	NA
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Light-duty vehicle	1 Light-duty vehicle	NA	NA
Other Equipment	Other specific equipment	Laptop computer	Laptop computer	NA	NA
Materials	As needed	Health and safety regulatory resource materials	Health and safety regulatory resource materials	NA	NA

Comments and Definitions: If possible, a Health and Safety Officer should be provided with responding mutual aid and assistance teams. This ensures familiarity with the responders and their practices.

RESOURCE: WATER / WASTEWATER ELECTRICAL GENERATOR AND DIRECT DRIVE TEAMS AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Capable of providing, delivering, and connecting generator of KW indicated	125 KW or greater, based upon FEMA generator resource types (See Appendix I)	Less than 125 KW	Direct drive units	Support in starting generators where already existing
Ideal Team Size	Total persons	2	2	2	1 - 2
Team Composition	Team member capabilities for work indicated	1 Qualified electrician 1 Electrician's assistant	1 Qualified electrician 1 Electrician's assistant	1 Qualified mechanic 1 Mechanic's assistant	1 Qualified electrician or mechanic 1 – 2 Electrician's or mechanic's assistant
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Truck capable of pulling generator(s) delivered	1 Truck capable of pulling generator(s) delivered	1 Truck capable of pulling drive unit(s) delivered	1 Pick-up truck
Other Equipment	Other specific equipment	Necessary tools for generator connection	Necessary tools for generator connection	Necessary tools for drive unit connection	Necessary tools for generator start-up
Materials	As needed	Mining cables and other necessary materials for generator connection	Mining cables and other necessary materials for generator connection	Necessary materials for drive unit connection	Materials that may be necessary for generator start-up

Comments and Definitions: Requestor must specify KW and voltage of generators needed or existing. Requestor should indicate type of connection provisions in place. Trailer-mounted generators are preferred to skid-mounted. Portable switch-gear preferred. Refueling arrangements must be established. RPM of direct drive units must be specified.
Volts: 480 _____ 4160 _____ RPM: 540 _____ 1100 _____

RESOURCE: CONTROL SYSTEMS, SCADA AND RADIO SYSTEMS REPAIR AND RESTORATION TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Capable of repairing and restoring SCADA and radio telemetry systems	Capable of repairing and restoring plant control systems, PLC, etc.	Capable of repairing and restoring remote SCADA and radio telemetry systems	Capable of repairing radio communications systems	Capable of repairing and replacing in-ground communications and control cables
Ideal Team Size	Total persons	2	2 – 4	1 - 2	2 - 4
Team Composition	Team member capabilities for repairs indicated	1 Qualified plant controls technician 1 Support technician	1 Qualified plant controls technician 1 – 3 Support technicians	1 Qualified plant controls technician 0 - 1 Support technician	1 Team leader 1 – 3 utility workers
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Pick-up truck	1 - 2 Heavy-duty pick-up trucks 1 bucket truck	1 Heavy-duty pick-up truck 1 bucket truck	1 Heavy-duty pick-up truck 1 small backhoe or trencher preferred
Other Equipment	Other specific equipment	Necessary tools for plant controls and PLC repairs, fluke meter, 4-20 milliamp signal generator, laptop computer with serial port	Necessary tools for SCADA repairs, fluke meter, 4-20 milliamp signal generator, laptop computer with serial port	Necessary tools for SCADA repairs, laptop computer with serial port	Necessary tools for cable repairs, hand-digging tools
Materials	As needed for repairs indicated	Necessary general materials for plant controls and PLC repairs	Necessary general materials for SCADA repairs	Necessary general materials for radio system repairs	Necessary general materials for cable repairs

Comments and Definitions: SCADA = Supervisory Control and Data Acquisition. PLC = Programmable Logic Controllers. Requestors should indicate types of controls, PLC, SCADA, telemetry equipment, radios and network cable (e.g., fiber optic, copper) used. Major repair components to be provided by requestors or others, unless otherwise arranged.

RESOURCE: VEHICLE AND EQUIPMENT MAINTENANCE, REPAIR AND FUELING TEAMS AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Degree and type of repair capability	Heavy field repairs of vehicles and heavy equipment	Light repairs, lubrication and other preventive maintenance of vehicles and light equipment	Tire repairs	Vehicle and equipment fueling
Ideal Team Size	Total persons	2	1 - 2	1 - 2	1
Team Composition	Team member capabilities for work indicated	1 Qualified mechanic 1 Vehicle repair technician	1 Qualified mechanic 0 – 1 Mechanic's assistant	1 Tire mechanic 0 – 1 Tire mechanic's assistant	1 fuel truck operator
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 1-Ton or larger truck with equipment boom	1 Heavy duty pick-up truck	1 Tire truck or equivalent	1 Fuel truck with capacity for at least 100 gallons of gasoline and 100 gallons of diesel fuel
Other Equipment	Other specific equipment	Necessary tools and equipment	Necessary tools and equipment	Necessary tools and equipment	Any portion of other types that can be provided
Materials	As needed	Necessary materials for maintenance and repairs of known equipment	Necessary materials for maintenance and repairs of known equipment	Necessary materials for maintenance and repairs of known equipment	NA

Comments and Definitions: Type I, II and III teams may be used in conjunction with each other. These teams, especially the Type III tire repair team and Type IV fueling team, will often be provided in conjunction with other responding teams. Fuel truck to be initially provided full of fuels, other than that which may be needed in transit. Additional fuels to be provided by requestors or others.

RESOURCE: FACILITY ACCESS RESTORATION AND DEBRIS CLEARING TEAM AWWA April 2008					
Category: Public Works and Engineering (ESF 3) Subcategory: Water and Wastewater Kind: _X_ Team					
Component	**Metric**	**Type I**	**Type II**	**Type III**	**Type IV**
Capability	Clearing of debris and other measures to establish access to facilities	Heavy "cut and shove" clearing of vegetative and structural storm debris with personnel and heavy equipment	Light debris clearing by personnel only	General facility repairs	Components of Type I – III Teams
Ideal Team Size	Total persons	2 - 4	2+	2+	1-5
Team Composition	Team member capabilities for work indicated	1 Team leader 0 - 1 Backhoe-loader operator 1 – 2 Chain saw operators 0 - 2 Utility workers	1 Team leader 1+ Chain saw operator(s) or utility worker(s)	2+ Building maintenance mechanics with experience in repairs of doors, windows, etc.	Any portion of Type III that can be provided
Vehicles and Heavy Equipment	Number and type of vehicles and heavy equipment	1 Backhoe-loader 1 Team truck	1 Team truck	1 Team truck	Any portion of Type III that can be provided
Other Equipment	Other specific equipment	2 18"+-Bar chain saws and other necessary tools and equipment	2 18"+-Bar chain saws and other necessary tools and equipment	Necessary tools and equipment	Any portion of Type III that can be provided
Materials	As needed	NA	NA	NA	NA

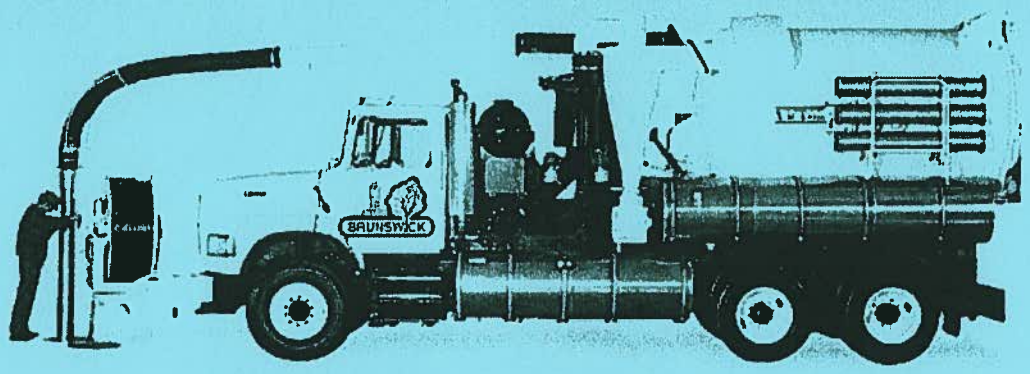
Comments and Definitions: These teams can be used in various combinations. A Type III team can be used in support of various operations requiring bulk hauling, such as for hauling of spoil materials, stone, etc. This resource may also be provided by other public works agencies. Requestor should provide a representative to point out the location of debris-covered appurtenances to avoid accidental damage during debris clearing opera.

Additional Equipment Definitions

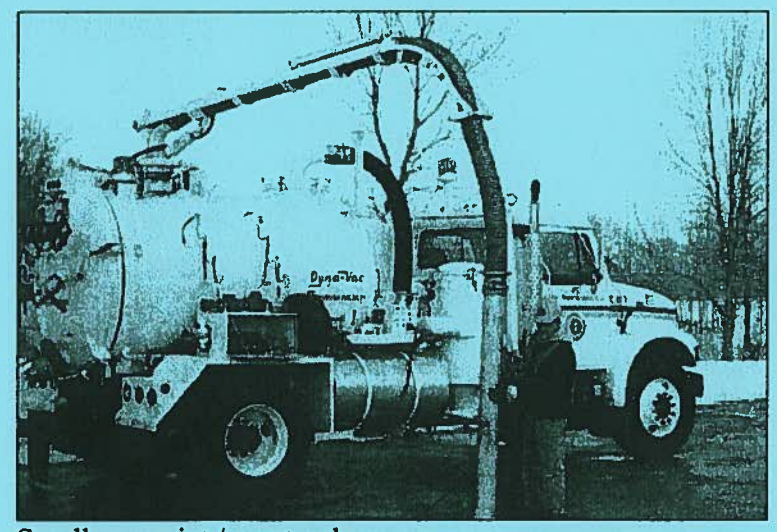
This Appendix section provides basic descriptions and definitions for specialized water sector equipment that is identified on some of the teams described in this manual and is not detailed in FEMA resource descriptions.

Sewer Jet / Vac Truck

A sewer jet / vac truck, also sometimes referred to as a "combination truck", is a truck with a clean water tank of at least 750 gallons and the capability for jetting sewer mains with a stream of water of at least 10 gpm at 2,000 psi and for vacuuming material from the mains. For the purpose of this manual, a large jet / vac truck is one with a debris body of 10 cubic yards or greater and a small jet / vac truck is one with a debris body of less than 10 cubic yards.



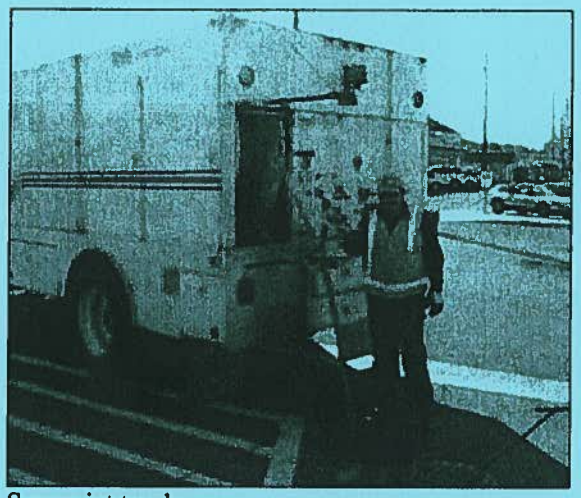
Large sewer jet / vac truck



Small sewer jet / vac truck

Sewer Jet Truck

A sewer jet truck is a truck with a clean water tank of at least 500 gallons and the capability for jetting sewer mains with a stream of water of at least 10 gpm at 2,000 psi. Sewer jet units can also be trailer-mounted.



Sewer jet truck

Sewer Power Rod Truck

A sewer power rod truck is a truck equipped with at least 500' of continuous or sectional rods of at least 5/16" diameter, driven by a motor of at least 10 hp, for clearing sewer main obstructions. Sewer power rod units may also be trailer-mounted.

Sewer power rod truck

Water Valve Operating Truck

A water valve operating truck is a truck with a mechanical valve operator capable of turning water valves at least 5 rpm with a minimum of 1,000 foot-pounds of torque. A water valve vacuum unit provides at least 250 cfm of vacuum through a 2" hose and wand, through a filter and into a debris body of at least 10 cubic feet. Either the valve operator or the vacuum unit may also be trailer-mounted.

Water valve truck with vacuum unit