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Formerly Utilized Sites  
Remedial Action Program  
(FUSRAP)

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**Maywood Chemical Company Superfund Site**

**ADMINISTRATIVE RECORD**

**Operable Unit 1 – Soils and Buildings**

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**Document Number**

**MISS-195**

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**US Army Corps  
of Engineers®**  
New York District

# **WATER MANAGEMENT PLAN**

## **FUSRAP MAYWOOD SUPERFUND SITE MAYWOOD, NEW JERSEY**

**SITE-SPECIFIC ENVIRONMENTAL RESTORATION  
CONTRACT NO. W912DQ-13-D-3016 TASK ORDER 001**

*Prepared for*



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**December 2013  
Revision 0**

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MAYWOOD, NEW JERSEY

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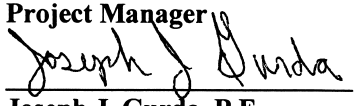
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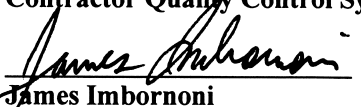
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## REVISIONS

Revision No.	Description of Revision	Date
0	Transition to new remediation contractor	November 2013

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## ACRONYMS AND ABBREVIATIONS

BCUA	Bergen County Utilities Authority
BMP	Best Management Practice
BOD	Biological Oxygen Demand
DAR	Design Analysis Report
FMSS	FUSRAP Maywood Superfund Site
FUSRAP	Formerly Utilized Sites Remedial Action Program
GEPP	General Environmental Protection Plan
gpd	gallons per day
gpm	gallons per minute
LEL	Lower Explosive Limit
mg/L	milligrams per liter
MHTDP	Materials Handling/Transportation Disposal Plan
MISS	Maywood Interim Storage Site
NA	Not applicable
NJDEP	New Jersey Department of Environmental Protection
NYS&W	New York, Susquehanna, & Western
O&M	Operation and Maintenance
pCi/L	picocuries per liter
Ra-226	Radium-226
ROD	Record of Decision
TAL	Total Analyte List
TCL	Target Compound List
Th-232	Thorium-232
TDS	total dissolved solids
TPH	total petroleum hydrocarbon
TSS	total suspended solids
U-238	Uranium-238
UFP-QAPP	Uniform Federal Policy-Quality Assurance Project Plan
ug/L	micrograms per liter
USACE	U. S. Army Corps of Engineers
USDOE	U.S. Department of Energy
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
WMP	Water Management Plan

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## 1.0 INTRODUCTION

The scope of work for this task order is the remediation of the Formerly Utilized Sites Remedial Action Program (FUSRAP) Maywood Superfund Site according to the provisions and criteria set forth in the Maywood Site Specific Environmental Remediation Contract. The *Water Management Plan (WMP)* addresses the necessary actions to ensure compliance for the management, treatment, and discharge of water generated from the FUSRAP Maywood Superfund Site (FMSS). Impacted water generated from the site will be treated and discharged in accordance with the Treated Groundwater Discharge Permit issued by the Bergen County Utilities Authority (BCUA) as well as, applicable local, state, and federal regulations. The procedures that encompass containment, collection, treatment, and discharge of all water generated during construction activities are described in this document.

The FMSS consists of 88 designated residential, commercial, municipal, and government-owned properties in the Boroughs of Maywood and Lodi, and the Township of Rochelle Park in Bergen County, New Jersey. The majority of the remediation activities will be conducted at the Maywood Interim Storage Site (MISS). The MISS is an 11.7-acre lot that previously was part of a 30-acre property owned by the Stepan Company. Remediation activities have also taken place on properties located within a few miles of the MISS. These off-site locations are known as Vicinity Properties. The U.S. Department of Energy (USDOE) began investigating the FMSS and surrounding areas in 1983, and subsequently acquired the MISS from the Stepan Company in 1985. As of 2003, the U.S. Army Corps of Engineers (USACE) published the *Final Record of Decision for Soils and Buildings at the FUSRAP Maywood Superfund Site (ROD)* (USACE, 2003) to address soil and building contamination on the remaining 24 commercial and governmental FMSS properties.

Remedial excavation and restoration of the remaining vicinity properties have been completed in accordance with the ROD, except for the following properties and the MISS: 149-151 Maywood Avenue, New York, Susquehanna, & Western (NYS&W) Railroad, and 100 West Hunter Avenue. This revision to the *WMP* focuses on the control, treatment, and discharge of construction water associated with remedial excavation activities for these remaining properties.

### 1.1 WATER TYPES AND MANAGEMENT OPERATIONS

Water will be actively managed on the FMSS at all times. Protecting water quality and minimizing the volume of contaminated water required for treatment and discharge is the first step to managing water on the FMSS. The two categories of water quality that will be managed during construction activities are non-impacted water and impacted water (water presumed to be contaminated).

Non-impacted water will be classified as precipitation on uncontaminated, undisturbed areas that flows to drainage points in and around the area of construction without contacting contaminated soils or debris in the disturbed areas. In the event of precipitation, surface flow will be diverted from disturbed areas by using grading, berms, trenches, and ditches. Best Management Practices (BMP) for surface water and sediment control are identified in the *General Environmental Protection Plan (GEPP)* (USACE, 2013a) and include the use of silt fences and hay bales to minimize the movement of sediment via surface runoff. The BMPs also will be included on the design drawings for each property.

Impacted water will be classified as any water (i.e. groundwater, precipitation, or storm water runoff) that contacts potentially contaminated soil or contaminated equipment in the FMSS and is presumed contaminated. Water considered “impacted” will be collected, treated, and discharged to the BCUA sanitary sewer under the treated groundwater discharge permit. Impacted water will be controlled within the excavations whenever possible through the use of berms and appropriate grading before being pumped into vacuum trucks for transport and treatment at the construction water treatment system. The quality and quantity of impacted water will vary throughout the FMSS based on the variance in soil and

groundwater contamination and overall excavation requirements. Only potable water obtained from a public water supply will be used for dust control at the MISS and Vicinity Properties.

The goals of water management at the FMSS are:

- Minimize the volume of impacted water that requires treatment and discharge.
- Efficiently and safely contain, collect, treat and dispose of all impacted water from construction operations.
- Minimize the impact of water on construction operation performance.

## 1.2 MANAGEMENT OF IMPACTED WATER

The *WMP* establishes procedures for managing impacted water generated during construction activities at the FMSS. Because remediation of the contaminated fill material will require excavation at depths below the groundwater table, construction dewatering will be necessary to facilitate the removal of contaminated materials. Dewatered liquids requiring treatment will consist of groundwater, precipitation, and storm water runoff. Impacted waters are expected to contain suspended solids contaminated with radionuclides Radium-226 (Ra-226), Thorium-232 (Th-232), and Uranium-238 (U-238); chemical constituents such as Target Compound List (TCL) volatile organic compounds (VOCs); Total Analyte List (TAL) metals; and other inorganic compounds. The water generated at the FMSS will be transported to the treatment system via vacuum trucks and treated using a four phase treatment process. The four stage process will serve as pretreatment to BCUA's treatment process for wastewater. The parameters considered in the design of the construction water treatment system are discussed in **Section 2.0**, and the treatment processes are described in detail in **Section 3.0** of this document. Following treatment, the water will be discharged to the BCUA sanitary sewer located in the MISS. Periodic monitoring of the effluent will be performed in accordance with the BCUA treated groundwater discharge permit, which is further described in **Section 4.0**. **Section 4.0** also identifies operation and maintenance (O&M) responsibilities in order to keep the treatment system maintained and operating properly. All construction activities addressed in the *WMP* are further described in the *GEPP* (USACE, 2013a) and the *Remedial Action Work Plan* (USACE, 2013b). All activities associated with the construction water treatment system will be performed in accordance with the Accident Prevention Plan (APP; USACE, 2013c).

## 2.0 DESIGN PARAMETERS AND REQUIREMENTS

The volume and quality of impacted water and the BCUA treatment discharge criteria were the basic design parameters for the construction water treatment system. The design also considered storm event calculations and groundwater infiltration calculations. These parameters are discussed in detail in the following sections.

### 2.1 WATER SOURCES AND VOLUME

In order to manage the water on-site, the potential volume of impacted water will need to be minimized, if possible. Sources of impacted water include groundwater infiltration, precipitation, storm water runoff, and water seepage from Lodi Brook Culvert. The volume of impacted water to be managed will depend on a combination of the following:

- Depth of excavation relevant to groundwater
- Sequencing of excavation and restoration schedules (the number and size of active excavations on each property)
- Weather conditions
- Control of surface water run-off

### 2.2 STORM EVENT CALCULATIONS

An average of 4.2 inches of rainfall in a 24-hour period was assumed for the design storm calculation. This is the average of the maximum two-year storm (3.4 inches) and the maximum ten-year storm (5.1 inches) in the area of the FMSS ([www.worldclimate.com](http://www.worldclimate.com)). Assuming total diversion of storm water run-off away from the excavation is achieved, the volume of storm water that collects in an excavation depends on the rainfall over the area footprint of the excavation. Allowing for an excavation footprint of 12,000 to 15,000 square feet based on a maximum (i.e., worst case) excavation and restoration sequencing scenario, a range of 30,000 to 50,000 gallons of water is estimated to collect over a 24-hour period design storm event.

### 2.3 GROUNDWATER CALCULATIONS

The volume of groundwater infiltration is dependent on the excavation dimensions, hydraulic flow, and soil permeability. The maximum range for groundwater infiltration from the various clusters throughout the project is 24,000 gallon per day (gpd) to 56,000 gpd, based on the estimated average groundwater volumes calculated and reported in the Design Analysis Report (DAR) for each cluster. For groundwater management alone, a flow rate range of 17 to 39 gallons per minute (gpm) is estimated over a 24-hour period. Depending on the depth of contaminants that must be excavated relative to the groundwater table, location-specific hydrogeologic and other considerations, excavation dewatering methods selected may result in the production of considerably greater dewatering discharge flowrates. The specific range will change for each property and the anticipated flow rates are presented and discussed in the cluster-specific DARs.

### 2.4 WATER QUALITY AND RADIONUCLIDES OF CONCERN

The primary contaminants identified in the subsurface soils at the FMSS are radiological constituents. The radionuclides of concern for soil removal at the FMSS are Ra-226, Th-232, and U-238. These contaminants are not readily soluble; therefore, pretreatment radiological standards set by the New Jersey

Department of Environmental Protection (NJDEP) for BCUA will be met by removing suspended solids from impacted waters.

In addition to radiological contaminants, the potential for chemical contamination in both the soil and groundwater at the FMSS historically has been reported, and is documented in the *Remedial Investigation Report for the Maywood Site* (USDOE, 1992) and the *Groundwater Remedial Investigation Phase I* (USACE, 2000). Specifically, VOCs, TAL metals, and other inorganic compounds may be present in groundwater or become dissolved in groundwater by soil contamination.

## 2.5 DISCHARGE PERMIT CRITERIA

A permit equivalency is required to discharge treated water to BCUA. The BCUA has issued a treated groundwater discharge permit for the construction water treatment system at the FMSS. The current permit, #1050, classifies the treatment system in the significant industrial user category. The pretreatment requirements for discharge are provided by BCUA with guidance on the radiological constituents from the NJDEP. The water treatment system will treat raw construction water to meet the permit limits. The treatment effluent limitations established for the system at the FMSS are provided in **Table 1**. A copy of the treated groundwater discharge permit #1050 is included in **Appendix A**.

**Table 1 – Bergen County Utilities Authority Discharge Permit Limits<sup>1</sup>**

Contaminant	BCUA Permit Limit (mg/L) <sup>2</sup>
Acrolein	0.30
Acrylonitrile	8.40
Aluminum, Total	NA
Arsenic, Total	NA
Barium, Total	NA
Benzene	0.85
Beryllium, Total	NA
Boron, Total	NA
Bromoform	1.00
Cadmium, Total	NA
Calcium, Total	NA
Carbon Tetrachloride	0.15
Chloride	NA
Chlorobenzene	10.60
Chloroethane	21.50
Chloroform	1.75
Chromium, Total	NA
Cobalt, Total	NA
Copper, Total	1.0 (daily max)
1,2-Dichlorobenzene	21.60
1,4-Dichlorobenzene	26.30
1,1-Dichloroethane	19.40
1,2-Dichloroethane	4.50

**Table 1 – Bergen County Utilities Authority Discharge Permit Limits<sup>1</sup> (Continued)**

<b>Contaminant</b>	<b>BCUA Permit Limit (mg/L)<sup>2</sup></b>
1,1-Dichloroethylene	0.14
1,2-trans-Dichloroethylene	17.00
1,2-Dichloropropane	21.20
Ethyl Benzene	9.30
Iron, Total	NA
Lead, Total	NA
Magnesium, Total	NA
Manganese, Total	NA
Mercury, Total	NA
Methylene Chloride	17.00
Nickel, Total	NA
Nitrate	NA
Potassium, Total	NA
Selenium, Total	NA
Silicon, Total	NA
Silver, Total	NA
Sodium, Total	NA
Sulfate	NA
Sulfide	NA
1,1,2,2-Tetrachloroethane	3.85
Tetrachloroethylene	1.80
Thallium, Total	NA
Toluene	8.10
1,1,1-Trichloroethane	65.00
1,1,2-Trichloroethane	8.60
Trichloroethylene	3.30
Trichlorofluoromethane	6.25
Vanadium, Total	NA
Vinyl Chloride	0.005 (det. limit of 0.005)
Zinc, Total	NA
Cyanide	0.50 (daily max)
Oil and Grease (petroleum origin)	100 (monthly avg) 150 (single sample)
Oil and Grease (non-petroleum origin)	200 (daily max)
Explosivity	5% LEL on 2 successive readings 10% LEL on any 1 reading
Biochemical Oxygen Demand (BOD)	BCUA must be notified > 350



**Table 1 – Bergen County Utilities Authority Discharge Permit Limits<sup>1</sup> (Continued)**

Contaminant	BCUA Permit Limit (mg/L) <sup>2</sup>
Total Organic Carbon (TOC)	NA
Total Dissolved Solids (TDS)	NA
Total Suspended Solids (TSS)	BCUA must be notified > 350
pH	5.5-9.5 standard units (daily range)
Gross Alpha (including Radium-226 but excluding Uranium and Radon) <sup>3</sup>	15 pCi/L (min. det. limit of 3 pCi/L)
Gross Beta	50 pCi/L (min. det. limit of 4 pCi/L)
Radium-226 plus Radium-228	5 pCi/L (min. det. limit of 1 pCi/L)
Thorium-228	15 pCi/L <sup>4</sup>
Thorium-230	15 pCi/L <sup>4</sup>
Thorium-232	15 pCi/L <sup>4</sup>
Uranium-234	~ 9.5 pCi/L <sup>5</sup>
Uranium-235	~1.1 pCi/L <sup>5</sup>
Uranium-238	~ 9.5 pCi/L <sup>5</sup> min. det. limit of 0.5 pCi/L
Uranium, Total	0.03 (min. det. limit of 0.001)

Note(s):

<sup>1</sup> Permit limits based on BCUA Permit # 1050 dated 09/01/2011-08/31/2014.

<sup>2</sup> Unless otherwise noted.

<sup>3</sup> As stated in N.J.A.C. 7:10-5.2(a)10 by reference to 40 CFR 141.66(c)

<sup>4</sup> If an alternative analysis method is used, i.e. radiochemistry, then these limits apply as alpha emitters.

<sup>5</sup> If an alternative analysis method is used, i.e. radiochemistry, then these limits apply by apportioning the 30 ug/L limit for Total Uranium to the natural isotopes assuming U-total specific activity of 0.67 pCi/g and uranium activity fractions of 0.473 for U-234 and U-238 and 0.054 for U-235.

mg/L denotes milligrams per liter.

ug/L denotes micrograms per liter

pCi/L denotes picocuries per liter

LEL denotes Lower Explosive Limit

NA denotes not applicable.

### 3.0 TREATMENT PROCESSES OF THE CONSTRUCTION WATER SYSTEM

The following sections detail the four processes used to treat impacted water at the FMSS.

#### 3.1 PROCESS FLOW OF CONSTRUCTION WATER TREATMENT

The level of treatment required is based upon effluent pretreatment standards required by the BCUA and NJDEP. Four stages of treatment will be required to meet the treatment standards at the FMSS. Each phase of treatment utilizes existing, demonstrated technology. However, the treatment process is configured to allow some flexibility in operation, and in particular, allow certain processes to be bypassed in the event they are not required for treatment. **Two treatment processes within the water treatment system target elevated levels of arsenic in water (Phases II and IV). However, the water will bypass these treatment processes if field testing reveals that arsenic levels are below applicable levels.** Additional information regarding the four phases of treatment is provided in the following sections. **Figures 1 through 3** depict the different stages of treatment at the FMSS.

#### 3.2 PHASE I OF TREATMENT

Impacted water will typically be pumped from the site of excavation to either a temporary holding tank (frac tank) or directly into a vacuum truck for immediate transport to the MISS. From the vacuum truck, the water will be pumped into one of several frac tanks located at the water treatment system. Influent storage capacity will vary depending upon project needs. However, in general, approximately 150,000 gallons of on-site influent storage capacity will be available. If needed, additional storage tanks will be added to the treatment system to increase storage capacity. From the holding tanks, the water will be directed into a 50,000 gallon equalization tank located just outside of the treatment trailers. Use of these temporary storage tanks allows for solids settling, and also allows for control over the water level in the equalization tank depending on the amount of water awaiting treatment. The equalization tank also allows for solids settling and will be used to regulate the amount of water being processed through the system. Small quantities of flocculant will be added to the equalization tank to aid with solids settling. Additionally, calcium hypochlorite solution may be used to control algae growth, on an as needed basis. All influent samples for radiological and chemical analyses will be collected from the equalization tank. Phase I of the treatment process is intended to help minimize the amount of suspended solids transported from the excavation to the downstream water treatment processes. Solids generated as part of the Stage I treatment process will be disposed of with the contaminated soil. **Figure 1** depicts the first phase of treatment, as well as, an overview of the entire treatment system at the FMSS.

#### 3.3 PHASE II OF TREATMENT

Stage II of the treatment process will target arsenic removal if elevated arsenic concentrations are identified in the water. This is the arsenic pretreatment system. A sample of the influent will be collected daily and analyzed by the on-site laboratory to determine if arsenic concentrations require treatment. Arsenic concentrations will be compared to the values listed in **Appendix B** to determine if treatment for arsenic is necessary.

If arsenic treatment is required, the water will be directed from the equalization tank into a multi-chamber chemical mixing tank for the addition and mixing of potassium permanganate, ferric chloride, and a polymer for coagulation. Each chemical will be added and mixed in a separate chamber of the three-chambered mixing tank. The water then will be directed into a sedimentation tank for further solids settling before continuing onto the next phase of the treatment process. The arsenic pretreatment system is presented as **Figure 2**.

**If arsenic treatment is not required, the water will be directed from the equalization tank in Phase I to a treatment trailer in Phase III, and the Phase II treatment process will be bypassed.**

### 3.4 PHASE III OF TREATMENT

Phase III of the treatment process will consist of two treatment trailers that run in parallel. The water will be directed from the baffled roll-off tanks (in arsenic pretreatment) or the equalization tank (if arsenic treatment is not required) to either one of the two treatment trailers, as both trailers have identical equipment and treatment processes. This treatment phase will include a joint physical and chemical process to remove any remaining solids not previously removed during Phases I and II and adjustment for pH.

The Phase III treatment process will provide chemical addition for pH adjustment, if necessary. Adjustment for pH will take place in the clarifier before the water enters the storage tank. From the storage tank, the water will be directed through a series of two bag filters and six cartridge filters (housed in one cartridge canister) to further remove sediments and fines. Following the filters, the water will be processed through a granular activated carbon vessel to aid with the removal of VOC concentrations. The water then shall be treated using an ion exchange process to remove concentrations of dissolved radiological contaminants radium and uranium. The water first will enter the radium resin vessel and then pass through the uranium resin vessel for treatment. The water will be directed to the arsenic post-treatment trailer if arsenic was detected in the influent. If not, the effluent will be directed from the uranium resin vessel through a flow meter and discharged into the sanitary sewer located at the MISS. The filter bags and cartridges will be disposed of along with the contaminated soil. **Figure 1** depicts the Phase III treatment process.

### 3.5 PHASE IV OF TREATMENT

The final phase of water treatment at the FMSS is arsenic post-treatment. **If arsenic is not detected in the influent, this treatment phase will be bypassed and the effluent will be discharged directly to the sanitary sewer.** If treatment for arsenic is required, the water will be directed into a series of two granular ferric hydroxide resin vessels for final treatment and polishing. There will be two sets of ferric hydroxide resin tanks in the post arsenic treatment process to accommodate water discharged from Treatment Trailer 1 and Treatment Trailer 2 in Phase III. The treatment trailers will be piped directly to a set of resin tanks in the arsenic post-treatment system. Also, a backwash tank in the post treatment system will allow for the resin units to be backflushed periodically. Following the resin units, the effluent will pass through the flow meter and be discharged to the sanitary sewer at the MISS. The arsenic post-treatment process is presented as **Figure 3**.

### 3.6 OPERATION AND MAINTENANCE OF THE CONSTRUCTION WATER TREATMENT SYSTEM

The construction water treatment system at the MISS will operate an average of 8 to 10 hours per work day. The operating hours can be increased or decreased depending on the volume of impacted water required for treatment and the storage capacity available. If the storage capacity is not sufficient, the hours of operation can be increased to 24-hours per day to treat excess volumes of water. Storage is crucial in the control and management of impacted water during construction activities. Water storage constantly will be changing to adjust for the anticipated flux in volume of water awaiting treatment and discharge.

The construction water treatment system was initially designed based upon a maximum flow rate of 60 gpm. However, since the initial design of the system, an additional treatment unit was added to the Phase III treatment process and the arsenic pre-treatment and post-treatment units were incorporated into the system. The flow rate of the system varies depending on the individual treatment processes that must be operated in order to comply with the permit effluent limitations. The arsenic pre-treatment unit is

designed for a maximum flow rate of 100 gpm or 60,000 gpd during 10-hours of operation per day. The two treatment trailers in Phase III each will process water at a rate of 60 gpm (36,000 gpd for each trailer during a 10-hour work day). The arsenic post-treatment unit can process a maximum combined flow of 120 gpm directed from the two treatment trailers in Phase III (72,000 gpd). The flow rates for each treatment phase are summarized in **Table 2**.

**Table 2 – Design Basis Flow Rates for Treatment Phases II, III, and IV**

Treatment Phase	Unit	Flow Rate (gpm)	Total Gallonage per 10-hr Day (gpd)
II	Arsenic Pre-Treatment	100	60,000
III	Treatment Trailer 1	60	36,000
	Treatment Trailer 2	60	36,000
IV	Arsenic Post-Treatment	120	72,000

Note(s):

*gpm denotes gallons per minute.*

*gpd denotes gallons per day.*

Performance of the water treatment system will be monitored and measured by three parameters: contaminant concentration, flow rate, and pressure. The treatment system will remove suspended solids, dissolved radionuclides, and organic and inorganic compounds (as needed) in order to meet the pretreatment discharge standards of the BCUA.

Regular maintenance of the system will include, but is not limited to the following:

- Inspection of the system daily
- Monitoring the water levels of the equalization tank and frac tanks
- Recording pressure readings and effluent flow readings
- Changing the bag filters
- Changing the cartridge filters
- Backflushing the activated carbon vessels (annually)
- Backflushing the radium and uranium resin vessels
- Backflushing the ferric hydroxide resin vessels (in the arsenic post-treatment unit)
- Frac tank and equalization tank cleaning (annually)

Additional information regarding the operation and maintenance of the treatment system is detailed in the O&M manuals for each treatment unit. Impacted water generated from the O&M of the treatment system (i.e. backwash water from the filters, ion exchange, and resin units) will be returned to the start of the system and processed for treatment and discharge. All activities associated with the O&M of the system will be performed in accordance with the *APP* (USACE, 2013c). Treatment capabilities of the construction water treatment system will be monitored through monthly performance testing of the effluent.

### **3.7 MONITORING AND REPORTING REQUIREMENTS**

Monthly effluent sampling will be conducted at the construction water treatment system in accordance with the BCUA treated groundwater discharge permit. An effluent sample will be collected and analyzed for radiological and chemical constituents for every 500,000 gallons of water treated. The effluent sample will be collected when the treatment quantities have been reached, or at a minimum of once per month. Additionally, an effluent sample will be collected and analyzed for radiological constituents gross alpha and gross beta for every 125,000 gallons of water treated. The radiological samples will be analyzed by the on-site radionuclide laboratory and the chemical samples and trip blanks will be shipped to an off-site laboratory for analysis. The sampling point for the effluent samples collected at the MISS will be located between the uranium resin vessel and the discharge point into the sanitary sewer. An influent sample also will be collected at least once per month from the equalization tank for informational purposes. BCUA will be on-site at the FMSS every six months to collect a set of effluent samples (to be analyzed by BCUA's laboratory) and once each year to perform an inspection of the water treatment system and sanitary sewer outfall. A split sample usually is collected at the time of the BCUA sampling event and analyzed for a minimum of gross alpha and gross beta by the on-site laboratory. A list of the radiological and chemical analyses for the 500,000 gallon monthly effluent sample is presented in **Table 3**.

**Table 3 – Monthly Radiological and Chemical Analyses for Effluent**

Chemical Analyses	Radiological Analyses
TCL Volatile Organic Compounds (VOCs)	Gross Alpha (including Radium-226 but excluding radon and uranium)
TAL Metals	Gross Beta
Cyanide	Radium-226
pH	Radium-228
Total Dissolved Solids (TDS)	Thorium-228
Total Suspended Solids (TSS)	Thorium-230
Biological Oxygen Demand (BOD)	Thorium-232
Phenols	Uranium-234
Total Petroleum Hydrocarbons (TPH)	Uranium-235
Oil and Grease	Uranium-238

A self-monitoring report will be completed monthly and sent to BCUA in compliance with the groundwater discharge permit. The monthly report will summarize the average and maximum daily regulated wastewater flow, present the analytical results of the monthly effluent sampling, and include a copy of the chain of custodies with the sample times listed. The analytical data shall meet the data quality objectives established in the *Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP)* (USACE, 2013d).

### 3.8 MODIFICATION OF THE CONSTRUCTION WATER TREATMENT SYSTEM

The quality and quantity of impacted water will vary throughout the FMSS based on the variations in soil and groundwater contamination, time of year, and overall excavation requirements. Modifications in treatment system design and operation, if required to accommodate new site conditions in compliance with discharge permit limitations, may require prior approval by the BCUA.

### 3.9 TRANSPORTATION AND DISCHARGE

Vacuum trucks will be used to transport the liquid materials collected from the site of excavation to the treatment facility at the MISS in preparation for treatment and disposal. Water transported from one area to another, across public roadways, will be done in accordance with U.S. Department of Transportation (USDOT) regulations and the *Materials Handling/Transport and Disposal Plan (MHTDP)* (USACE, 2013e). The vehicle and driver transporting liquid materials will have the appropriate licenses and permits necessary for transporting the materials and the water will be USDOT classified. Spill prevention and protection during transportation and discharge will be followed in accordance with the *GEPP* (USACE, 2013a).

As stated previously, treated water will be discharged to BCUA via a sanitary sewer at the MISS in compliance with the BCUA treated groundwater discharge permit.

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## 4.0 REFERENCES

- 40 CFR 141.66 Maximum Contaminant Levels For Radionuclides.
- N.J.A.C. 7:10-5.2 Safe Drinking Water Act Rules, State of New Jersey
- USACE, 2000 *Phase I Groundwater Data Report*. Prepared by Shaw Environmental, Inc., Draft, November.
- USACE, 2003 *Final Record of Decision for Soils and Buildings at the FUSRAP Maywood Superfund Site*, Prepared by Shaw Environmental, Inc., August.
- USACE 2013a *General Environmental Protection Plan, FUSRAP Maywood Superfund Site*, Revision 0. Prepared by Cabrera Services, Inc., December. .
- USACE, 2013b *Remedial Action Work Plan, FUSRAP Maywood Superfund Site, Revision 0*. Prepared by Cabrera Services, Inc., December.
- USACE, 2013c *Accident Prevention Plan, FUSRAP Maywood Superfund Site, Revision 0*. Prepared by Cabrera Services, Inc., December.
- USACE, 2013d *Uniform Federal Policy-Quality Assurance Project Plan, FUSRAP Maywood Superfund Site, Revision 0*. Prepared by Cabrera Services, Inc., December.
- USACE, 2013e *Materials Handling/Transportation and Disposal Plan, FUSRAP Maywood Superfund Site, Revision 0*. Prepared by Cabrera Services, Inc., December..
- USDOE, 1992 *Remedial Investigation Report for the Maywood Site*. Prepared by Bechtel National Incorporated, December.



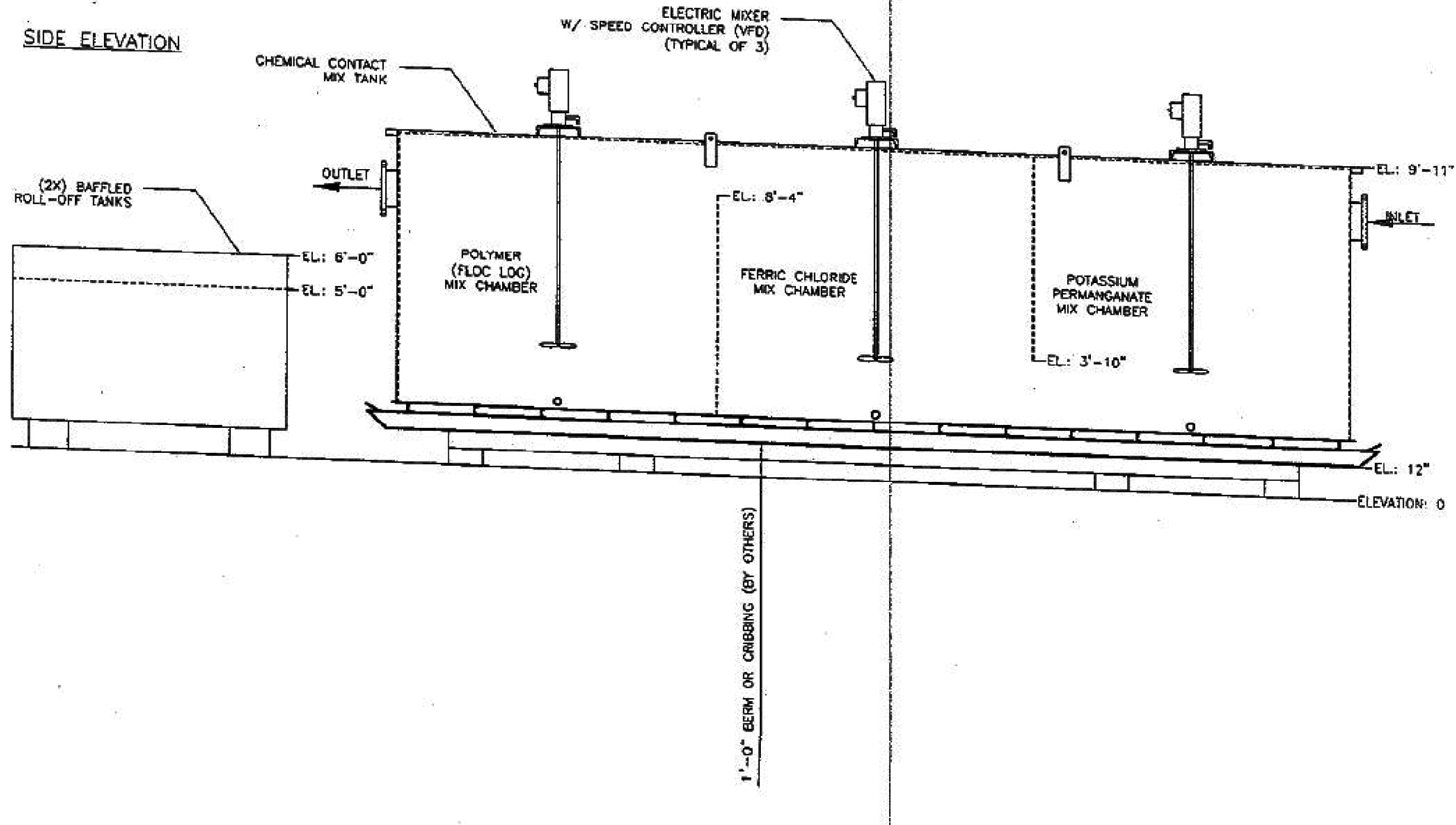
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## FIGURES

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**SIDE ELEVATION**




**CABRERA SERVICES**  
 1106 N. CHARLES ST.  
 SUITE 300  
 BALTIMORE, MD 21201

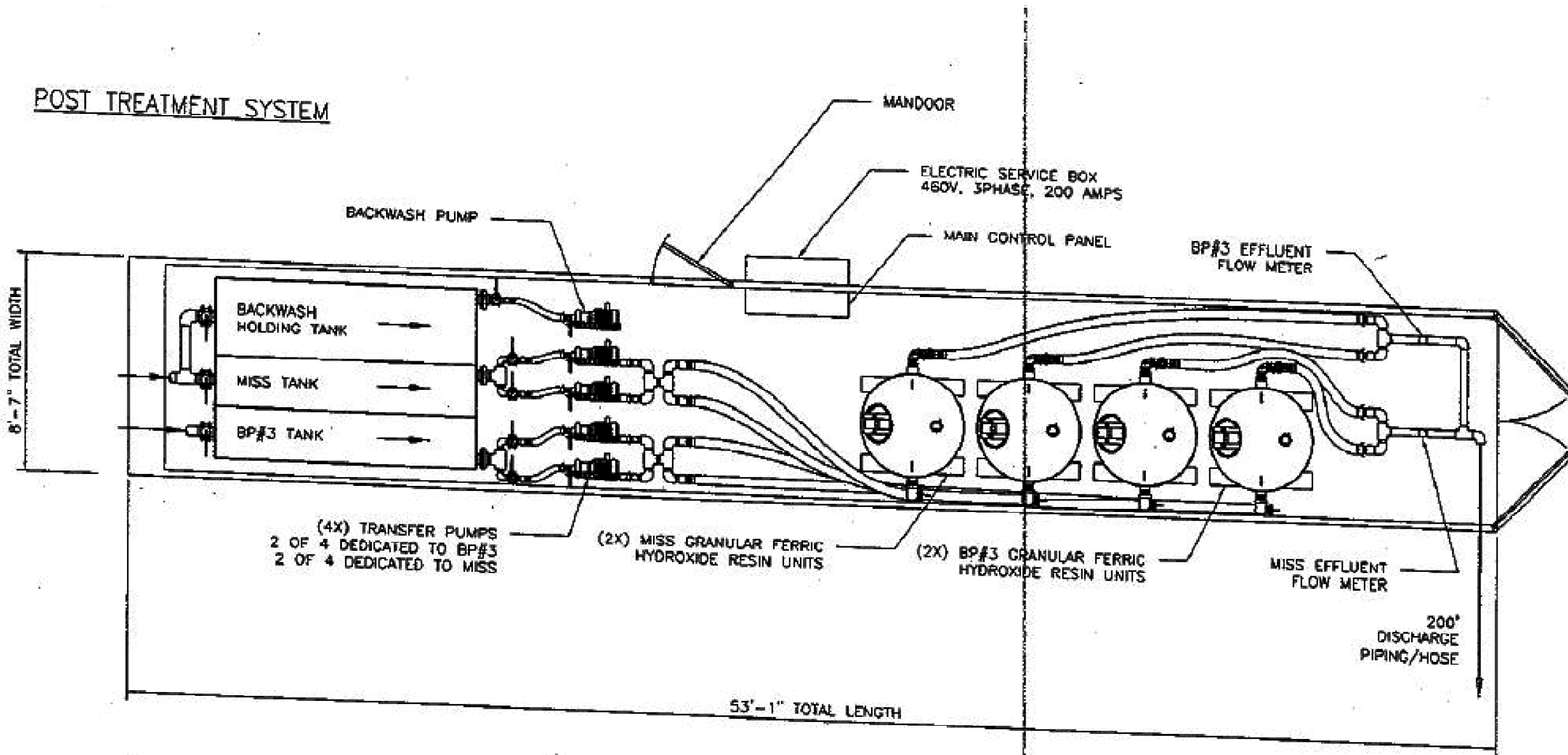

**U.S. ARMY CORPS OF ENGINEERS**

**PRE-TREATMENT SYSTEM  
ELEVATION EQUIPMENT LAYOUT**

**FUSRAP Maywood Superfund Site  
Waste Management Plan  
Maywood, New Jersey**

Project: 13-3900.01	Date: 12/04/2013	Figure 2
Prepared By: KW	Reviewed By: JB	Rev 1

POST TREATMENT SYSTEM



**NOTES:**

1. POST TREATMENT FOOTPRINT APPROX. 10' X 55'
2. ELECTRICAL REQUIREMENTS - 480V, 3 PHASE, 200 AMPS

CABRERA SERVICES  
1106 N. CHARLES ST.  
SUITE 300  
BALTIMORE, MD 21201



U.S. ARMY CORPS  
OF ENGINEERS

**POST-TREATMENT  
EQUIPMENT LAYOUT**

FUSRAP Maywood Superfund Site  
Waste Management Plan  
Maywood, New Jersey

Project: 13-3900.01 Date: 12/04/2013 Figure 3

Prepared By: KW Reviewed By: JB Rev 1

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**APPENDIX A**

**BERGEN COUNTY UTILITIES AUTHORITY TREATED  
GROUNDWATER DISCHARGE PERMIT**



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**FACT SHEET****TREATED GROUNDWATER DISCHARGE PERMIT TO DISCHARGE TO THE BERGEN COUNTY UTILITIES AUTHORITY TREATMENT WORKS*****NAME AND ADDRESS OF LOCATION WHERE DISCHARGE OCCURS:***

US Army Corps of Engineers Formerly Utilized Sites Remedial Action Program (FUSRAP)  
Maywood Superfund Site, 100 West Hunter Avenue, Maywood, New Jersey 07607

***TYPE OF PERMIT:*** Significant Industrial User

***NAICS CODE:*** 562910

***FLOW CATEGORY:***  $\geq 25,000$  gpd

***AVERAGE DAILY FLOW RATE:*** 250,000 gpd

***DESCRIPTION OF PERMITTEE OPERATIONS:***

Dewatering operations associated with the remediation of the FUSRAP Maywood Superfund Site.

***PRETREATMENT:***

Stage I - filtration and sedimentation. Stage II (if needed) - coagulation, flocculation, and sedimentation to remove solids not removed by Stage I. Stage III (if needed) - polishing filtration and/or ion exchange if radiological contaminants are detected. Additional treatment at Site E only: Arsenic Treatment consisting of potassium permanganate/ferric chloride pretreatment and granular ferric hydroxide post treatment. Note: Site C: Treatment at stage I only.

***DESCRIPTION OF SAMPLING POINTS:***

Effluent: after the final treatment step prior to discharge into the sanitary sewer from the following locations:

- B Scanel & Railroad Property Excavation
- C Scanel & Railroad Property Dewatering Wells
- E West Hunter Avenue (MISS II)\*

\* Site (A), the original discharge within the MISS has been deleted. Site (E), designated "MISS II" identifies the combined MISS & Burial pit system with arsenic treatment.

***SAMPLING PARAMETERS:***

Routine compliance monitoring at sites, B and E shall be conducted at a frequency of one sample per 125,000 effluent gallons for Gross Alpha/Gross Beta and one sample per 500,000 effluent gallons for all other parameters listed in the Treated Groundwater Discharge Permit with a minimum sampling frequency of one sample per month from each site from which discharge occurs. Routine compliance monitoring at site C shall be conducted at a frequency of one sample per 1.25 million effluent gallons for Gross Alpha/Gross Beta, one sample per 5 million gallons of treated wastewater for full radionuclide analysis and for all other parameters listed in the Treated Groundwater Discharge Permit with a minimum sampling frequency of one sample per month during each month that discharge occurs.

Additional uranium sampling requirements are listed in the Special Requirements section for the Treated Groundwater Discharge Permit.

***STATEMENT OF BASIS:***

Local Discharge Limitations and General Conditions of the Treated Groundwater Discharge Permit are in accordance with the General Pretreatment Regulations, 40 CFR 403.6 and the Rules and Regulations for the Direct and Indirect Discharge of Wastewater to the Bergen County Utilities Authority Treatment Works. Additional Discharge Limitations are in accordance with the USEPA 1976 National Interim Primary Drinking Water Regulations and the New Jersey Groundwater Quality Standards at N.J.A.C. 7:9.6.

**BERGEN COUNTY UTILITIES AUTHORITY**  
**TREATED GROUNDWATER DISCHARGE PERMIT**

Company ID #:            Effective Date:            Expiration Date:

1050                            9/01/11                            08/31/14

Name and Address of Permittee:                            Location of Activity/Facility:

Shaw Environmental, Incorporated  
100 West Hunter Avenue  
Maywood, New Jersey 07607

FUSRAP Maywood Superfund Site  
100 West Hunter Avenue  
Maywood, New Jersey 07607

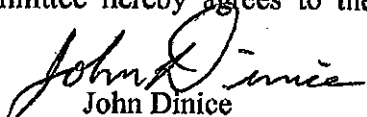
Type of Permit:    Significant Industrial User

Flow Category:     $\geq 25,000$  gpd                            Annual Fee:    \$4500.00

In accordance with all terms and conditions in the "Rules and Regulations for the Direct and Indirect Discharge of Wastewater to the Bergen County Utilities Authority Treatment Works", the provisions by which are incorporated in this permit, and applicable provisions of Federal and/or State regulation, permission is hereby granted to discharge treated groundwater into the Bergen County Utilities Authority Little Ferry Treatment Plant, via the Maywood sanitary sewer collection system, in accordance with wastewater discharge limitations, monitoring requirements, and other requirements set forth in the following tables hereof.

This permit is granted in accordance with the Application for a Waiver and Permit to Discharge Treated Groundwater and accompanying documentation, filed with the Authority, and are considered part of this permit. The permittee shall apply for permit re-issuance a minimum of one hundred eighty (180) days prior to the expiration of this permit. Treated Groundwater Discharge Permits are issued for a specific operation. The permittee shall promptly notify the Authority in advance of any changes in operation, process, flow, or discharge. A permit shall not be reassigned or transferred, sold to a new owner, new user, different premises or a new or changed operation without prior written approval of the Authority. If, upon application, the Authority decides that the existing permit can be transferred with no modifications, the succeeding owner or user shall comply with the terms and conditions of the existing permit for the balance of the permit's duration.

Be advised that while the permit is in force, additional information may be required to be submitted and/or discharge limitations may be changed to reflect changes in applicable Federal, State and local regulations. The Permittee hereby agrees to the aforementioned.

  
John Dinice  
Industrial Pretreatment Coordinator

### Local Discharge Limitations

#### *Hazardous limits:*

<u>Parameter</u>	<u>Limitation (mg/l)</u>
Acrolein	0.30
Acrylonitrile	8.40
Benzene	0.85
Bromoform	1.00
Carbon Tetrachloride	0.15
Chlorobenzene	10.60
Chloroethane	21.50
Chloroform	1.75
1,2-Dichlorobenzene	21.60
1,4-Dichlorobenzene	26.30
1,1-Dichloroethane	19.40
1,2-Dichloroethane	4.50
1,1-Dichloroethylene	0.14
1,2-trans-Dichloroethylene	17.00
1,2-Dichloropropane	21.20
Ethyl Benzene	9.30
Methylene Chloride	17.00
1,1,2,2-Tetrachloroethane	3.85
Tetrachloroethylene	1.80
Toluene	8.10
1,1,1-Trichloroethane	65.00
1,1,2-Trichloroethane	8.60
Trichloroethylene	3.30
Trichlorofluoromethane	6.25
*Vinyl Chloride	0.00024

\* Limit to be set at current detection limit of 0.005 mg/l.

Copper (total)	1.0 mg/l Daily Maximum
Cyanide	0.50 mg/l Daily Maximum
Oil or Grease	
Petroleum origin	100 mg/l Monthly Average 150 mg/l Single Sample
Explosivity	5% LEL any 2 successive readings 10% LEL any 1 reading

#### *Non-hazardous limits:*

Biochemical Oxygen Demand, BOD	BCUA must be notified if over 350 mg/l
Suspended Solids, S.S.	BCUA must be notified if over 350 mg/l
pH	5.5 - 9.5 Daily Range
Oil or Grease	
Non-petroleum origin	200 mg/l Daily Maximum

### Additional Discharge Limitations

<u>Parameter</u>	<u>Limitation</u>	<u>Minimum Detectable Level</u>
Gross Alpha (excluding Uranium and Radon)	15 pCi/L	3 pCi/L <sup>A</sup>
Gross Beta	50 pCi/L	4 pCi/L <sup>B</sup>
Radium 226 plus Radium 228	5 pCi/L	1.0 pCi/L each
Uranium	30 ug/L	1.0 ug/L <sup>C</sup>

- A. When the alternative compliance methodology is applied, the Gross Alpha MDL is calculated by summing the reported MDLs for Th-232, Th-230, Th-228 and Ra-226.
- B. When the alternative compliance methodology is applied, the Gross Beta MDL is calculated by summing the reported MDLs for U-238, Th-228, Ra-228 and Ra-226.
- C. If Uranium is measured isotopically divide the Uranium 238 activity values in pCi/L by the specific activity of Uranium 238, 0.3365 pCi/ug. The minimum detectable level for alpha spectroscopy is 0.5 pCi/L

**When the alternative compliance methodology for Gross Alpha or Gross Beta is applied, this must be clearly reflected in the monitoring report. The alternative compliance methodology may only be applied when the sample matrix elevates the MDL of the standard analysis above the required MDL.**

The above standards are in accordance with the USEPA 1976 National Interim Primary Drinking Water Regulations and the New Jersey Groundwater Quality Standards at N.J.A.C. 7:9.6.

### Special Requirements

1. The permittee shall discontinue discharge during wet weather periods in order to minimize the loading to the BCUA treatment works during periods of high demand. For the purposes of this requirement, a wet weather event is defined as rainfall resulting in accumulation of greater than one (1) inch during less than one twenty-four (24) hour period, or rainfall of any amount of a duration greater than one twenty-four (24) hour period.
2. Should the permittee's discharge cause radiological contamination of the Authority's sewage sludge thereby restricting and/or interfering with the Authority's disposal practices, then said sewage sludge shall become the sole property of the permittee, including all transport and removal costs.
3. When processing excavation water from any of the individual areas of concern, identified as the "NRC Licensed Burial Pits 1-3" or "Former Retention Ponds A-E", additional uranium analysis will initially be performed at a frequency of one sample per 125,000 influent gallons. After four consecutive sampling events with results below the uranium discharge limitation, the additional influent sampling frequency may be relaxed to one sample per 500,000 influent gallons with a minimum sampling frequency of one sample per month for all permit specified parameters. If at any time, influent sampling results exceed the uranium discharge limitation, additional ion exchange processing or batch discharge will be initiated. The additional ion exchange processing or batch discharge, triggered by an influent uranium exceedance, may be discontinued when the processing of excavation water from the area of concern ends or, when four consecutive influent sample results indicate concentrations below the uranium discharge limitation. However all exceedances of effluent discharge limitations remain subject to BCUA enforcement response plan including the requirement for six consecutive months of increased monitoring requirements in the case of a serious violation.

### Monitoring Schedule

The USACE FUSRAP Maywood Superfund Site shall monitor its effluent wastestream per the following schedule. All sampling and analysis shall be performed in accordance with 40 CFR Part 136 or the approved equivalent method and reported in the same units as the respective discharge limitation.

#### **Monthly Monitoring:**

Routine compliance monitoring of Sites B and E shall be conducted at a frequency of one sample per 125,000 effluent gallons for Gross Alpha/Gross Beta and one sample per 500,000 effluent gallons for all other discharge permit specified parameters with a minimum sampling frequency of one sample per month for all permit specified parameters from each sampling location from which discharge occurs. Minimum detectable levels specified above must be achieved for radioactive analysis.

Routine compliance monitoring at site C shall be conducted at a frequency of one sample per 1.25 million effluent gallons for Gross Alpha/Gross Beta, one sample per 5 million gallons of treated wastewater for full radionuclide analysis and for all other parameters listed in the Treated Groundwater Discharge Permit with a minimum sampling frequency of one sample per month for all permit specified parameters during each month that discharge occurs.

Samples taken in compliance with the specified monitoring requirements shall be taken after the final treatment step prior to discharge into the sanitary sewer from each of the following locations from which discharge occurs each month:

- B) Scanel & Railroad Property Excavation
- C) Scanel & Railroad Property Dewatering Wells
- E) West Hunter Avenue (MISS II)\*

\* Site (A), the original discharge within the MISS has been deleted. Site (E), designated "MISS II" identifies the combined MISS & Burial pit system with arsenic treatment.

**Chain of custody must identify the sampling time for grab samples.**

**Note: The permittee shall discontinue discharge during wet weather periods in order to minimize the loading to the BCUA treatment works during periods of high demand.**



**Monitoring Requirements**

Not later than twenty-five (25) days following each calendar month, the permittee shall submit to Bergen County Utilities Authority a compliance report consisting of, at a minimum, the following items:

1. Any change in permittee ownership, contact person or authorized representative;
2. Average and maximum daily regulated wastewater flow, with an explanation of how obtained (flow meter, volume displacement, etc.);
3. An accounting of each regulated pollutant by analysis in accordance with 40 CFR Part 136 or the approved equivalent method and reported in the same units as respective discharge limitation;
4. Chain of custody identifying the duration of composite samples (start and finish) and sampling time for grab samples;
5. The name, address and identification number of the NJDEP certified laboratory that performed the analysis;
6. A statement of compliance or a compliance schedule in the event of non-compliance; and
7. A certification from an authorized representative of the permittee which states:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations

BY:

\_\_\_\_\_ " "  
Signature

\_\_\_\_\_ " "  
Name and Title (typed)

**General Conditions**

A. Discharge Prohibitions

1. The permittee shall not discharge, or allow to be discharged, directly or indirectly into the Authority Treatment Works or local sewer system connected thereto any pollutants or wastewater which:

a) causes or would cause the influent at the Authority's treatment plant to exceed the following headworks limitations at the Authority's treatment plant:

<u>Pollutant</u>	<u>Headworks Limitation (mg/L)</u>
Arsenic	0.002
Cadmium	0.006
Chromium (T)	0.132
Copper	0.151
Lead	0.189
Mercury	0.002
Nickel	0.138
Silver	0.100
Zinc	0.328
Phenols	0.771

b) contain prohibited material or substances as specified under the Rules and Regulations for the Direct and Indirect Discharge of Wastewater to the Bergen County Utilities Authority Treatment Works (Rules and Regulations), except upon approval of the Authority, or except as otherwise expressly permitted by Federal or State laws and regulations; or

c) are not in conformance with a permit, administrative order, administrative consent agreement, including interim enforcement limits or other approval issued by the Authority; or

d) exceed the limitations set forth by EPA pursuant to Section 307 of the Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. 466 et seq. or the New Jersey Department of Environmental Protection pursuant to Section 4 of the New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.

2. In no case shall the permittee's discharge have a flow rate or contain concentrations of pollutants that exceed, for any fifteen (15) minute period, more than five (5) times the approved daily maximum concentration, flow or mass discharge during normal operation as stated in the permit.

3. The permittee shall not discharge directly or indirectly into the local sewer system or Authority Treatment Works, any wastes or wastewater which cause, threaten to cause, or are capable of causing either alone or by interaction with other substances:

## General Conditions

- a) a fire or explosion hazard, including but not limited to, wastestreams with a closed cup flash point of less than 140 °F or 60 °C using the test methods specified in 40 CFR 261.21;
  - b) obstruction of flow or injury to the local sewer system or the Authority Treatment Works;
  - c) toxic gases, vapors or fumes that may cause acute health or safety problems of personnel operating or maintaining the system or to the public;
  - d) prevention of the effective operation or maintenance of the local sewer system or the Authority Treatment Works;
  - e) a strong offensive odor or air pollution by the release of toxic or malodorous gases or malodorous gas-producing substances;
  - f) interference with the Authority's treatment plant;
  - g) the Authority's effluent or any other product of the treatment process, residues, sludges, or scums, to be unsuitable for reclamation and reuse or disposal or to interfere with the reclamation and/or disposal process;
  - h) a detrimental environmental impact or a nuisance in the waters of the State or a condition unacceptable to any public agency having regulatory jurisdiction over same or the right to withhold funds as a result thereof;
  - i) discoloration or any other condition in the quality of the Authority Treatment Works effluent such that receiving water quality requirements established by law cannot be met;
  - j) conditions at or near the Authority Treatment Works which violate any statute or any rule, regulation, or ordinance of any public agency, federal, state, county or local regulatory body; or
  - k) the Authority Treatment Works to be overloaded or cause excessive Authority collection or treatment costs.
4. The permittee shall not discharge storm water, groundwater, rain water, street drainage, subsurface drainage, floor or yard drainage, or unpolluted water to any new direct or indirect connections to any separate sanitary sewer in the local sewer system or to the Authority Treatment Works.
  5. The permittee shall not discharge storm water, groundwater, rain water, street drainage, subsurface drainage, floor or yard drainage, or unpolluted water through any new direct or indirect connection to any combined sewer system in a local sewer system unless approval is granted by the Authority prior to such discharge. Approval shall be granted when no reasonable alternate method of disposal is available.
  6. The permittee shall not discharge or cause to be discharged, any radioactive material directly or indirectly into the local sewer system or the Authority Treatment Works except:

## General Conditions

- a) when the permittee is authorized to use radioactive materials by the New Jersey Department of Environmental Protection, the United States Nuclear Regulatory Commission or other governmental agency empowered to regulate the use of radioactive materials; and
  - b) when the waste is discharged in strict conformity with current New Jersey Department of Environmental Protection and United States Nuclear Regulatory Commission regulations and recommendations for safe disposal, and when the permittee is in compliance with all rules and regulations of all other applicable regulatory agencies.
7. The permittee shall not discharge waste from garbage grinders directly or indirectly to the local sewer system or the Authority Treatment Works through any new connection except:
- a) wastes generated in preparation of food normally consumed on the premises; or
  - b) where the permittee has obtained approval for that specific use from the Authority and agrees to undertake whatever self-monitoring is required to enable the Authority to equitably determine the charges and fees based on the waste constituents and characteristics. An approved access point for monitoring and sampling sewage must be made available by the permittee. Such grinders must shred the waste to a degree that the discharge is shredded so that all particles will be carried freely under normal flow conditions prevailing in the local sewer system or the Authority Treatment Works. Plastic, glass, rags, paper or wood products, inert materials, garden refuse or any other commercial or industrial solid wastes shall not be discharged through a garbage grinder directly or indirectly to the local sewer system or the Authority Treatment Works.
8. The permittee shall not make any new connections to the local sewer system or discharge any wastes directly or indirectly to the local sewer system through any new connection unless such connection has been approved by the Executive Director except indirect 4" residential lateral connections. The permittee shall not discharge any substances directly into a manhole or other opening leading to the local sewer system or the Authority Treatment Works that was not designed or intended to receive such wastes, unless the Authority approves such discharge and the discharge location.
9. The permittee shall not discharge any holding tank wastes directly or indirectly to the local sewer system or the Authority Treatment Works through any connection unless the permittees received prior approval from the Authority.
10. The permittee shall not discharge directly or indirectly to the local sewer system or the Authority Treatment Works any wastes or wastewater having heat in amounts which will inhibit the biological activity at the Authority's Treatment Plant, but in no case shall the wastewater temperature at the Treatment Plant exceed 40 °C (104 °F).
11. Any effluent limitations and other requirements promulgated by the United States Environmental Protection Agency, the New Jersey Department of Environmental Protection, or any other governmental entity having jurisdiction shall apply in any instance where they are more stringent than those set forth in this permit. The Authority may also supplement this permit with more stringent requirements if it determines that this permit:

## General Conditions

- a) may not be sufficient to enable the Authority to comply with the standards and limitations specified in the Authority's National or New Jersey Pollutant Discharge Elimination System Permit; or
  - b) may not adequately limit the wastes received into the Authority Treatment Works so as to prevent interference, pass through, or impeding of operations or so as to allow the disposal or sale of solids or sludges or the recovery of by-products or energy therefrom.
12. When the Authority shall prohibit, establish pretreatment standards, or other otherwise limit the discharge of any substance or pollutant, the permittee will be required to modify the discharge of the substances to the sewers to the levels so prescribed.
  13. The permittee shall not increase the use of process or cooling water or, in any way, attempt to dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with the limitations contained in the National Categorical Pretreatment Standards, or any other pollutant-specific limitation developed by the Authority or NJDEP.
  14. Connections to the local sewer system shall be designed and constructed to conform to the requirements and procedures set forth in the Authority's "Standards for Connection to Authority Sewers and Related Requirements" (Appendix A) of the Rules and Regulations, and all applicable State and local building and plumbing codes. All such connections shall be subject to the inspection and approval of the Authority.

### B. Record-Keeping Requirements

1. Permittee shall maintain records of all information resulting from any monitoring activities required by this permit. Such record shall include for all samples:
  - a) The date, exact place, method, and time of sampling and the names of the person or persons taking the samples;
  - b) The dates analyses were performed;
  - c) The individual(s) who performed the analyses;
  - d) The analytical techniques/methods use; and
  - e) The results of such analyses.
2. Permittee shall be required to retain for a minimum of 5 years any records of monitoring activities and results, whether or not such monitoring activities are required by this permit and shall make such record available for inspection and copying by the Authority and NJDEP. This period of retention shall be extended during the course of any unresolved litigation regarding the permittee or when requested by the Authority or NJDEP.

### C. Reporting Requirements

1. Slug Loadings
  - a) Permittee shall notify the Authority immediately of all discharges that could cause problems to the Authority's treatment works including any slug loadings. A slug loading is any discharge of a non-routine episodic nature including, but not limited to an accidental spill or a non-customary batch discharge.

- b) A notice shall be permanently posted on the bulletin board or other prominent place advising all employees of the responsible person to call in the event of an accidental or non-compliance discharge. This person shall be responsible for initiating emergency notification procedures in accordance with this permit. Permittees shall insure that all employees who could cause such an accidental or non-compliance discharge to occur are advised of the emergency notification procedure.

2. Additional Self-Monitoring

- a) If sampling performed by the permittee indicates a violation, the permittee shall notify the BCUA within 24 hours of becoming aware of the violation. The permittee shall also repeat the sampling and analysis and submit the results of the repeat analysis to the BCUA within 30 days after becoming aware of the violation.
- b) The permittee shall be required to file monthly reports if the permittee:
  - (i) in any month commits a serious violation or fails to submit a completed self-monitoring report and such failure to report continues unabated following thirty (30) days notice from the BCUA; or
  - (ii) exceeds an effluent limitation for the same pollutant at the same discharge point source by any amount for four (4) out of six (6) consecutive months, if the permittee files monthly self-monitoring reports; or
  - (iii) reports an effluent value that causes the permittee to be a serious violator for one or more parameters for which the permittee is required to report less frequently than monthly.
  - (iv) The monthly reporting requirement shall apply to those constituents that triggered the violations noted in (b)(i)-(iii) above. The reporting requirements stipulated in the permit shall be restored if the permittee has not committed any of the violations identified in (b)(i)-(iii) above for six (6) consecutive months. The term "Serious Violation" shall be as defined in Article II of the Authority's Rules and Regulations.

3. Non-compliance Reporting

- a) Permittee shall be required to report any exceedance of an effluent limitation that causes injury to persons, or damage to the environment, or poses a threat to human health or the environment, within two (2) hours of its occurrence, or of the permittee becoming aware of its occurrence.
- b) Within twenty-four (24) hours of an event described in (a) above, or of an exceedance, or of becoming aware of an exceedance of an effluent limitation for a toxic pollutant, a permittee shall provide as such additional information on the discharge as may be required by the Authority, including an estimate of the danger posed by the discharge to the environment, whether the discharge is continuing and the measures taken or being taken to remediate the problem and any damage to the environment, and to avoid a repetition of the problem.

## General Conditions

- c) Permittee shall report to the Authority any serious violation within thirty (30) days of the violation, together with a statement explaining the nature of the serious violation and the measures taken to remedy the cause or prevent a recurrence of the serious violation.
- d) Permittee shall notify the Authority in advance of any change in the quality or quantity of any pollutant introduced into the Authority's Treatment Works or a local sewer system. The notification shall estimate the effects of the changes on the effluents to be discharged to the Authority.

### 4. Hazardous Waste Reporting

- a) The permittee shall notify the Authority, the USEPA Regional Waste Management Division Director, and NJDEP in writing of any discharge into the Authority's Treatment Works, Intercepting Sewer or Local Sewer of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the USEPA hazardous waste number, and the type of discharge (continuous, batch, or other). If the permittee discharges more than 100 kilograms of such waste per calendar month to the Authority's Treatment Works, Intercepting Sewer or Local Sewers, the notification shall also contain the following information to the extent such information is known and readily available to the permittee: An identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the wastestream discharged during that calendar month, and an estimation of the mass of constituents in the wastestream expected to be discharged during the following twelve months. All notification for existing sources must take place within 180 days after the discharges of the listed or characteristic hazardous waste. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed discharges must be submitted in accordance with the Authority's Rules and Regulations. The notification requirement in this section does not apply to pollutants already reported under the self-monitoring requirements of Section III - Monitoring Schedule of this permit.
- b) Dischargers are exempt from the requirements of paragraph (a) above during a calendar month in which they discharge no more than fifteen kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen kilograms of non-acute hazardous wastes in a calendar month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e) requires a one-time notification. Subsequent months during which the permittee discharge more than such quantities of any hazardous waste do not require additional notification.
- c) In the case of any new regulations under section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substances as a hazardous waste, the permittee must notify the Authority, the EPA Regional Waste Management Waste Division Director, and NJDEP of the discharge of such substance within ninety (90) days of the effective date of such regulations.
- d) In the case of any notification made under paragraphs (a) - (c) above, the permittee shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.

**D. Other Requirements**

1. The Authority shall have the right of entry to all premises in which a discharge source is or might be located or in which monitoring equipment or records required by a permit are kept, for purposes of inspection, sampling, copying or photographing.
2. The Authority shall have the right to perform an inspection and sample the effluent of a permittee at such times and at such frequencies as the Authority deems necessary to confirm compliance with pretreatment requirements.
3. Discharge permits may be transferred to a new owner or operator only if permittee gives at least thirty (30) days advance notice to Industrial Pretreatment Coordinator and Industrial Pretreatment Coordinator approves the permit transfer. The notice to Industrial Pretreatment Coordinator must include a written certification by the new owner or operator which:
  - a) States that the new owner and/or operator has no immediate intent to change the facility's operations and processes;
  - b) Identifies the specific date on which the transfer is to occur; and
  - c) Acknowledges full responsibility for complying with the existing discharge permit.
4. All permits issued to a particular user by the Authority are void upon the issuance of a new permit to that user.



### Statement of Penalties

The Authority may take any and all actions and pursue any and all remedies permitted by federal law and the laws of the State of New Jersey to enforce the provisions of the "Rules and Regulations for the Direct and Indirect Discharge of Wastewater to the Bergen County Utilities Authority Treatment Works."

These actions and remedies shall include, but not necessarily be limited to those set forth in Article VI of the "Rules and Regulations for the Direct and Indirect Discharge of Wastewater to the Bergen County Utilities Authority Treatment Works." Wherever in Article VI reference is made by title to any official or employee of the Authority, it shall be understood that such official or employee shall act as the duly appointed representative of the Executive Director. The Executive Director shall at all times have the right to undertake any action delegated to such official or employee or authorize other authority officials or employees to undertake such delegated duties as well.

Enforcement actions available to the Authority include, but are not necessarily limited to, the following:

- (A) Issue an order to comply in accordance with the provisions of Section 10 of P.L. 1977 c.74 (N.J.S.A. 58:10A-10);
- (B) Bring a civil action in accordance with the provisions of Section 10 of P.L. 1977, c.74 (N.J.S.A. 58:10A-10);
- (C) Issue a summons in accordance with the provisions of Section 1 of P.L. 1991, c.8 (N.J.S.A. 58:10A-10.4);
- (D) Issue a civil administrative penalty in accordance with the provisions of Section 2 of P.L. 1991, c.8 (N.J.S.A. 58:10A-10.5);
- (E) Bring an action for a civil penalty in accordance with the provisions of Section 10 of P.L. 1977, c.74 (N.J.S.A. 58:10A-10);
- (F) Petition for the commencement of a criminal action in accordance with the provisions of Section 10 of P.L. 1977, c.74 (N.J.S.A. 58:10A-10);
- (G) Seek injunctive relief against a violation or threatened violation in accordance with the provisions of Section 7 of P.L. 1972, c.42, as amended by Section 18 of P.L. 1990, c.28 (N.J.S.A. 58:11-55); and
- (H) Seal or close off sewerage connections in accordance with the provisions of Section 8 of P.L. 1972, c.42 (N.J.S.A. 5:11-56).

In the event of a violation of any rule, regulation or pretreatment standard adopted by the Authority, the Authority shall take one of the enforcement actions set forth above or obtain injunctive relief against the violation. If applicable, the Authority shall assess civil administrative penalties in amounts no less than the minimums set forth in P.L. 1990, c.28, section 6 (N.J.S.A. 58:10-10.1). Nothing contained in this section shall be construed to prohibit or otherwise limit the Authority from pursuing any other remedy permitted by federal law and the laws of the State of New Jersey.

Gurda, Joe

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**From:** Dubnick, Joshua [jdubnick@bcua.org]  
**Sent:** Wednesday, October 20, 2010 7:44 AM  
**To:** Aziz, Akram; Gurda, Joe  
**Cc:** Dinice, John  
**Subject:** Arsenic loading

Akram and Maurice,

These averages are for the 12 month period of October 2009 through September 2010:

BCUA Average Plant Flow:	81.765 MGD
Average arsenic Concentration:	0.0017 mg/L (1.70 µg/L)
Average arsenic loading:	1.159 Lb/Day (0.526 kg/day)
BCUA arsenic headworks limitation:	0.002 mg/L (2 µg/L) (maximum influent arsenic concentration)
BCUA total arsenic loading limit: (based on headworks limitation)	1.364 lb/day (0.619 kg/day)
Total available arsenic loading:	0.2046 lb/Day (0.0928 kg/day)
20% of available*:	0.04095 lb/day (0.0186 kg/day)

I don't know what your proposed discharge flow rate from the arsenic contaminated area will be. You can figure the concentration limit based on the formula:  $\text{mg/L} = \text{Lb}/(\text{MGD} * 8.34)$  where you would put the 0.04095 lb available loading and your discharge flow into the pounds and MGD positions respectively.

Josh

\* See BCUA Rules and Regulations Article V D:

For all Treated Groundwater or Industrial Wastewater Discharge Permit applications for new discharges or for increases in existing discharges, the approval for discharge of pollutants shall be limited to that maximum daily amount which will utilize no more than twenty (20%) percent of the remaining capacity for that pollutant at the Authority's treatment plant. The remaining capacity shall be the difference between the existing lower influent pollutant concentration and the Influent Limitation. The permit approval may provide for more than the aforesaid twenty (20%) percent when the user demonstrates to the satisfaction of the Authority that such additional discharge is appropriate based upon technological considerations, economics, industry practice and such other matters as the Authority deems pertinent. In no case shall approval be granted which would cause the influent concentration to exceed the Influent Limitation.

**Allowable Arsenic Loading:**

$$0.0186 \text{ kg/day} = 18.6 \text{ g/day} = 18,600 \text{ mg/day}$$

Allowable concentration = allowable mass / total volume

Total volume = flow rate \* time

Allowable concentration = allowable mass / (flow rate \* time)

$$\text{Concentration} = 18600 \text{ mg} / (\text{x gpm} * 60 \text{ min/hr} * 24 \text{ hrs/day} * 3.79 \text{ L/gal})$$

60 min/hr  
24 hours/day  
3.78541 L/gallon

gpm	mg/L	ug/L
20	0.171	170.6
30	0.114	113.7
40	0.085	85.3
50	0.068	68.2
60	0.057	56.9
70	0.049	48.7
80	0.043	42.7
90	0.038	37.9
100	0.034	34.1

FUSRAP Maywood  
Arsenic Concentration

Allowable Arsenic Concentration from BCUA

0.0186 kg/day  
0.04095 lb/day

FLOW RATE gpm	ALLOWABLE ARSENIC CONCENTRATION	
	mg/l	ug/l
20	0.1706	170.6297
30	0.1138	113.7531
40	0.0853	85.3148
50	0.0683	68.2519
60	0.0569	56.8766
70	0.0488	48.7513
80	0.0427	42.6574
90	0.0379	37.9177
100	0.0341	34.1259

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## **APPENDIX B**

# **BERGEN COUNTY UTILITIES AUTHORITY ALLOWABLE ARSENIC CONCENTRATIONS**

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**Table B-1 – Bergen County Utilities Authority Allowable Arsenic Loading by Weight**

Allowable Arsenic Loading to Bergen County Utilities Authority	
0.0186 kilograms per day	
0.04095 pounds per day	

**Table B-2 – Bergen County Utilities Authority Allowable Arsenic Concentrations by Flow Rate and Concentration**

Flow Rate (gpm)	Allowable Arsenic Concentrations	
	mg/L	µg/L
20	0.1706	170.6
30	0.1138	113.8
40	0.0853	85.3
50	0.0683	68.3
60	0.0569	56.9
70	0.0488	48.8
80	0.0427	42.7
90	0.0379	37.9
100	0.0341	34.1

Note(s):

µg/L denotes microgram(s) per Liter.

gpm denotes gallons per minute.

mg/L denotes milligram(s) per liter.



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