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South Carolina Department of Health and Environmental Control

Proposed Plan for Site Remediation

AVX –Myrtle Beach Site/Operable Unit 2

801 17th Avenue South, Myrtle Beach, South Carolina

October 2011

ANNOUNCEMENT OF PROPOSED PLAN

The South Carolina Department of Health and Environmental Control (DHEC or the Department) recently completed an evaluation of cleanup alternatives to address groundwater and surface water contamination at the AVX-Myrtle Beach Site - Operable Unit 2 (the Site) in Myrtle Beach, South Carolina. Operable Unit 2 (OU-2) includes the off property groundwater and surface water contamination. Operable Unit 1 (OU-1), which will be addressed in a separate Feasibility Study (FS) process at a later date, includes the contamination on the AVX facility property. This Proposed Plan identifies DHEC's Preferred Alternative for cleaning up the OU-2 groundwater and surface water and provides the reasoning for this preference. In addition, this Plan includes summaries of other cleanup alternatives evaluated. These alternatives were identified based on information gathered during environmental investigations conducted by AVX pursuant to Consent Order 96-43-HW, dated December 1996, between AVX and the Department.

The Department is presenting this Proposed Plan to inform the public of our activities and to gain your input. This Proposed Plan summarizes information that can be found in greater detail in the Feasibility Study Operable Unit 2 (FS) report dated February 2011 and other documents contained in the Administrative Record file. The Department encourages the public to review these documents to gain a comprehensive understanding of the Site and activities that have been conducted.

The Department will select a final remedy after reviewing and considering comments submitted during the 30-day public comment period. The Department may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments.

DHEC's Preferred Cleanup Summary

DHEC's preferred groundwater remedial alternative for OU-2 is Alternative OGW-3b and the preferred surface-water alternative is Alternative SW-3. These options involve using a combination of the following:

- Injection into the ground of a carbon substrate, such as molasses, to stimulate the breakdown of contaminants in the groundwater by a natural process.
- Operation of an extraction well to control migration of groundwater contamination.
- Groundwater monitoring.
- Implementation of phytoremediation by planting hybrid poplar trees along the banks of the surface-water body.
- Surface-water monitoring.

MARK YOUR CALENDAR

❑ PUBLIC MEETING:

When: **November 1, 2011**
Where: **Lakewood Elementary School**
1675 Highway 396
Myrtle Beach, South Carolina 29575
Time: **6:00 to 7:30 PM**

DHEC will hold a meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. After the Proposed Plan presentation, DHEC will respond to your questions. Oral and written comments will also be accepted at the meeting.

❑ PUBLIC COMMENT PERIOD:

DHEC will accept written comments on the Proposed Plan during the public comment period until **December 2, 2011**. Submit your written comments to:

Carol Minsk, Project Manager
DHEC-L&WM
2600 Bull St.
Columbia, SC 29201
Minskcc@dhec.sc.gov

❑ FOR MORE INFORMATION:

Call: **Carol Minsk,** Project Manager, 803-896-4032

See: The Public Notice at DHEC's website:
www.dhec.sc.gov/environment/lwm/public_notice.asp
OR
The Proposed Plan and the Feasibility Study for OU-2 at DHEC's website:
www.dhec.sc.gov/environment/AVX

View: The Administrative Record at the following locations:

- Horry County Memorial Library – Socastee Branch
  141 SC Hwy 707-Connector
  Myrtle Beach, South Carolina

- DHEC's Bureau of Land & Waste Management
  8911 Farrow Road - Columbia, SC
  Contact: Freedom of Information Office: (803) 898-3817
  Hours: Monday - Friday: 8:30a.m. - 5:00p.m.

SITE HISTORY

The AVX Corporation Myrtle Beach Facility is located at 801 17th Avenue South in Myrtle Beach, South Carolina. OU-2 is located adjacent to OU-1 within an area of undeveloped, residential, and commercial properties in the City of Myrtle Beach. Aerovox Corporation, the predecessor to AVX, began operations at the Facility in 1953. Chlorinated volatile organic compounds (VOC's) were used at this location in the manufacturing of ceramic capacitors until 1993. In 1981, AVX discovered that shallow groundwater beneath the Facility was impacted by VOC's. AVX conducted assessment and some remediation of contaminated soil and groundwater without the Department's knowledge from 1981 until 1995.

In June 1995, AVX notified the Department of the existence of soil and groundwater contamination at the Facility (OU-1). In 1996, the Department issued a consent order and required AVX to submit a work plan for an investigation and remediation of soil and groundwater. Beginning in 1997, a number of soil and groundwater samples were collected on the plant site in the process of conducting a Remedial Investigation (RI) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). The samples collected indicated contamination of groundwater beneath the site with VOC's (primarily trichloroethylene). Additionally, the consent order required AVX to update and continue to operate a groundwater treatment system, installed by AVX prior to the Consent Order, under the Department's on-going review process.

In August 2006, the Department received groundwater data from a property owner, near the AVX facility, indicating the presence of VOC contamination similar to the contaminants found beneath the AVX property. Due to this new data, the Department requested AVX submit a work plan to further investigate potential groundwater contamination beyond the AVX facility's existing monitoring wells. Since that time, AVX has installed a number of temporary and permanent groundwater monitoring wells to define the bounds of the off-site groundwater contamination (OU-2). Additionally, surface water and soil gas samples have been collected from OU-2 to fully define the extent of VOC contamination.

The groundwater and surface water data collected in the study of OU-2 was evaluated in a Feasibility Study (FS). The FS uses the information collected during the Remedial Investigation and associated studies to develop and evaluate potential remedial alternatives and their overall protection of human health and the environment. Both groundwater and surface water were considered in the FS.

SITE CHARACTERISTICS

Operable Unit 2 (OU-2) is the off-property groundwater and surface water contamination that has migrated from the AVX facility (OU-1). Figure 1 shows the approximate boundary of OU-2 as defined by data collected during investigations conducted since 2006. The largest single property in OU-2 is an undeveloped and partially wooded parcel located between 17th and 13th Avenue South formerly referred to as the Horry Land Company (HLC) property.

Sources

No sources for VOC contamination are known to exist within OU-2. The sources for groundwater contamination detected within OU-2 are located on the AVX facility property (OU-1). The most likely source areas are located beneath the AVX main building. The Department chose to divide the AVX site into two operable units so that further investigation of the on-site source areas could be conducted, at a future date, once additional building demolition has been completed.

Groundwater

The bulk of the off property groundwater contamination exists beneath the HLC property. Beyond the HLC property, the prominent portion of the groundwater plume migrates northeast toward a flood control pond located on 11th Avenue South. This pond is part of the surface water drainage system referred to as Wither's Swash. Permanent groundwater monitoring wells within OU-2 are sampled routinely. The primary constituents of concern (COCs) detected in the wells include trichloroethylene and the breakdown products associated with this compound (cis-1,2 dichloroethene and vinyl chloride).

Surface Water

Surface-water samples were collected from the discharge point of Withers Swash as it leaves the AVX facility property to the ocean. Detections of site-related COCs were limited to a portion of Withers Swash beginning at the storm water run-off pond located between 11th and 10th Avenues and becoming undetectable downstream prior to Withers Swash Park. The detections of COCs in surface water are consistent with the discharge of contaminated groundwater to the surface water and not from a migration of contamination in surface water from the AVX facility (OU-1).

SCOPE AND ROLE OF OPERABLE UNITS

The AVX Myrtle Beach Site has been divided into two operable units (OU). OU-1 is the AVX facility property located on 17th Avenue South where manufacturing processes occurred. OU-1 contains the source areas for

groundwater contamination as well as groundwater contamination. OU-2 is the off property groundwater contamination that has migrated from the AVX facility.

The split into two operable units was performed because:

- Potential changes in the OU-1 building use/configuration may allow for evaluation and potential selection of other remedial alternatives that are currently not feasible for the onsite contamination.
- Evaluation and selection of a remedial alternative for OU-2 can proceed without delay.

SUMMARY OF SITE RISKS

The area adjacent to the Site is zoned for industrial, commercial, and residential usage. The affected aquifer is a potential underground drinking water source. The primary exposure route would be contact or ingestion of affected groundwater containing contamination. Public water is available in this area, and seems to be used by the residents in the area.

It is the Department's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or the environment from actual or threatened releases of hazardous substances. Based on information collected during the previous investigations, a Feasibility Study (FS) was conducted to identify, develop, and evaluate cleanup options and remedial alternatives.

REMEDIAL ACTION OBJECTIVES

The remedial action objectives for the development and evaluation of alternatives for the Site are:

- Restore groundwater aquifer by reducing the concentrations of COCs in groundwater to below the Federal Maximum Contaminant Levels (MCL's) for drinking water.
- Prevent ingestion and dermal contact with groundwater containing COCs above the MCL's.
- Mitigate the concentrations of COCs in surface water to below the SCDHEC Water Standards for Surface Water and/or the USEPA Regional Screening Level (RSL) for tap water.

SUMMARY OF REMEDIAL ALTERNATIVES FOR GROUNDWATER

Groundwater Alternative OGW-1: No Further Action

The no further action alternative provides a baseline for comparison with the other alternatives, and is included in the evaluation for consistency with the EPA guidance. No remedial activities beyond those that have already been conducted with OU-2 would occur at the Site. Routine groundwater monitoring would not be implemented under this alternative.

The no further action alternative would not impact current land uses or expected future land uses at the site, other than the need to properly abandon existing monitoring wells if their locations interfere with future land uses. Groundwater quality would not be affected other than through natural attenuation, which would not be monitored. The groundwater remedial goals would not be addressed with this alternative. Since no action would be conducted, the net present worth of this alternative is $0.

Groundwater Alternative OGW-2: Limited Action

This alternative would prevent and control potential exposure to groundwater through institutional controls (deed notifications/restrictions), the abandonment of existing irrigation wells, and monitoring the natural attenuation of constituents in groundwater.

This alternative would not impact current or expected future land uses, other than the need to maintain the monitoring well network. Groundwater quality would not be affected other than though natural attenuation, however, the dissolved phase constituent concentrations would be monitored. The total present value cost of this alternative is $872,000 based on monitoring for 30 years.

Groundwater Alternative OGW-3a: Active Treatment-Hydraulic Containment

This alternative would provide protection to human health by preventing or controlling potential exposure to groundwater through institutional controls (deed notifications/restrictions), the abandonment of existing irrigation wells, the hydraulic containment and treatment of groundwater by the use of extraction wells with an associated treatment system (air stripping), and monitoring the natural attenuation of constituents in groundwater.

Natural attenuation from naturally occurring subsurface processes would reduce the concentrations of COCs in groundwater, while the operation of a groundwater extraction and treatment system would prevent further migration of COCs in groundwater and accelerate the groundwater remediation process. Monitoring would be preformed to evaluate changes in COC concentrations within

groundwater. The timeframe for this alternative to achieve remedial goals is estimated to be a minimum of 30 years.

The present value cost of this alternative is $5,250,000 based on 30 years of treatment and groundwater monitoring.

Groundwater Alternative OGW-3b: Active Treatment – Enhanced Anaerobic Bioremediation

This alternative would provide protection to human health by preventing or controlling potential exposure to groundwater through institutional controls (deed notifications/restrictions), the abandonment of existing irrigation wells, the implementation of enhanced anaerobic bioremediation, and monitoring the natural attenuation of constituents in groundwater.

The COC concentrations in groundwater would be reduced through the implementation of enhanced anaerobic bioremediation, accelerating the groundwater remediation process, and preventing the future migration of surface-water infiltration of impacted groundwater. Methane vapor monitoring would be conducted and mitigation implemented, if needed. Additionally, the natural attenuation from natural subsurface processes would reduce any remaining COC concentrations in groundwater after the enhanced anaerobic bioremediation is complete. The estimated timeframe to achieve remedial goals is 15 years.

The present value cost of this alternative is $5,417,000 based on 5 years of active remediation and 10 additional years of groundwater monitoring.

SUMMARY OF REMEDIAL ALTERNATIVES FOR SURFACE WATER

Surface-Water Alternative SW-1: No Action

The no further action alternative provides a baseline for comparison with the other alternatives, and is included in the evaluation for consistency with the EPA guidance. No remedial activities beyond those that have already been conducted within OU-2 would occur at the site. Routine surface water sampling would not be implemented under this alternative.

The no further action alternative would not impact current land uses or expected future land uses at the site and the surface water remedial goals would not be addressed with this alternative. Since no action is being conducted the present value cost of this alternative is $0.

Surface-Water Alternative SW-2: Limited Action

This alternative does not actively reduce existing COC concentrations in surface water. Surface water samples would be collected on an annual basis for an estimated 30 years to monitor changes in surface water concentrations due to natural degradation and the affects of groundwater treatment.

The present value cost of this alternative is $31,000 based on 30 years of surface water monitoring.

Surface-Water Alternative SW-3: Active Remediation – Phytoremediation

This alternative provides protection to human health and the environment by the implementation of phytoremediation and long-term monitoring of surface-water concentrations. Phytoremediation utilizes the ability of plants, in this case hybrid poplar trees, to remove harmful chemicals from the environment and either store those chemicals within the plant or reduce the chemicals to less harmful by-products. Use of phytoremediation at this site would diminish the source of future impacted surface water by preventing the infiltration of impacted shallow groundwater. Natural attenuation from natural processes would reduce the COC concentrations in surface water.

The present value cost of this alternative is $72,000 based on site preparation, tree planting, maintenance cost and 30 years of surface water monitoring.

EVALUATION OF ALTERNATIVES

The National Contingency Plan requires the Department to use specific criteria to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the criteria, noting how each compares to the other options under consideration. The criteria are discussed below:

1. Overall Protection of Human Health and the Environment

When evaluating alternatives in terms of overall protection of human health and the environment, consideration is given to the degree to which site-related risks are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

Groundwater Alternatives:

Alternative OGW-1, the no further action alternative, does not provide adequate protection, because no groundwater monitoring or active remediation would be conducted to reduce the levels of contamination.

Alternative OGW-2, providing monitored natural attenuation, institutional controls, and well abandonment is more protective than Alternative 1. This alternative would continue to monitor the reduction of constituent concentrations in groundwater and limit any potential exposure through deed notifications/restrictions and well abandonment. However, no active remediation would be conducted.

Alternative OGW-3a would be more protective of human health and the environment than OGW-1 or OGW-2 due to the addition of groundwater extraction and treatment. The removal of COPC mass from groundwater would prevent future COC migration, control potential discharge of COCs from groundwater to surface water and prevent exposure to COCs in groundwater.

Alternative OGW-3b would be the most protective of human health and the environment. In addition to institutional controls, well abandonment, and monitoring natural attenuation of COCs in groundwater, this alternative would implement the active treatment process of enhanced anaerobic bioremediation. This alternative would be similar to OGW-3a in that it would prevent future COC migration, control potential discharge of COCs from groundwater to surface water, destroy COCs in groundwater, and prevent exposure to COCs in groundwater, however, with this remedy the reduction of COCs would occur in a shorter time-frame.

Surface-Water Alternatives:

Alternative SW-1, the no further action alternative, does not provide adequate protection, because no surface water monitoring or active remediation would be conducted to reduce the levels of contamination.

Alternative SW-2 would not actively reduce existing COC concentrations in surface water, but would provide measures to monitor changes in surface water concentrations due to natural degradation.

Alternative SW-3 is the most protective of human health and the environment. This remedy would actively reduce COC concentrations at the groundwater/surface water interface and monitor changes in surface water concentrations due to natural degradation and treatment.

2. Compliance with State and Federal Regulations

Each of the alternatives is evaluated with respect to the ability to comply with applicable state, federal and local environmental and health regulations. All regulations that might require consideration are identified and referred to as Applicable or Relevant and Appropriate Requirements (ARARs). ARARs are further broken into the three categories of chemical-specific, location-specific and action-specific.

Groundwater Alternatives:

Alternative OGW-1 would not comply with chemical–specific ARARs for groundwater because no further action would be taken to control potential exposure pathways or address COC concentrations in groundwater. This alternative would also not comply with location–specific ARARs.

Alternative OGW-2 would prevent the completion of an exposure pathway for groundwater through the use of deed notifications/restrictions and irrigation well abandonment. Additionally, by monitoring the reduction of COC's through natural attenuation processes, this alternative would, over a long period of time, comply with chemical-specific ARARs.

Alternatives OGW-3a and OGW-3b would comply with chemical–specific ARARs for COCs in groundwater by the destruction of COCs and by minimizing potential exposure through the use of institutional controls. Additionally, through the use of active remedies, both alternatives would comply with ARARs in a shorter time-frame than OGW-2, however, OGW-3a would take longer to achieve compliance than OGW-3b.

Surface-Water Alternatives:

Alternative SW-1 would not comply with chemical-specific ARARs for surface water because no further action would be taken to address existing COC concentrations in surface water.

Alternative SW-2 would over a long period of time comply with chemical-specific ARARs for surface water by documenting natural attenuation of COC concentrations exceeding the chemical-specific ARARs.

Alternative SW-3 includes monitoring of the attenuation of surface water identified as having COC concentrations exceeding the chemical-specific ARARs following implementation of the phytoremediation component. This alternative would comply with chemical-specific ARARs by documenting these attenuation trends.

3. Long-term Effectiveness and Permanence

This factor considers the ability of an alternative to maintain protection of human health and the environment over time.

Groundwater Alternatives:

Long-term effectiveness and permanence would not be achieved with Alternative OGW-1, the No Action

Alternative. Potential exposure risks associated with COCs in groundwater would remain with no controls or long-term management plan.
Institutional controls and abandonment of irrigation wells would prevent access to COCs in groundwater. Also, as natural attenuation processes reduce COC concentrations in groundwater, periodic groundwater monitoring will allow for a determination of when remedial goals are met. Therefore, Alternative OGW-2 is marginally more acceptable than Alternative OGW-1 regarding this criterion.

Alternatives OGW-3a and OGW-3b would both provide effective and permanent removal of COCs from groundwater and be successful in eliminating human health risks. However, it is assumed that Alternative OGW-3b would take significantly less time to achieve remedial goals.

Surface-Water Alternatives:

Long-term effectiveness and permanence would not be achieved through Alternative SW-1, the No Action Alternative. Potential future exposure associated with COCs in surface water would remain with no controls or long-term management plan.

Both Alternative SW-2 and SW-3 would monitor the natural attenuation processes in surface water and over time achieve long-term effectiveness and permanence. However Alternative SW-3, through the additional use of phytoremediation, would reduce the discharge of COCs in groundwater to surface water and therefore reduce the time to achieve long-term effectiveness and permanence.

4. Reduction of Toxicity, Mobility or Volume through Treatment

This factor evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Groundwater Alternatives:

Natural attenuation mechanisms may result in reduction of COC mobility, toxicity, and volume in groundwater, although monitoring of these processes would not be performed with Alternative OGW-1 to evaluate risks or determine when remedial goals are met. Therefore, Alternative OGW-1 is the least acceptable alternative regarding this criterion.

Active treatment of groundwater would not occur with Alternative OGW-2. However, concentrations would be monitored to determine the rate and extent of reductions through natural attenuation processes over time.

Alternative OGW-3a would, through the use of a groundwater extraction and treatment system, reduce mobility, toxicity and volume of COCs in groundwater.
By the use of enhanced reductive dechlorination and natural attenuation processes, Alternative OGW-3b would permanently reduce the mobility, toxicity, and volume of COCs in groundwater.

Surface-Water Alternatives:

Although natural attenuation processes may result in the reduction of COC mobility, toxicity, or volume in surface water, monitoring of these processes would not be performed under the Alternative SW-1 (No Action Alternative).

While Alternative SW-2 does not provide an active treatment option, it would reduce the mobility, toxicity, and volume of COCs in surface water by natural attenuation processes. Monitoring activities would be conducted to document the attenuation.

Alternative SW-3 would permanently reduce the mobility, toxicity, and volume of COCs in surface water by the interception of COCs in shallow groundwater before discharge to surface water through the process of phytoremediation. Additionally, natural attenuation processes will further reduce COCs in surface water.

5. Short-term Effectiveness

Short-term effectiveness addresses potential human health and environmental risks of the alternative during the construction and implementation phase until remedial response objectives are met.

Groundwater Alternatives:

Alternative OGW-1 (No further action) would have no short-term effects on the community or remediation workers. Groundwater quality would gradually improve through natural attenuation, although it would not be monitored.

Adverse short-term impacts associated with the implementation of Alternative OGW-2 (monitored natural attenuation, institutional controls, and well abandonment) are not anticipated.

The limited construction activities (abandoning irrigation wells, installation of extraction wells, additional monitoring wells, and groundwater treatment system) associated with OGW-3a would result in limited short-term exposure risks and impacts to workers, adjacent populations, or the environment. Construction activities would be managed through engineering controls to minimize exposure.

Implementation of Alternative OGW-3b would result in minimal exposure risks to the community, workers and the environment. Construction and treatment activities (installation of additional monitoring and injection wells, periodic injection activities, and vapor monitoring) would be managed through engineering controls to minimize exposure. Should vapor monitoring of methane indicate a need, mitigation may be necessary in residential areas to control risks from methane production.

Surface-Water Alternatives:

The No Action Alternative (SW-1) does not incorporate any implementation activities that would present exposure risks to the community, workers, or the environment.

Implementation of Alternative SW-2 would result in minimal exposure risk to the community, workers and the environment. This alternative includes periodic surface-water monitoring, which would be conducted by trained workers.

Alternative SW-3 incorporates implementation activities (planting/maintenance/monitoring of hybrid poplar trees and surface-water monitoring) that would present minimal risks of exposure to the community, workers, or the environment.

6. Implementability

The analysis of implementation considers the technical and administrative feasibility of implementation, as well as the availability of required materials and services. Implementability is further categorized into technical feasibility, administrative feasibility and availability criteria.

Groundwater Alternatives:

Groundwater monitoring is an on-going activity at the Site, and continued monitoring and maintenance of the well network would be readily implementable with any of the alternatives. All of the Alternatives are implementable.

Alternative OGW-1 is technically feasible because no technical components are necessary. This alternative is also administratively feasible because no coordination with other parties is necessary.

Implementation of Alternative OGW-2 (MNA and institutional controls) is technically feasible and also administratively feasible as no coordination with other parties is necessary.

Alternatives OGW-3a and OGW-3b are both technically and administratively feasible. The technology used for both these alternatives is conventional and proven. The administrative components can be easily coordinated, and the services and materials needed to implement these remedial alternatives are readily available.

Surface-Water Alternatives:

The No Action Alternative (SW-1) is technically feasible and administratively feasible because of a lack of monitoring or other active measures.

Alternatives SW-2 and SW-3 are both technically and administratively feasible. However, SW-2 would not prevent potential future discharge of COCs from groundwater to surface water, whereas, SW-3 would reduce this potential discharge. Lastly, gaining access to properties for phytoremediation plots could affect the administrative feasibility of SW-3.

7. Cost

The cost analysis evaluated capital costs and annual operation and maintenance (O&M) cost. The total present value cost is the sum of initial capital costs and the discounted value of O&M costs over the lifespan of the remedy.

Groundwater Alternatives Total Present Value Cost:

Alternative OGW-1	$0
Alternative OGW-2	$872,000
Alternative OGW-3a	$5,250,000
Alternative OGW-3b	$5,417,000

Surface-Water Alternatives Total Present Value Cost:

Alternative SW-1	$0
Alternative SW-2	$31,000
Alternative SW-3	$72,000

8. Community Response

Community acceptance of the preferred remedy will be evaluated after the public comment period ends. Public comments will be summarized and responses provided in the Responsiveness Summary Section of the Record of Decision document that will present the Department's final alternative selection. The Department may choose to modify the preferred alternative or select another based on public comments or new information.

SUMMARY OF THE DEPARTMENT'S PREFERRED ALTERNATIVE

Groundwater:

Alternative OGW-3b – Active Remediation – Enhanced Anaerobic Bioremediation

Alternative OGW-3B would combine the use of institutional controls, irrigation well abandonment, enhanced anaerobic bioremediation, and monitored natural attenuation.

Access to contaminated groundwater would be limited through deed notifications/restrictions and irrigation well abandonment. The COC concentrations in groundwater would be reduced through the implementation of enhanced anaerobic bioremediation, accelerating the groundwater remediation process, and preventing the future migration of surface-water infiltration of impacted groundwater. Natural attenuation from natural subsurface processes would reduce any remaining COC concentrations in groundwater once the enhanced anaerobic bioremediation is completed. Monitoring would be performed to evaluate changes in COC concentrations within groundwater for risks to human health or the environment.

The enhanced anaerobic bioremediation system would consist of using a series of approximately 30 injection wells, to deliver a carbon substrate, such as molasses, into the subsurface. The estimated time frame for the injections is four times a year at all 30 wells for 5 years. After the 5 years of injections, monitoring would be conducted for an additional 10 years.

Because the bioremediation process of VOCs can produce methane gas, methane vapor monitoring would also be conducted. It is currently assumed that methane vapor monitoring and potential mitigation would be performed in the vicinity of the residential properties within the treatment areas for 15 years.

This alternative provides the most protection of human health and the environment, and reduces the concentrations of COC in groundwater in a timely manner. It is implementable and although it is the highest in cost, it provides the most permanent removal of COCs and the shortest time for cleanup.

Surface-Water:

Alternative SW-3-Active Remediation-Phytoremediation

Alternative SW-3 would implement phytoremediation by planting hybrid poplar tress along the banks of the surface-water body in the area of likely discharge of COCs from groundwater to surface-water. Monitored natural attenuation would also be conducted to document the declining concentrations of COCs.

Phytoremediation is an accepted remedial alternative for VOCs in groundwater and the location within OU-2 that this remedy would be used is very suited for this application.

Installation of the phytoremediation componet will require property access, which could affect administrative feasibility. However, this alternative should not impact current or expected future land uses, other than the need to gain access to properties, plant the trees, and monitor surface water.

This alternative provides the most protection of human health and the environment, and reduces the potential future discharge of COCs in groundwater to surface water. It is implementable and although it is the highest in cost, it provides the shortest time for cleanup.

COMMUNITY PARTICIPATION

The Department will evaluate comments from the public before selecting a final alternative. A comment period has been established to allow the public an opportunity to submit written comments to the Department. The community is also invited to a public meeting where the Department will discuss the Feasibility Study results, present the preferred alternative, and accept comments on the remedial alternatives.

The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files are provided on the first page of this Proposed Plan.

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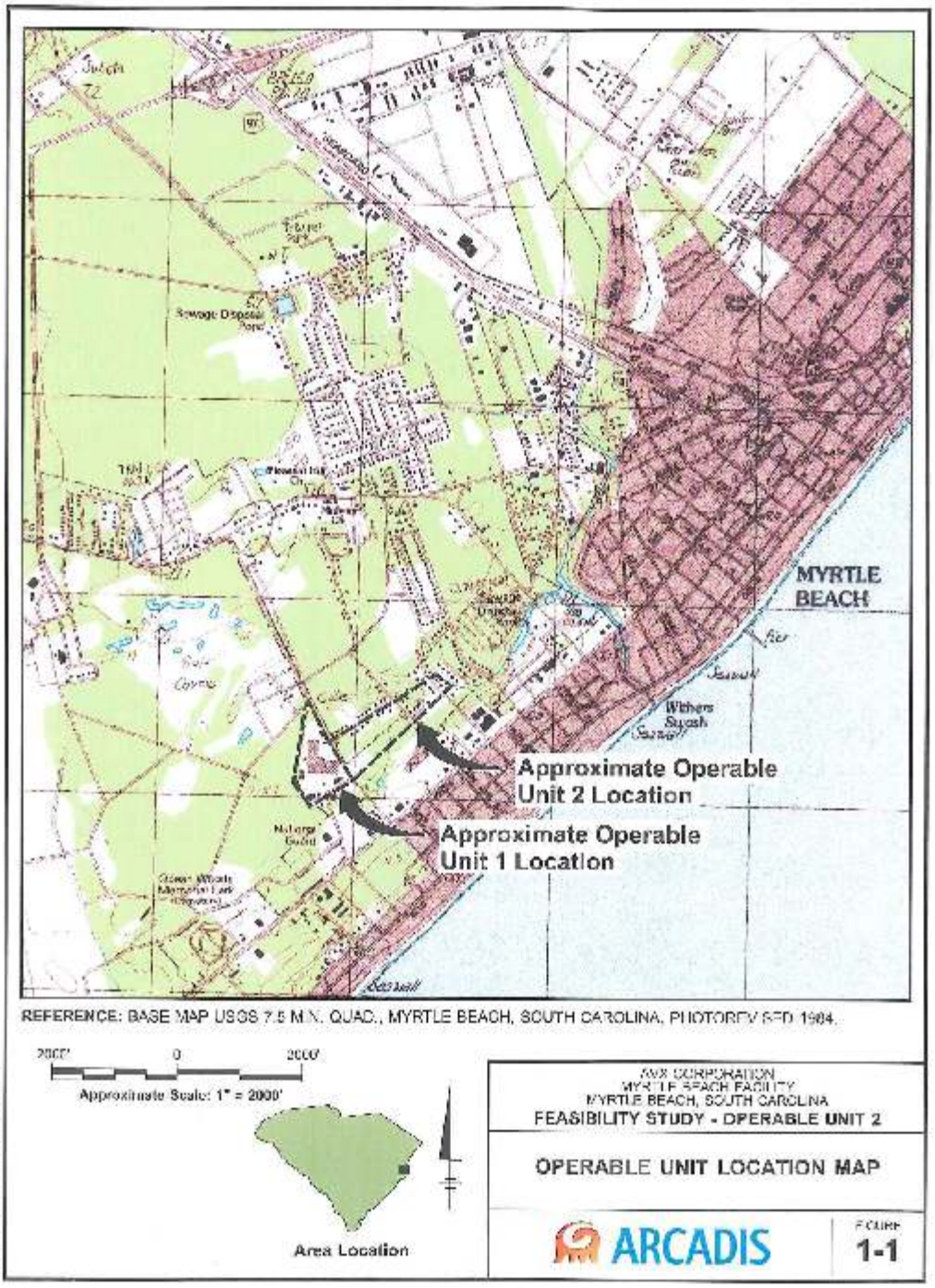
Technical Reports

- A **Remedial Investigation (RI)** identifies the potential sources of contamination; and determines what contaminants are at the site, and the extent of the contamination.
- A **Feasibility Study (FS)** considers various cleanup alternatives for the soil and groundwater.
- A **Proposed Plan (PP)** describes cleanup alternatives to address contamination.
- A **Record of Decision (ROD)** identifies the selected cleanup method.
- The **Remedial Design (RD)** is the development of specifications and drawings necessary for the construction and implementation of the ROD.


MYRTLE BEACH
Withers Swash
Approximate Operable Unit 2 Location
Approximate Operable Unit 1 Location
Sewage Disposal
REFERENCE: BASE MAP USGS 7.5 M.N. QUAD., MYRTLE BEACH, SOUTH CAROLINA, PHOTOREVISED 1984.
2000' 0 2000'
Approximate Scale: 1" = 2000'
Area Location
AVX CORPORATION
MYRTLE BEACH FACILITY
MYRTLE BEACH, SOUTH CAROLINA
FEASIBILITY STUDY - OPERABLE UNIT 2
OPERABLE UNIT LOCATION MAP
ARCADIS
FIGURE
1-1

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the AVX-Myrtle Bach Site is important. Comments provided by the public are valuable in helping DHEC select a final cleanup remedy.

You may use the space below to write your comments, then fold and mail. Comments must be postmarked by December 2, 2011. If you have any questions, please contact Carol Minsk at 803-896-4032. Additionally, you may also submit your questions and/or comments electronically to Minskcc@dhec.sc.gov by December 2, 2011.