FIVE-YEAR REVIEW REPORT

THIRD FIVE-YEAR REVIEW REPORT
FOR
BEULAH LANDFILL DELETED SUPERFUND SITE

PENSACOLA,
ESCAMBIA COUNTY, FLORIDA
EPA ID: FLD980494660

September 25, 2008

Prepared By:

U.S. Army Corps of Engineers
Mobile District
109 Saint Joseph Street
Mobile, Alabama 36602

Approved by:

Franklin E. Hill
Director
Superfund Division
U.S. Environmental Protection Agency, Region 4

Date: 9/25/08

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ATTACHMENTS

LIST OF ACRONYMS, SYMBOLS, AND ABBREVIATIONS

ARARs	Applicable or Relevant and Appropriate Requirements
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C&D	Construction & Demolition
ECDSW	Escambia County Division of Solid Waste Management
EPA	U.S. Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Management
GCTL	Groundwater Cleanup Target Level
HDPE	High Density Polyethylene
IPC	International Paper Company
MCL	Maximum Contaminant Level
NCP	National Contingency Plan
NGVD	National Geodetic Vertical Datum
NPL	National Priorities List
O&M	Operation & Maintenance
PA	Preliminary Assessment
PAH	Polynuclear Aromatic Hydrocarbons
PCP	Pentachlorophenol
PCBs	Polychlorinated Byphenyls
PRP	Potentially Responsible Parties
RA	Risk Assessment
RAO	Remedial Action Objective
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SAR	Site Assessment Report
TCL/TAL	Target Compound List/Target Analyte List
TCE	Trichloroethene
USACE	U.S. Army Corps of Engineers
ZOD	Zone of Discharge

EXECUTIVE SUMMARY

The Beulah landfill is located in Southwestern Escambia County, Florida and is comprised of two sections; the northern portion which received only solid wastes during its operation, and the southern portion which also received domestic septage and wastewater treatment sludges. Both the northern and the southern portions have been capped and the landfill was officially closed in 1999. An additional area containing construction and demolition material was discovered in 2002 along the south boundary of the southern portion of the landfill. Recent investigations have defined the lateral and vertical extent of this material.

The Beulah landfill was placed on the National Priorities List (NPL) in 1990 following a 1985 Preliminary Assessment (PA) which indicated contaminants in excess of regulatory standards. In 1991, an administrative order was signed with Escambia County Division of Solid Waste Management (ECDSW) to perform a Remedial Investigation/Feasibility Study (RI/FS) and a subsequent Baseline Risk Assessment (BRA). The Baseline Risk Assessment and the comparison of exposure concentrations to chemical-specific standards indicated that there were no unacceptable risks to human health or the environment at the Site.

The Record of Decision (ROD) for Beulah Landfill was signed in September 1993 and selected a "no action" remedy. This determination means that no action was necessary under CERCLA to ensure protection of human health or the environment. The ROD noted that closure of the landfill would occur in accordance with Florida Department of Environmental Protection (FDEP) requirements and with continued groundwater and surface water monitoring. Semi-annual groundwater and surface water monitoring have been performed under FDEP oversight since 1994. The site was delisted from the National Priorities List (NPL) in 1998.

During the second five-year review, the U.S. Environmental Protection Agency (EPA) determined that the selected remedy was protective under CERCLA and the Site continued to pose no unacceptable risk to human health and the environment. The EPA further determined that the groundwater contamination monitored during semi-annual sampling events was being adequately addressed by the Florida Department of Environmental Protection as intended by the ROD.

This is the third five-year review for the Beulah Landfill. No contaminants have been discovered during this review period which would call into question the protectiveness of the remedy. The selected remedy at the Site remains protective of human health and the environment. There are no complete exposure pathways that could result in unacceptable risks under CERCLA. The EPA expects that the ECDSW will comply with the state landfill closure program's monitoring and corrective action requirements as determined by the FDEP. Institutional controls are included in the State Closure Permit.

FDEP has required several assessments, including a Site Assessment Report (SAR), dated March 14, 2008, which was performed by the county and found that groundwater contaminant levels remain above Florida Primary and Secondary standards. Bioassay and biodiversity studies were also performed during this review period to determine if the groundwater has an adverse effect on

the quality of water within Elevenmile Creek. FDEP stated that continued groundwater monitoring without remedial action is not acceptable under the state landfill closure program. The FDEP requested that a SAR addendum that includes appropriate recommendations regarding remedial action be submitted to the Department by September 5, 2008. The Beulah Landfill is well maintained and there is little opportunity for improvement beyond compliance with Florida groundwater and surface water criteria. The FDEP monitoring program is continuing on a semi-annual basis as stipulated in the closure permit. The next five-year review is due September 2013.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Beulah Landfill Superfund Site		
EPA ID *(from WasteLAN)*: FLD980494660		
Region: 4	**State:** FLA	**City/County:** Pensacola/Escambia County

SITE STATUS	
NPL status: : ☐ Final ☒ Deleted ☐ Other (specify)	
Remediation status (choose all that apply): ☐ Under Construction ☐ Operating ☒ Complete	
Multiple OUs?* ☐ YES : ☒ NO	**Construction completion date:** September 16, 1993
Has site been put into reuse? ☒ YES ☐ NO The Northern Portion of the landfill is utilized for recreational purposes by the Academy of Model Aeronautics. The Southern portion is not in use. Both areas have been capped.	

REVIEW STATUS	
Lead agency: : ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency	
Author name: Rhonda Capes, P.G.	
Author title: Geologist	**Author affiliation:** U.S. Army Corps of Engineers
Review period: December 1, 2007 through September 25, 2008	
Date(s) of site inspection: January 15, 2008	
Type of review: ☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion	
Review number: ☐ (first) ☐ (second) ☒ (third) ☐ Other (specify)	
Triggering action: ☐ Actual RA On-site Construction at OU #___ ☐ Construction Completion ☐ Other (specify) ☐ Actual RA Start at OU# NA ☒ Previous Five-Year Review Report	
Triggering action date *(from WasteLAN)*: September 25, 2003	
Due date *(five years after triggering action date)*: September 25, 2008	

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

1. The perimeter fencing and the fence along the entrance to the facility do not restrict access adequately to protect the components of the landfill such as pipes and vents.

2. Groundwater contamination remains in excess of Florida standards under the state landfill closure program.

Recommendations and Follow-up Actions:

1. Repair the perimeter fencing, the fence along the entrance to the facility, and bollards to restrict access and the potential for vandalism.

2. The PRP should continue closure under the FDEP landfill closure program.

Protectiveness Statement:

No contaminants have been discovered during this review period which would call into question the protectiveness of the remedy. The selected remedy at the Site remains protective of human health and the environment. There are no complete exposure pathways that could result in unacceptable risks under CERCLA.

Other Comments:

BEULAH LANDFILL SITE
PENSACOLA, FLORIDA
THIRD FIVE-YEAR REVIEW REPORT

I. INTRODUCTION

As the lead agency, U.S. EPA, Region 4 formed a team consisting of the Remedial Project Manager and U.S. Army Corps of Engineers (USACE) engineering staff to conduct the Five-Year Review. The USACE, Mobile District, was tasked by the EPA to perform the third Five-Year Review of the Beulah Landfill in Pensacola, Florida. The purpose of the five-year review is to determine whether the remedy at a site remains protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, Five-Year Review reports identify issues found during the review, if any, and identify recommendations to address them.

The USACE is preparing this Five-Year Review for the EPA pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The Record of Decision for Beulah Landfill was signed in September 1993 and selected a "no action" remedy in conjunction with closure of the landfill in accordance with Chapter 62-701, Florida Administrative Code (FAC). The remedy selected in the ROD further specified that groundwater monitoring would continue to ensure that the "no action" remedy remained protective of human health and environment.

The Site has one operable unit (OU) which addresses soil, sediment, surface water and groundwater contamination at the site. The landfill was closed in accordance with FDEP

requirements, and operation and maintenance and groundwater monitoring activities are ongoing under the FDEP's program.

This is a statutory five year review, which, in accordance with CERCLA §121 and the NCP, is triggered by remedial action that leaves hazardous substances, pollutants, or contaminants on site above levels that allow for unlimited use and unrestricted exposure. This is the third five-year review for Beulah Landfill since implementation of the ROD. The triggering action for this statutory review is the second five-year review that was completed on September 25, 2003. The USACE conducted this third five-year review during the period December 1, 2007 to July 31, 2008. This report documents the results of the review. The next five-year review will be required in September 2013.

II. SITE CHRONOLOGY

Table 1 presents the chronology of events for the Beulah Landfill Site

Table 1
Chronology of Site Events

EVENT	DATE
Disposal of solid waste begins	1966
Disposal of domestic waste and wastewater treatment sludges begins	1968
EPA Initial Investigation	September 1980
Sludge disposal ceases	1984
EPA lists Beulah Landfill on the Superfund National Priorities List	March 1990
Florida Department of Health and Rehabilitative Services Preliminary Health Assessment	May 1990
Installation of three additional groundwater monitor wells for site characterization	1992
Remedial Investigation	July 1993
EPA Baseline Risk Assessment	1993
ROD signed by EPA (No Action)	September 1993
FDEP Permit for Closure of the Beulah Landfill	July 1994
Semi-Annual Groundwater Monitoring begins pursuant to landfill closure regulations	1994
Revision to Site Closure Plan approved by FDEP	1997
U.S. Department of Health and Human Services Site Review and Update	September 1997

Beulah Landfill Superfund Site deleted from NPL	June 1998
First Five-Year Review	**September 24, 1998**
Completion of Beulah Landfill closure	1999
EPA allows use of the northern portion for recreation purposes	April 2002
Preliminary groundwater assessment performed for former construction & demolition (C & D) materials landfill	June 2002
FDEP requires submittal of Remedial Action Plan	August 30, 2002
Second Five-Year Review	**September 25, 2003**
Class I Long Term Care Closure Permit renewed	July 21, 2004
Bioassay Study completed for MW-6 and Eleven Mile Creek	September 23, 2004
FDEP recommends additional Bioassay Study of Creek sediment	May 2005
Follow-up Bioassay and Biodiversity Study	October 2007
Additional Subsurface Investigation of C & D Debris Landfill	October 2007
Site Assessment Report Complete	March 2008
FDEP requires SAR Addendum to be submitted by September 5, 2008	July 9, 2008

III. BACKGROUND

The following subsections present background information for the Beulah Landfill site including physical characteristics, land and resource use, history of contamination, initial response, and the basis for taking action.

PHYSICAL CHARACTERISTICS

The Beulah Landfill site is topographically located at Latitude 30°N30'57" and Longitude 87°W20'31 in southwestern Escambia County, Florida. Geographically, Beulah Landfill is located approximately 10 miles northwest of downtown Pensacola, Florida (Figure 1).

The Beulah Landfill comprises approximately 101 acres and is divided into a northern portion and a southern portion by a natural barrier, Coffee Creek. Coffee Creek discharges into Elevenmile Creek which forms a natural boundary on the eastern edge of the landfill (Figure 2). Elevenmile Creek is the receiving stream of wastewater discharge from the International Paper Company Cantonment Plant (IPC) located approximately 6 miles upgradient. Elevenmile Creek discharges into Perdido Bay, a saltwater bay connected to the Gulf of Mexico by Perdido Pass.

Closure of the site was officially completed in 1999 by placing a clay cap on the northern portion and installing a High Density Polyethylene (HDPE) synthetic cover on the southern portion. Currently the surface of the site is covered with grass and is relatively flat with the exception of low berms around the perimeter and multiple stormwater diversion flumes. Steeper slopes exist near the edges of the creeks and near a small stormwater retention pond located in the northwest corner of the landfill.

LAND AND RESOURCE USE

Beulah Landfill is surrounded by sparse piney woods to the east, north, and west and remains basically undeveloped at this time (Figure 2). IPC owns a majority of the surrounding property and utilizes the property as timber plantations. IPC also owns the land adjacent to the southern property line. Escambia County Division of Solid Waste Management (ECDSW) is in negotiation with IPC to purchase IPC property near the site.

IPC operates under a temporary permit allowing discharge of industrial effluent into Elevenmile Creek. At the time of the 2003 five-year review, plans were underway for construction of an effluent pipeline that would parallel the western side of Beulah Landfill and traverse along the southern boundary. IPC's initial request for construction of this pipeline was denied and is currently under appeal. To date, no pipeline construction activities have occurred and IPC continues to discharge approximately 24 million gallons/day of effluent to Elevenmile Creek.

Several residences are located adjacent to the southeastern corner of the site and on Jamesville Road. Other than these few residences, the area is sparsely populated. Residences along Jamesville Road are connected to the municipal water supply system. Another residential community is located less than 1 mile northeast of the site. At the time of this review, there are no known plans for increased residential or commercial development in the area.

The underlying groundwater aquifer at the site is the Sand-and-Gravel Aquifer. The surficial zone of this aquifer is primarily composed of fine silt, clay, and sand. Groundwater flows towards and discharges into Elevenmile Creek and Coffee Creek. The SAR confirms the direction of groundwater flow. The surficial zone of the Sand-and-Gravel Aquifer is not typically used as a source for potable water.

HISTORY OF CONTAMINATION

Beulah Landfill was operated as a municipal landfill between the years 1966 to 1984. The northern portion of the site received only solid wastes whereas the southern portion received solid wastes, domestic septage, and wastewater treatment sludges. Waste depths in the northern portion ranged from 4 to 10 feet within the northwest area, increasing to about 25 feet toward the northeast area. Wastes in this area were covered with native soils and then planted with pine trees.

The southern half of the site was a sand borrow pit prior to 1965. Solid wastes were initially deposited into the southwest corner of the borrow pit to depths of 15 to 20 feet. In 1968, the first domestic septage and wastewater treatment sludges were deposited in a 10-acre, excavated and bermed area at the southwest corner of the site. Sludge deposition continued in the southern half until all landfill operations ceased in June 1984. A soil cover was not placed on the sludge after deposition ceased.

During the final stages of the landfill closure, Gallet & Associates, Inc. participated in the installation of a landfill gas monitoring system around the perimeter of the southern portion of the

site. During installation of these wells, an area of construction & demolition (C&D) material was discovered beneath the surface. Gallet & Associates, Inc. reported that ECDSW had formerly operated a C&D disposal facility in this area and that wastes were managed such that only C&D material was accepted. Subsequent investigative activities have been performed to determine the lateral and vertical extent of this waste and determine its impact, if any, to the groundwater of the site. Results of these investigations are further discussed herein.

INITIAL RESPONSE

In 1982, a site investigation was performed for the Beulah Landfill by Ecology and Environment, Inc., followed by a Preliminary Assessment performed by the EPA in 1985. Results of the investigations indicated contaminants in the soil and groundwater in excess of current regulatory standards. In 1990, the Beulah Landfill was placed on the National Priorities List (NPL). The NPL is a list of priority releases for long-term evaluation and remedial response, and was promulgated pursuant to section 105 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended (P.L. 99-499). The NPL list is found in the NCP (Appendix B of 40 CFR part 300). The Site was deleted from the NPL on June 22, 1998.

In 1990, the EPA performed a search for Potentially Responsible Parties (PRPs) and on September 16, 1991 signed an Administrative Order with the PRP (ECDSW) to perform a Remedial Investigation/Feasibility Study (RI/FS).

The RI was performed by the PRP's contractor (Engineering Science, Inc.) and was streamlined in order to characterize the site's "hot spots" and provide information to be used in the EPA's Baseline Risk Assessment (BRA). All media sampled were analyzed for Target Compound List/Target Analyte List (TCL/TAL) including Pesticides and Polychlorinated Byphenyls (PCBs).

BASIS FOR TAKING ACTION

Contaminants

A range of organic and inorganic contaminants were found in all media sampled at the site. Groundwater contamination exceeding EPA's maximum contaminant levels (MCLs) was limited to benzene, naphthalene, and pentachlorophenol (PCP). PCP occurred in one of the on-site wells at concentrations of 120-130 parts-per-billion (ppb). The MCL for PCP was 1 ppb, therefore PCP was listed as a contaminant of concern in groundwater for Beulah Landfill.

The primary contaminants of concern identified in soils and sludges were polynuclear aromatic hydrocarbons (PAHs), pesticides, PCP and metals including aluminum, zinc, iron, lead, chromium, nickel, and zinc.

Risk Assessment

The BRA provided the basis for the selected remedy. The BRA served as the baseline for indicating risks that could exist if no action was taken at the site. It was determined that there were no known complete exposure pathways at the site. A trespasser scenario was developed as the most likely future human health exposure pathway. The total risk based on trespasser exposure was within the EPA's acceptable risk range for Superfund Sites.

The risk to the environment was determined through the assessment of potential adverse effects to ecosystems and populations resulting from site related contamination. The main media of ecological concern were surface soil, surface water, and sediments. Although elevated levels of contaminants were found in the surface water and sediments of a swale area, the swale area was not considered to be an aquatic habitat since it also contained periodic rainfall. Cyanide was the only contaminant of concern associated with either Coffee or Elevenmile Creek that could pose a threat to aquatic communities. Sediment concentrations were also found to be within acceptable ranges. It was determined from the environmental risk assessment that actual or threatened releases of hazardous substances for the site did not pose an imminent danger to the environment.

IV. REMEDIAL ACTIONS

The following subsections present the remedial actions for the Beulah Landfill site including remedy selection, remedy implementation, and operation and maintenance.

REMEDY SELECTION

The Record of Decision (ROD) was signed on September 16, 1993 and was developed in accordance with CERCLA, as amended (P.L. 99-499). The State of Florida, specifically the Florida Department of Environmental Protection (FDEP) was the support agency during the Remedial Investigation, with input to the ROD and participation in remedy selection.

The selected remedy from the ROD states:

> "The Baseline Risk Assessment and the comparison of exposure concentrations to chemical-specific standards indicates that there is no unacceptable risk to human health or the environment at the Site. Therefore, no action is necessary to ensure protection of human health or the environment. However, the groundwater will be monitored to ensure that this no action remains protective of human health or the environment.
> The EPA understands that the Site will be closed by the State of Florida in accordance with the Florida Administrative Code: Chapter 17-701, Solid Waste Management Facilities."

CERCLA Section 121 clean-up standards for selection of a Superfund remedy, including the requirement to meet Applicable, Relevant and Appropriate Requirements (ARARs), are not triggered for Beulah Landfill. However, the FDEP has promulgated state closure requirements for municipal and industrial landfills.

FDEP closure requirements for a solid waste landfill include groundwater and surface water monitoring and corrective action, if needed. A brief summary of FDEP closure specifications

regarding the surface water and groundwater monitoring program, as described in the current permit dated June 28,1999 renewed on July 21, 2004, and amended on August 24, 2004, is provided as follows:

- The monitoring network shall include eleven (11) groundwater wells and four (4) surface water sampling points.
- All sampling shall be performed semi-annually with reports following no later than the end of May and November.
- A written report shall be submitted every two years summarizing the water quality and water levels from permit issuance to present.
- Groundwater laboratory analyses shall include all parameters listed in FAC Rule 62-701.510(8)(a) and 62-701.510(8)(b) and pentachlorophenol (EPA Method 8041 or 8151) and PAH compounds (EPA Method 8100, 8270, or 8310).
- The allowable horizontal zone of discharge (ZOD) for the site shall extend to the existing property line. The vertical ZOD shall extend from land surface down to the top of the clay-confining unit at approximately +195 ft to +210 ft NGVD (58 to 78 feet Below Land Surface).
- Compliance with water quality standards of FAC Rule 62-520.420, and as contained in FAC Rules 62-550.310 and 62-550.320, shall be met at and beyond the edges of the ZOD. Within and beyond the edge of the ZOD, compliance with minimum groundwater criteria of FAC Rule 62-520.400 shall be met. Surface water criteria in accordance with FAC Rules 62-302.500 and 62-302.530, shall be met beyond the ZOD.

REMEDY IMPLEMENTATION

The remedy described in the ROD is "no action". The EPA understands that the closure of the landfill will occur in accordance with FDEP closure permit regulations, including groundwater and surface water monitoring.

Landfill closure began in 1985 and was interrupted from 1988 to 1993 during the Superfund Investigation. In September of 1993, the ROD was signed and closure procedures were again started. Closure of the Beulah Landfill was completed in 1999.

Closure of the landfill included installation of impermeable caps: a clay cap on the northern portion and a synthetic cap on the southern portion. Closure procedures also included initiation of the groundwater and surface water monitoring program on a semi-annual basis. This monitoring began in 1994 and has continued on a semi-annual basis to the present. Sampling, compilation, and review of the data has been performed by Gallet & Associates and URS Corporation with copies provided to the FDEP for subsequent review and comment.

Additionally, results of the semi-annual monitoring are compiled every two years into a Water Quality Report. The last two-year report prepared by URS Corporation is dated March 16, 2007 and includes groundwater and surface water data from the 2005 and 2006 semiannual sampling events. As stated in the Beulah Landfill – Class I Long-Term Care Permit under F.A.C. Rule 62-701, water monitoring shall continue for a period of thirty (30) years from issuance of the permit. Long term care for Beulah Landfill was initiated on May 8, 2001. FDEP may extend the monitoring period if the closure design or closure operation plan is found to be ineffective.

The current groundwater and surface water monitoring plan consists of sampling at two background wells (MW-4 and newly constructed well, MW-10R), five detection wells (BMW-1R, BMW-3R, MW-7, MW-8, and MW-9), four point of compliance wells (BMW-2, BMW-7, MW-6, and newly constructed well, MW-11), one background surface water station (SW-4UG), one upgradient location (SW-6), one detection surface water station (SW-7), and a downstream location (SW-3). All sampling locations are shown on Figure 3.

OPERATION AND MAINTENANCE

Operation and Maintenance (O&M) for the site occurs under FDEP oversight and includes erosion control, grounds maintenance, landfill gas monitoring, repairs, and implementation of the groundwater and surface water monitoring plan as stated in the FDEP closure permit. The ECDSW is responsible for developing, funding, and implementing all O&M activities. ECDSW has provided the following O&M breakdown for maintenance and projected expenditures of the Beulah Landfill for 2008 (Table 2).

Table 2
Operation and Maintenance Costs
2008

Item	Description	Annual Cost
Grounds Maintenance	Mowing, Trimming	$13,371.50
Groundwater/Surface Water Analysis	Semi-annual groundwater and surface water collection, analysis, and reports	$39,576.60
Maintenance and Repairs	Repairs to Erosion and Stormwater Devices, repairs to monitor wells, fences, and gates.	$14,500
Total Annual O&M Costs		**$67,449**

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

The USACE completed the second five-year review for Beulah Landfill on September 25, 2003. The protectiveness statement from the second five-year review stated the following:

> *According to the data reviewed, site inspection, and interviews, the remedy at Beulah Landfill is protective of human health and the environment. There are no threats to human health from the lack of perimeter fencing or from groundwater releases. The threat to the surface water from releases of groundwater contamination above Florida's*

surface water standards is being pursued by the FDEP under its permit closure requirements as intended by the ROD. EPA will monitor FDEP's progress in achieving compliance with its closure requirements. If in one year FDEP fails to achieve compliance, EPA will reevaluate the site and determine what federal action is needed to achieve compliance.

EPA contacted FDEP during the 2004 time period and confirmed that FDEP and ECDSW were actively evaluating the groundwater contamination at Beulah Landfill. Since completion of the second five-year review (2003), the following supplemental investigations have been completed:

- The horizontal and vertical extents of the construction debris discovered at the south end of the landfill were defined through preliminary and supplemental assessments. During these investigations, 2 permanent monitor wells (MW-10 and MW-11) and 5 temporary monitor wells were installed. Additionally, 6 gas probes were installed through direct push technology. (2001-2003)

- A bioassay study of the groundwater in MW-6 and a bioassay/biodiversity study of Elevenmile Creek were performed pursuant to the request of FDEP. (2004)

- A soil gas assessment was performed along the northern and southern boundaries of the landfill. (2007)

- An addendum investigation to determine the impact to groundwater from the C&D landfill was completed. This investigation included the installation of 5 permanent monitoring wells (MW-12, MW-13, MW-13D, MW-14, and MW-6R). (2007)

- A follow-up bioassay and biodiversity study was performed for Elevenmile Creek. (2007)

In addition to these supplemental investigations, regularly scheduled groundwater, surface water and vapor monitoring have continued in accordance with the current landfill closure and long-term care permits (No. SF17-253440 and No. 0078433-003-SF).

Recommendations and follow-up actions presented in the 2003 five-year review are shown on the following Table 3.

Table 3
Previous Five-year Review Recommendations and Follow-Up Actions

Issue	2003 Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	2003-2008 Action Taken and Outcome
Access Control	Complete perimeter fencing	PRPs	EPA	Fencing has been completed where applicable. Concrete bollards have been placed in areas where trespassing is evident. "No Trespassing" signs have been posted. The main gate is locked when not in use.
Monitor well is not secured	Conduct a complete inventory of the existing wells and provide locks where necessary	PRPs	EPA	Complete. All monitor wells are properly secured and checked at each semi-annual monitoring event.
Groundwater contamination is in excess of standards	Comply with FDEP Closure Permit Requirements	PRPs	EPA	On-going. Several additional assessments were performed to address the contamination in excess of standards. FDEP and ECDSW are in communication regarding this issue.

VI. FIVE-YEAR REVIEW PROCESS

The third five-year review was conducted by the USACE under guidance from the EPA Remedial Project Manager, Erik Spalvins. Technical expertise for the review was provided by Rhonda Capes of USACE. State concerns for the Site were identified and discussed with Bonnie Whitlock and Kelsey Helton from the FDEP.

The five-year review process consisting of administrative components, document review, data review, site inspection, and interviews is described in the following subsections.

ADMINISTRATIVE COMPONENTS

This Beulah Landfill Site Five-Year Review was performed by Rhonda Capes of the USACE. A schedule was established to include document review, data review, site inspection, interviews, and report development during a conference call between representatives of the EPA and USACE on November 28, 2007. FDEP and the PRP, Escambia County Solid Waste Department, were notified of the initiation of the five-year review by the EPA. The components of the review include:

- Community notification;
- Document review;
- Data review;
- Site inspection;

- Interviews; and
- Five-Year Review Report development and review.

COMMUNITY NOTIFICATION

Public notice was written by the EPA and posted in the Pensacola News Journal on January 18, 2008. A copy of the notice is provided within Attachment 7. No public responses to the notice were received by the EPA. Within thirty (30) calendar days of the Third Five-Year Review Report finalization, a notice will be published in the same local newspapers announcing that the Third Five-Year Review Report for the Beulah Landfill Superfund Site is complete, and the results of the review and the report are available to the public at the information repository which is located at West Florida Regional Library, 200 W. Gregory Street, Pensacola, Florida 32501.

DOCUMENT REVIEW

This third five-year review consisted of a review of relevant documents including decision documents, semi-annual groundwater and surface water monitoring reports, bi-annual water quality reports, quarterly facility inspection checklists, closure permits, additional investigation reports, and miscellaneous file correspondence. Attachment 2 provides a list of all documents reviewed for this effort.

DATA REVIEW

Laboratory analytical results from the semi-annual sampling events of 2003 through 2008 were reviewed for compliance with current FDEP groundwater and surface water standards. A summary of groundwater, surface water and sediment data was provided in the SAR and is included in Attachment 3. The monitoring program, including the selection of chemicals of concern, sample locations, and sampling frequency is implemented under the direction of the FDEP and not directly related to the ROD.

Groundwater Monitoring

Semiannual groundwater monitoring has been conducted since 1999. Four Volatile Organic Compounds (VOCs) exceeded FDEP GCTLs, benzene, tetrachloroethene, vinyl chloride, and acrylonitrile. One Semi-Volatile Organic Compounds SVOC, pentachlorophenol, was found in two wells in 1999, and in 2007 was found in only one well. Eight Polynuclear Aromatic Hydrocarbons (PAHs) exceeded FDEP GCTLs (1-methylnapthalene, 2-methylnapthalene, acenapthalene, benzo(a)anthracene, benzo(b)fluoranthene, fluorene, naphthalene, and phenanthrene). Five of the PAHs have only occurred in one well, MW-6, since 2002. Six inorganic parameters (iron, ammonia, arsenic, sodium, mercury, and total dissolved solids) exceeded FDEP GCTLs in groundwater. Groundwater sample results from the SAR are summarized in Table 6-1 of the SAR, included in Attachment 3.

Surface Water Monitoring

Four surface water locations are sampled during the semi-annual sampling events. Each of these is monitored for volatile, semi-volatile, and inorganic constituents. Iron was detected above the FDEP established criteria level at SW-3, SW-4, and SW-7. Ammonia was above the criteria level at SW-3 only and nitrogen was above the criteria level during one sampling event only at SW-7. Several semi-volatile constituents were detected at SW-6 during the February 2005 sampling event but were undetected in the following events for the reporting period. Surface water sample results from the SAR are summarized in Table 6-2 of the SAR, included in Attachment 3.

Sediment Monitoring

No sediment samples collected in 2007 exceeded the Sediment Quality Assessment Guidelines identified by FDEP. Some samples collected in 1992 and 1993 exceeded FDEP's identified regulatory levels. Sediment sample exceedances from the SAR are summarized in Table 6-3 of the SAR, included in Attachment 3.

C & D Landfill Assessment

A C & D landfill was discovered during the final stages of remedy installation in the southern portion of Beulah Landfill. In 2001, a preliminary assessment was performed and included the installation of two monitoring wells, MW-10 and MW-11. In 2003, an additional assessment was performed to address groundwater conditions further downgradient of the C & D landfill. Benzene, PCP, and benzo(b)fluoroanthene were detected above groundwater contaminant target levels (GCTLs) in the temporary monitoring wells installed at that time.

An additional investigation was performed in 2007 to evaluate the C & D landfill's impact to the groundwater conditions evidenced at MW-6. Permanent monitoring wells, MW-12, MW-13, MW-13D, MW-14 and MW-6R were installed during this investigation. MW-6R was installed to provide groundwater access downgradient of MW-6 and nearer Elevenmile Creek. No contaminants historically evidenced at MW-6 were detected in these wells.

Bioassay/biodiversity Assessments

Two bioassay/biodiversity studies were performed during the period of this 5-year review by URS Corporation and are described in the SAR. According to URS, results indicated that the biodiversity within Elevenmile Creek is not affected downstream of the Beulah Landfill. Neither the sediment nor the surface water exhibited toxicity to sensitive aquatic organisms. Furthermore, URS observed that contaminants within the surface water that were above Class III fresh water standards were only observed upstream of MW-6. Elevenmile Creek receives approximately 24 million gallons/day of wastewater effluent from the International Paper Company Cantonment Plant located approximately 6 miles upstream.

SITE INSPECTION

The site inspection was conducted on January 15, 2008. Individuals in attendance included: Rhonda Capes (USACE), Erik Spalvins (EPA), Ron Hixson, Devon Kinney, Sandy Perkins (ECDSW), and Bonnie Whitlock (FDEP). Notes and observations from the site inspection were recorded on the Site Inspection Check List provided in Attachment 4. Several photographs are provided in Attachment 5.

The main entrance into Beulah Landfill was locked and provided with the appropriate signage marked with "no trespassing" and "do not disturb soil". This is the only entrance provided for vehicular traffic and the road was noted to be in good condition. This road continues around the perimeter of the northern half and southern half of the landfill and provides access to the monitor wells and surface water sampling locations. This entrance is also utilized by the Escambia County Air Modelers for access to Fritz Field located on the northern portion of Beulah Landfill.

The surface of the landfill has a good vegetative cover of grass, and the berms and drainage flumes are in good condition. No major areas of erosion were noted. Mr. Hixson stated that one of the drainage flumes had been replaced since the previous five-year review and additional replacements have been budgeted.

Each of the sixteen monitor wells at the site was located at the time of the inspection and noted for condition. Monitor wells at the site were all provided with protective steel surface casings, and most with protective steel posts. Each monitor well was locked.

One surface water sampling location was noted during the inspection. No signage was posted to indicate the exact location where surface water samples are collected.

The northern end of the landfill contains a stormwater retention pond which is fenced along its entire perimeter. This pond is occasionally used for recreation purposes, specifically model boat operators. The northern part of Beulah Landfill is also utilized for model aircraft flying. The northern portion of Beulah Landfill was approved for recreational purposes in 2002 by the EPA.

The major issue noted during the inspection is the incomplete fencing along the southern portion of the site and minor vandalism to the bollards and fencing. As mentioned previously, ESDSW is in negotiations with International Paper Company to acquire property along the southern portion of the landfill. At this time, this area of the property remains unfenced and susceptible to trespassing. Elevenmile Creek provides a natural boundary on the east side of the landfill however access is still possible during periods of low rainfall.

INTERVIEWS

During the five-year review process, several individuals were interviewed concerning the Beulah Landfill Site with regard to activities over the last five years. The following individuals were interviewed and a summary of their comments are below.

- Mr. Ron Hixson (ECDSW) during the site visit and on July 2, 2008 by telephone.
  - The site is steadily improving and that groundwater contaminant levels have decreased.
  - Repairs are made as needed and improvements are planned.
  - The county is complying with all requirements as presented by the FDEP
  - Not aware of any complaints made by the public
  - Believes that the remedy is protective

- Ms. Bonnie Whitlock (FDEP) during the site visit and on July 2, 2008 by telephone.
  - Overall impression is good.
  - Site looked well maintained
  - Not aware of any complaints from the public regarding the site.

- Mr. Mike Stephen (FDEP) on July 2, 2008 by telephone.
  - Involved with Beulah Landfill for approximately 10 years
  - Conditions at Beulah landfill are very good.Mr. Stephen mentioned that they have never received a complaint from the public regarding Beulah Landfill

VII. TECHNICAL ASSESSMENT

The following Questions A, B, and C were answered to provide a technical assessment of the site remedy.

Question A: Is the remedy functioning as intended by the decision documents?

Remedial Action Performance

The ROD documented that no action was necessary to ensure protection of human health or the environment under CERCLA. The ROD noted that closure of the landfill would occur in accordance with FDEP requirements including F.A.C. 17-701. The EPA expects that the ECDSW will comply with the state landfill closure program's monitoring and corrective action requirements as determined by the FDEP.

Physical closure of the landfill is complete with impermeable covers in place, monitor wells and gas vents installed, and periodic monitoring continues. Monitoring results are reviewed by FDEP. Recommendations for remedial action under the state regulations will be determined by the FDEP.

System Operations

The O&M activities under the state closure program appear to be functioning well. Periodic groundwater, surface water, and vapor monitoring is being performed and reported accordingly. The facility is well maintained.

Opportunities for Optimization

There may be opportunities for optimization under the FDEP closure program. Issues of concern for the State are identified in the FDEP letter dated July 9, 2008 (Attachment 8). FDEP requested a SAR addendum that would include recommendations for remedial action to be submitted by September 5, 2008.

Early Indicators of Potential Issues

There are no early indicators of potential issues. Contamination in excess of FDEP standards for landfill closure may require remedial action under the state program, but not under CERCLA.

Implementation of Institutional Controls and Other Measures

The ROD documented that no action was necessary to ensure protection of human health or the environment. Some institutional controls are in place. The Site is located in a FAC 62-524 Delineated Area, and the future use of the site is restricted by County ordinance. Additional institutional controls are included in the State Closure Permit.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?

Changes in Standards and TBCs

No clean up standards or ARAR's are identified in the ROD for Beulah Landfill. The closure of the landfill will continue to be conducted in accordance with FDEP requirements and must be in compliance with Florida Standards.

Changes in Exposure Pathways

Significant changes have not occurred at the site to affect the exposure pathways. The "no action" decision remains protective under CERCLA. The contaminants of concern remain the same, as well as the land use.

Changes in Toxicity and Other Contaminant Characteristics

Changes in toxicity factors and other characteristics would not change the determination that actual or threatened releases of hazardous substances from this Site do not present an imminent and substantial endangerment to public health or welfare.

Changes is Risk Assessment Methods

Changes in human or ecological risk assessment methodologies would not change the determination that actual or threatened releases of hazardous substances from this Site do not present an imminent and substantial endangerment to public health or welfare.

Expected Progress Towards Meeting RAOs

No RAOs were identified in the ROD. Excess risks to human or ecological receptors remain below the threshold for action under CERCLA. The closure of the landfill under the state program is progressing as expected in regards to closure of the landfill; however groundwater and surface water are not yet in compliance with current FDEP regulatory limits. FDEP requested that the county submit recommendations for corrective action by September 5, 2008.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No new information has been discovered that calls into question the protectiveness of the site since the last five-year review.

TECHNICAL ASSESSMENT SUMMARY

According to the data reviewed, site inspection, and interviews, the remedy is functioning as intended by the ROD. The excess threats to human health and the environment are insufficient to require action under CERCLA. Groundwater contamination is being addressed under Florida's landfill closure program implemented by the FDEP.

VIII. ISSUES

A few issues noted during the site inspection and data review are presented in this section.

Table 4
Issues

Issue	Currently Affects Protectiveness (Yes/No)	Affects Future Protectiveness (Yes/No)
The perimeter fencing should be completed to protect the landfill from damage. The fence along the entrance to the facility has been damaged and is in need of repair. Several bollards have been pulled out and should be replaced.	No	No
Groundwater contamination in excess of Florida standards is being addressed through the state landfill closure program. FDEP is pursuing remediation of the groundwater that may pose a threat to surface water.	No	No

IX. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Table 5 provides recommendations and follow-up actions to address the issues presented in Section VIII.

Table 5
Recommendations and Follow-Up Actions

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Mile-stone Date	Affects Protectiveness? (Yes/No)	
					Current	Future
Access Control	Repair and extend perimeter fencing. Replace bollards.	Escambia County	FDEP	Ongoing	No	No
Groundwater contamination in excess of Florida standards.	Comply with FDEP closure requirements.	Escambia County	FDEP	Ongoing	No	No

X. PROTECTIVENESS STATEMENT

No contaminants have been discovered during this review period which would call into question the protectiveness of the remedy. The selected remedy at the Site remains protective of human health and the environment. There are no complete exposure pathways that could result in unacceptable risks under CERCLA.

XI. NEXT REVIEW

The next five-year review for the Beulah Landfill is required by September 2013, five years from the date of this review.

ATTACHMENTS

ATTACHMENT 1

SITE MAPS

FIGURE 1
SITE VICINITY MAPS

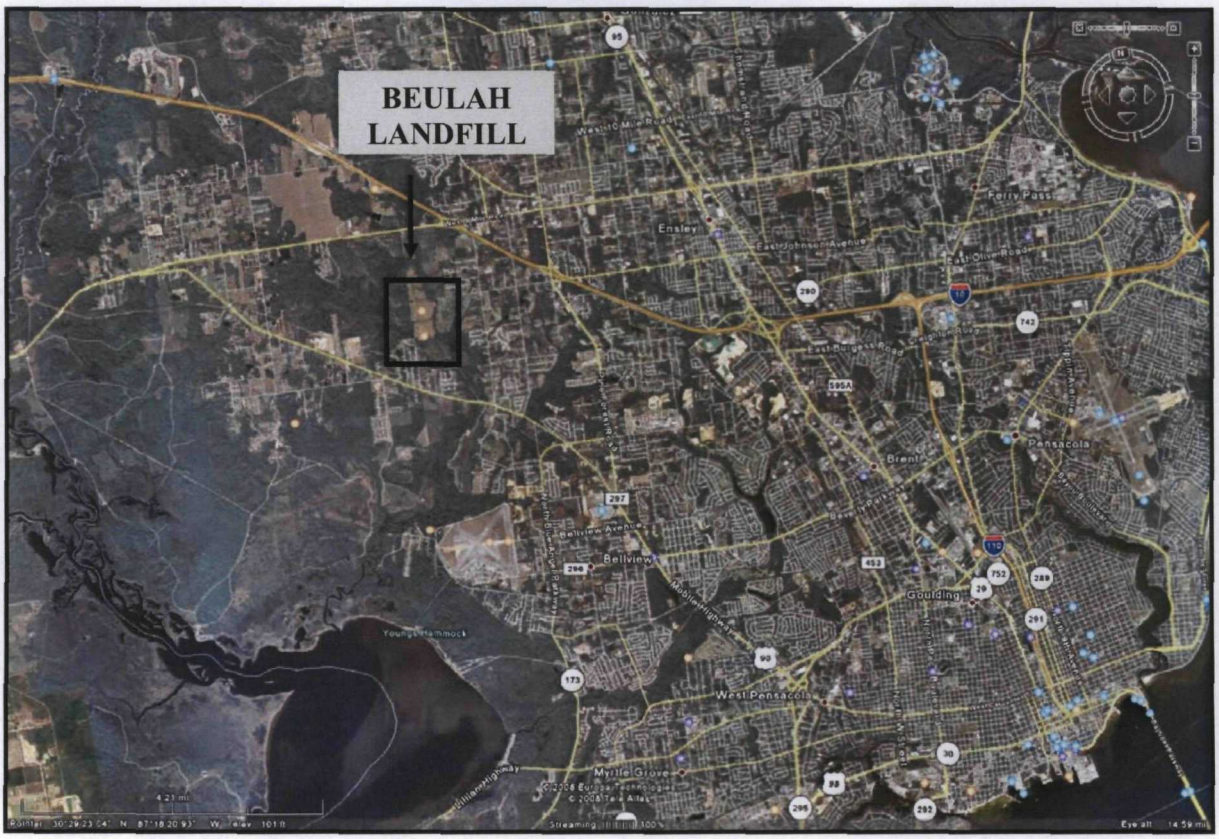


FIGURE 2
SITE MAP

FIGURE 3
MONITOR WELL AND SURFACE WATER SAMPLING LOCATIONS

ATTACHMENT 2

LIST OF DOCUMENTS REVIEWED

Documents Reviewed
(Chronological Order)

Record of Decision, U. S. Environmental Protection Agency, September 1993.

Second Five-Year Review Report – Beulah Landfill Superfund Site, U. S. Army Corps of Engineers, September 24, 2003.

Results of MW-6 Bioassay Study and Additional Bioassay Assessment Report, Beulah Landfill, URS Corporation, September 23, 2004.

Beulah Landfill – Long-Term Care Permit, Florida Department of Environmental Protection, July 21, 2004.

Biennial Report of Post Closure Water Quality Results – Beulah Landfill, URS Corporation, March 16, 2007.

Site Assessment Report – Former Beulah Landfill - Escambia County, Florida, URS Corporation, March 14, 2008.

ATTACHMENT 3

LABORATORY ANALYTICAL DATA

ATTACHMENT 4

SITE INSPECTION CHECK LIST

I. SITE INFORMATION

Site Name: Beulah Landfill	**Date of Inspection:** January 15, 2008
Location and Region: Pensacola, FL	**EPA ID:** FLD980494660
Agency, office or company leading the five-year review: U.S. Army Corps of Engineers	**Weather/temperature:** 65°F Clear/Cool

Remedy Includes (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☐ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls
- ☒ Other **ROD (No Action)** Closure Permit includes GW monitoring, access control, and landfill cover.

☒ Inspection team roster attached ☒ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M Site Manager**

Interviewed ☒ at site ☐ at office ☒ by phone Phone no. 850-937-2159
Problems, suggestions; ☒ Report attached _____

2. **O&M Staff** N/A

Interviewed ☒ at site ☒ at office ☐ by phone Phone no. 850-937-2159
Problems, suggestions; ☒ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal Offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency: Florida Department of Environmental Protection
Contact: Bonnie Whitlock (Name) Environmental Specialist I (Title) July 2, 2008 (Date)
Problems, suggestions: ☒ Report attached

4. **Other Interviews:**

See Interview records attached.

III. ON-SITE DOCUMENTS & RECORD VERIFIED (Check all that apply)

1. **O&M Documents**
☐ As-builts ☐ Readily available ☐ Up to date ☐ N/A
☐ Maintenance Logs ☐ Readily available ☐ Up to date ☐ N/A
Remarks O&M records were provided for the year 2008. Prior records have not been examined.

2. **Site Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☒ N/A

Contingency Plan/Emergency Response Plan ☐ Readily available ☐ Up to date ☒ N/A
Remarks

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A

Remarks

4. **Permits and Service Agreements**

☐ Air Discharge Permit ☐ Readily available ☐ Up to date ☒ N/A
☐ Effluent discharge ☐ Readily available ☐ Up to date ☒ N/A
☐ Waste disposal, POTW ☐ Readily available ☐ Up to date ☒ N/A
☒ Other permits Closure ☒ Readily available ☐ Up to date ☐ N/A
Remarks: ***Permit Nos: SF17-253440 and 0078433-003-SF***

5. **Gas Generation Records**
☒ Readily available ☒ Up to date ☐ N/A
Remarks: Vapor Monitoring is performed quarterly

6. **Settlement Monument Records**
☐ Readily available ☐ Up to date ☒ N/A
Remarks

7. **Groundwater Monitoring Records**
☒ Readily available ☒ Up to date ☐ N/A
Remarks: Groundwater monitoring is performed semi-annually.

8. **Leachate Extraction Records**
☐ Readily available ☐ Up to date ☒ N/A
Remarks_____

9. **Discharge Compliance Records**
☐ Air ☐ Readily available ☐ Up to date ☒ N/A
☐ Water (effluent) ☐ Readily available ☐ Up to date ☒ N/A
Remarks_____

4. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☒ PRP in-house ☐ Contractor for PRP
☐ Other _____

2. **O&M Cost Records**
☐ Readily available ☐ Up to date
☐ Funding mechanism/agreement in place
☐ Original O&M cost estimate:
☒ Breakdown attached
Remarks: Breakdown for the year 2008 is provided within this report.

V. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

1. Fencing ☐ Location shown on map ☒ Gates secured ☐ N/A
Remarks: *Fencing of the Beulah Landfill has not been completed at this time due to potential property acquisition and natural boundaries. Some damage to the fence has been noted in this report.*

B. Other Access Restrictions

1. Signs and other security measures ☐ Location shown on map ☐ N/A
Remarks:
The front gate is clearly marked "No Trespassing" and several signs are posted throughout the property.

C. Institutional Controls (ICS) ☒ N/A
Institutional controls are included in the State Closure Permit.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☐ No vandalism evident
Remarks: The PRP has noticed evidence of trespassing and minor vandalism on the site.

2. **Land use changes on site** ☐ N/A
Remarks_The northern portion of the facility is used by air modelers._____

3. **Land use changes off site** ☒ N/A
Remarks_____
_____

VI. GENERAL SITE CONDITIONS

A. **Roads** ☒ Applicable ☐ N/A
Remarks: The roads are in good condition.

B. **Other Site Conditions** ☐ Applicable ☒ N/A
Remarks

VII. LANDFILL COVERS ☒ Applicable ☐ Not Applicable

A. Landfill Surface ☒ Applicable ☐ Not Applicable

1. **Settlement** (Low spots) ☐ Location shown on site map ☒ Settlement not evident
Areal extent Depth

Remarks_____

_

_____

_

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident
Lengths_____ Widths_____ Depths_____
Remarks_____

_

_____

_

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
Areal extent_____ Depth_____
Remarks_____

___

_____

___

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
Areal extent_____ Depth_____
Remarks_____

___

_____

___

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established ☒ No signs of stress

☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks_____

___

_____

___

6. **Alternative Cover (armored rock, concrete, etc.)** ☒ N/A
Remarks_____

___

_____

___

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
Areal extent_____ Height_____
Remarks_____

___

_____

___

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas ☐ Location shown on site map Areal extent_____

☐ Ponding ☐ Location shown on site map Areal extent_____

☐ Seeps ☐ Location shown on site map Areal

☐ Soft subgrade ☐ Location shown on site map Areal extent_____

Areal extent_____

Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☒ No evidence of slope instability

Areal extent_____

Remarks_____

B. Benches ☐ Applicable ☒ Not Applicable

C. Letdown Channels ☒ Applicable ☐ Not Applicable

1. **Settlement** ☐ Location shown on site map ☒ No evidence of settlement

Areal extent_____ Depth_____

Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☒ No evidence of degradation

Material type_____ Areal extent_____

Remarks_____

3. **Erosion** ☐ Location shown on site map ☒ No evidence of erosion

Areal extent_____ Depth_____

Remarks_____

4. **Undercutting** ☐ Location shown on site map ☒ No evidence of undercutting

Areal extent_____ Depth_____

Remarks_____

5. **Obstructions** Type_____ ☒ No obstructions

☐ Location shown on site map Areal extent_____

Size_____

Remarks_____

6. **Excessive Vegetative Growth** Type_____
☒ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations ☐ Applicable ☒ Not Applicable

E. Gas Collection and Treatment ☐ Applicable ☒ Not Applicable

F. Cover Drainage Layer ☐ Applicable ☒ Not Applicable

G. Detention/Sedimentation Ponds ☐ Applicable ☒ Not Applicable

H. Retaining Walls ☐ Applicable ☒ Not Applicable

I. Ponds/Off-Site Discharge ☐ Applicable ☒ Not Applicable

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
Remarks _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
☐ Vegetation does not impede flow
Remarks _____
3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Remarks _____

4. **Discharge Structure** ☐ Functioning ☒ N/A
Remarks _____

VIII. VERTICAL BARRIERS ☐ Applicable ☒ Not Applicable

IX. GROUNDWATER/SURFACE WATER REMEDIES

A. Groundwater extraction wells, pumps and pipelines
☐ Applicable ☒ Not Applicable

B. Surface water collection structures, pumps and pipelines
☐ Applicable ☒ Not Applicable

1. **Collection Structures, Pumps and Electrical**
☐ Good condition ☐ Needs O&M
Remarks

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
☐ Good condition ☐ Needs O&M

Remarks_____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good Condition ☐ Requires upgrade ☐ Needs to be provided ☐ N/A
Remarks:

C. Treatment System ☐ Applicable ☒ Not Applicable

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☒ Functioning ☒ Routinely sampled ☐ Properly secured/locked
☒ Good condition ☒ All required wells located ☐ Needs O&M ☐ N/A

Remarks

X. OTHER REMEDIES

☐ Applicable ☒ Not Applicable

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

The remedy has been implemented as instructed within the ROD.

B. Adequacy of O&M

All O&M requirements are adequate for the site. Routine maintenance of the site should include an inspection for vandalism and subsequent repairs should be made when necessary.

C. Early Indicators of Potential Remedy Problems

The early indicator of a potential issue that could lead to remedy failure or jeopardize the protectiveness is the contamination levels in excess of FDEP standards indicated in the monitor wells.

D. Opportunities for Optimization

Groundwater contamination remains in excess of current FDEP standards. The facility should comply with the requirement to provide recommendations for remedial action to FDEP by September 5, 2008.

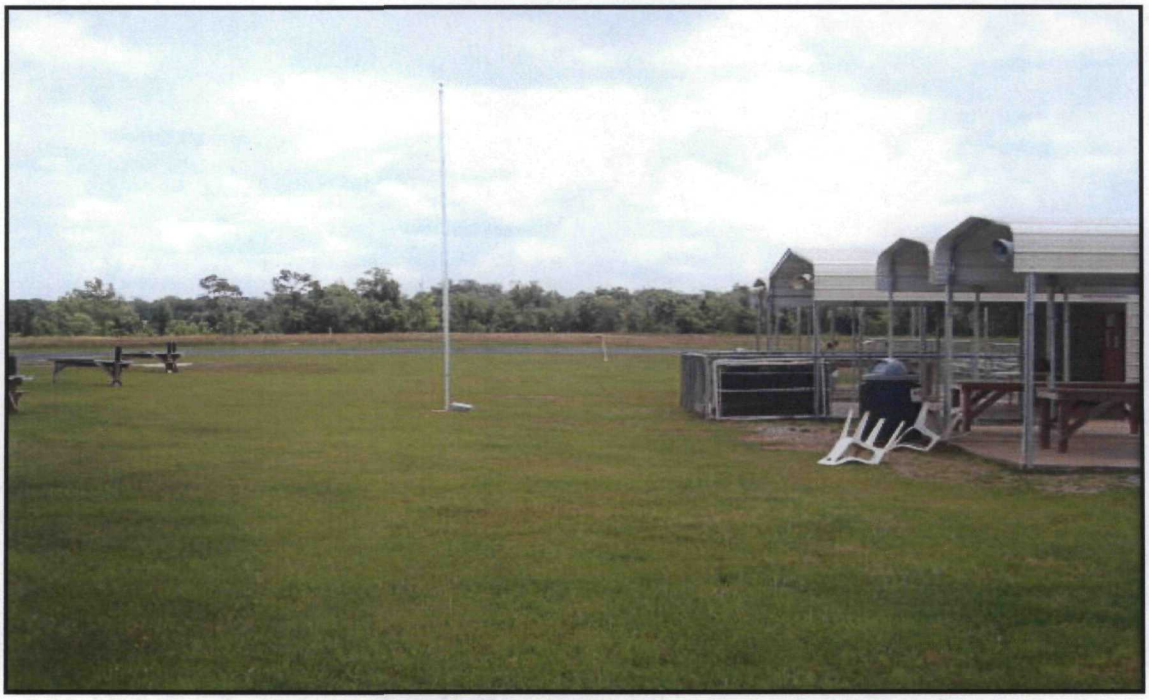
ATTACHMENT 5

PHOTOS DOCUMENTING SITE CONDITIONS

Entrance gate to Beulah Landfill

Southwest corner of Beulah Landfill. Fence damage.

Air modelers sign located on the northern portion of the landfill.



View east of Air Modelers facility.

View south: Paved area of northern landfill section.

View west: Posted waste limits and fence.

View northeast: Fenced retention pond.

View west: Bollards near retention pond.

View north: Sign located on northern portion of landfill and damage to fence.

View east: Elevenmile Creek.

View west: Posted waste limits of the northern portion of the landfill.

View east: Stormwater flume to Elevenmile Creek

View northeast: Typical stormwater flume located on southern portion of landfill.

Newly constructed monitor well

View north: Bollards near C & D landfill placed to discourage trespassing

View southwest: Site inspection participants

ATTACHMENT 6

INTERVIEW RECORDS

INTERVIEW RECORD

Site Name: Beulah Landfill		**EPA ID No.:** FLD980494660
Subject: 3rd Five-Year Review	**Time:** 0900	**Date:** July 2, 2008
Type: ☒Telephone ☐Visit ☐Other **Location of Visit:** Beulah Landfill		☒ Incoming ☐ Outgoing

Contact Made By:

Name: Rhonda Capes	**Title:** Geologist	**Organization:** USACE

Individual Contacted:

Name: Mr. Mike Stephen	**Title:** Environmental Specialist III	**Organization:** FDEP
Telephone No: 850-595-8300 Ext 1262 **Fax No:** **E-Mail Address:**	**Street Address:** 160 Governmental Center **City, State, Zip:** Pensacola, FL 32501-5794	

Summary Of Conversation

Mr. Stephen is an employee of FDEP in the Solid Waste Section. Mr. Stephen has been involved with Beulah Landfill for approximately 10 years and performs a Level of Service Inspection annually. Mr. Stephen stated that the conditions at Beulah landfill are very good. There is a good stand of grass and no major erosion has been noted during the past 5 years.

When asked about indications of trespassers on the property, Mr. Stephen stated that he has not seen any indication in the last year and has never seen any signs of illegal dumping. Mr. Stephen mentioned that they have never received a complaint from the public regarding Beulah Landfill.

Mr. Stephen was not familiar with the groundwater issues or the ROD for the Beulah landfill.

INTERVIEW RECORD

Site Name: Beulah Landfill		**EPA ID No.:** FLD980494660	
Subject: Third Five-Year Review		**Time:** 1450	**Date:** 7/2/2008
Type: ☒Telephone ☒Visit ☐Other **Location of Visit:**		☐ Incoming ☒ Outgoing	
Contact Made By:			
Name: Rhonda Capes, P.G.	**Title:** Geologist	**Organization:** USACE	
Individual Contacted:			
Name: Ron Hixson	**Title:** Manager of Engineering and Environmental Quality	**Organization:** Escambia County Division of Solid Waste Management	
Telephone No: (850) 937-2179 **Fax No:** **E-Mail Address:**		**Street Address:** **City, State, Zip:**	

Summary Of Conversation

Mr. Hixson's overall impression of the site is that it is steadily improving and that groundwater contaminant levels have decreased over time indicating that the covers are performing as intended. Repairs are made as needed and improvements for a new bridge and stormwater flumes are included in the budget. The county is complying with all requirements as they are presented by the FDEP and they will continue to do so as requested. He is aware that FDEP will likely require remediation to address the groundwater concerns at the site.

Mr. Hixson is not aware of any complaints made by the public in regards to Beulah Landfill.

Mr. Hixson believes that the remedy is protective of the environment.

INTERVIEW RECORD

Site Name: Beulah Landfill		**EPA ID No.:** FLD980494660	
Subject: Third Five-Year Review		**Time:** 0830	**Date:** 7/2/08
Type: ☒Telephone ☐Visit ☐Other **Location of Visit:**		☒ Incoming ☐ Outgoing	
Contact Made By:			
Name: Rhonda Capes	**Title:** Geologist	**Organization:** USACE	
Individual Contacted:			
Name: Ms. Bonnie Whitlock	**Title:** Environmental Specialist I	**Organization:** Florida Department of Environmental Protection	
Telephone No: 850-595-8300 ext. 1216 **Fax No:** **E-Mail Address:**		**Street Address:** **City, State, Zip:**	

Summary Of Conversation

Ms. Whitlock has been officially involved with the Beulah Landfill site since March of 2008 when the Site Assessment Report was submitted to the State. Ms. Whitlock has completed the SAR review and submitted comments to her supervisor, Ms. Karen Shea.

Ms. Whitlock's overall impression of the landfill site is good. She stated that the site looked well maintained and she was not aware of any complaints from the public regarding the site.

Ms. Whitlock was not completely familiar with the ROD but understood that it involves closure of the landfill in accordance with State guidelines. Due to the fact that FDEP is monitoring Beulah Landfill and continuing to address the groundwater contamination, she believes the ROD is protective.

ATTACHMENT 7

PUBLIC NOTIFICATION

U. S. Environmental Protection Agency, Region 4

Announces a Five-Year Review for the Beulah Landfill Superfund Site Pensacola, Florida

Purpose/Objective: The US Environmental Protection Agency (EPA) is conducting a Five-Year Review of the remedy for the Beulah Landfill Superfund Site in Pensacola, Florida. The purpose of the Five-Year Review is to ensure that the selected cleanup actions continue to protect human health and the environment.

Site Background: The Beulah Landfill Superfund Site is an approximately 101-acre site which was operated by Escambia County from 1950 to 1984. Its northern and southern sections were run independently. The northern landfill, used from 1950 to 1960, accepted mostly municipal trash. The southern sludge disposal pits began receiving domestic septic tank wastes in 1968 and continued to accept municipal trash, industrial waste, demolition debris, and municipal sludges until 1984 when the State ordered a halt to operations at the pits. In 1999, a clay cap was installed on the northern section and a high density polyethylene synthetic liner was installed on the southern section.

The Record of Decision for Beulah Landfill was signed in September 1993. The selected remedy was a "no action" remedy, provided the closure of the landfill in accordance with Florida Department of Environmental Protection requirements as well as continued groundwater and surface water monitoring. The site was delisted from the National Priorities List in 1998. Semi-annual monitoring has been performed since 1994.

Five-Year Review Schedule: The National Contingency Plan requires that remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure protection of human health and the environment. Previous Five-Year Reviews were completed on September 16, 1998 and September 24, 2003.

The 2003 Five-Year Review determined that the selected remedy is protective and poses no unacceptable risk to human health and the environment. This is the third Five-Year Review for this site.

EPA invites community participation in the Five-Year Review process.

The EPA is conducting this Five-Year Review to evaluate the effectiveness of the remedy and ensure that the remedy remains protective of human health and the environment. As part of the Five-Year Review process, the EPA is available to answer any questions about the Site. Community members who have questions about the Site, the Five-Year Review process, or who would like to participate in a community interview, are asked to contact the following:

Erik E. Spalvins, Environmental Scientist
404-562-8938 / 1-800-435-9234 (Toll Free)
spalvins.erik@epa.gov

L'Tonya Spencer, Community Involvement Coordinator
404-562-8463 / 1-800-435-9234 (Toll Free)
spencer.latonya@epa.gov

U.S. EPA – Region 4 Mailing Address
Superfund Division (4SD-SRB)
61 Forsyth Street,
Atlanta, Georgia 30303

Local Document Repository
George Stone Vocational School
2400 Longleaf Drive
Pensacola, Florida 32526

Online: *http://www.epa.gov/region4/waste/npl/nplfln/beulahfl.htm*

PENSACOLA News Journal
Informed. In Tune. In Touch.

Published Daily-Pensacola, Escambia County, FL

PROOF OF PUBLICATION

State of Florida

County of Escambia:

Before the undersigned authority personally appeared **Claudia C. Wysocki-Ables** who on oath, says that he is a personal representative of the Pensacola News Journal, a daily newspaper published in Escambia County, Florida; that the attached copy of advertisement, being a Legal in the matter of:

Five-Year Review

Was published in said newspaper in the issue(s) of:

January 19, 2008

Affiant further says that the said Pensacola News Journal is a newspaper published in said Escambia County, Florida, and that the said newspaper has heretofore been published in said Escambia County, Florida, and has been entered as second class matter at the Post Office in said Escambia County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Sworn to and subscribed before me this 21st Day of January, 2008, by **Claudia C. Wysocki-Ables** who Is personally known to me.

Claudia Wysocki-Ables Affiant

Notary Public

NIKKI E. NICHOLS
Notary Public-State of FL
Comm. Exp. Aug. 01, 2009
Comm. No. DD 427341

ATTACHMENT 8

RELATED CORRESPONDENCE

Florida Department of
Environmental Protection
Northwest District
160 Governmental Center, Suite 308
Pensacola, Florida 32502-5794

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

July 9, 2008

Sent via e-mail to:
Sandra_Jennings@co.escambia.fl.us

Ms. Sandra Jennings, Director
Escambia County Department
of Solid Waste Management
13009 Beulah Road
Cantonment, Florida 32533-8831

Dear Ms. Jennings:

This is in response to the March 14, 2008 Site Assessment Report (SAR), prepared by URS Corporation for the former Beulah Landfill (DEP Facility ID No.1685) located in Pensacola, Escambia County.

We delayed review of the SAR due to our request to the Biology Section of DEP to review the bioassessment data. The Biology Section requested information regarding whether the people who conducted the work were state certified in the respective areas. We asked your department for that information, and at this time, have not received a response from you. Once we receive that information from you and the Biology Section is able to complete their review of the biological portion of the SAR, we will add their comments to our review information.

Upon review of the report, we feel that site assessment is complete and groundwater contamination has been delineated. However, the Site Assessment Report cannot be approved as submitted. An appropriate recommendation regarding the action the facility plans to take pursuant to Rule 62-780.600(8)(b), Florida Administrative Code should be submitted.

The consultant has recommended the facility continue monitoring the site until Fall 2009, and then make a recommendation regarding further action. Based on contaminants documented in the groundwater that may be discharging into Elevenmile Creek, additional monitoring without remedial action is not acceptable. Chapter 62-302, Florida Administrative Code (FAC), prohibits the discharge of contaminants to surface water.

Please refer to the enclosed memorandum dated June 25, 2008 for more detailed information regarding review of the SAR. Information requested in the comments section of the memorandum should be submitted by August 15, 2008.

A SAR Addendum that includes appropriate recommendations regarding remedial action should be submitted to the Department by September 5, 2008. If you have any questions or need more information, please contact Bonnie Whitlock, Project Manager, at (850) 595-8360, extension 1216 or by e-mail at bonnie.whitlock@dep.state.fl.us.

Sincerely,

Karen Shea

Karen B. Shea, P.E
Cleanup Section Supervisor

KBS/bwr

Encl: Memo dated 6/25/08

cc: Ron Hixson, Chief, Engineering and Environmental Quality,
Ron_Hixson@co.escambia.fl.us w/encl

Florida Department of

Memorandum **Environmental Protection**

TO: Karen B. Shea, P.E. KBS

CC: Marshall Seymore, P.E.

FROM: Bonnie P. Whitlock 6.25.08 BPW

DATE: June 25, 2008

SUBJECT: Beulah Landfill – March 14, 2008 Site Assessment Report
Permit No. 0078433-001-SF; WACS No. 1685

I have reviewed the Site Assessment Report (SAR) received March 18, 2008 for Beulah Landfill. The SAR was prepared and submitted by URS Corporation. This site was closed in 1999. After the closure, the northern section of the landfill was covered with clay and the southern section was covered with a synthetic cap. The site assessment is required under Rule 62-780.600, Florida Administrative Code (F.A.C.) and was originally requested in May 2005. The primary concern at the facility is that groundwater contaminants may be discharging into Elevenmile Creek, which runs along the eastern border of the landfill.

Primary contaminants that have been documented in groundwater at the facility include 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, pentachlorophenol, phenanthrene, acenaphthene, vinyl chloride, iron, ammonia, sodium, mercury, and arsenic. Surface water samples have shown elevated levels of iron, mercury, and phenanthrene.

GROUNDWATER:

The groundwater monitoring network at the site contains two background wells, MW-4 and MW-10. There are also five detection wells (BMW-1R, BMW-3R, MW-7, MW-8, and MW-9) and four compliance wells (BMW-2, BMW-7, MW-6, and MW-11). Since only monitoring wells MW-6 and MW-11 are downgradient of the former C&D area at the landfill, four additional assessment wells (MW-12, MW-13, MW-13D, and MW-14) were installed downgradient of the waste. The facility also installed MW-6R approximately 75' downgradient of the current MW-6, closer to Elevenmile Creek, in order to verify results obtained from MW-6. In October 2007, URS initiated field activities in order to complete full delineation of contamination at the site. They installed and sampled the five newest wells.

The first time the new monitoring wells were sampled, in October 2007, all were below the GCTLs for all parameters, with the exception of MW-13, which exceeded the GCTL for iron at 716 ug/L. On the second sampling event for the new wells, again only MW-13 exceeded the iron standard at 4,410 ug/L and also the benzene standard at 2.3 ug/L. The other new wells are further downgradient than MW-13 and have not reported contaminants above the GCTLs, therefore aiding in delineation of the plume. As of the last sampling event, the following wells showed contamination above the GCTLs of Chapter 62-777, F.A.C.:

BMW-1R - Benzene, Vinyl Chloride, Iron, Mercury
MW-6(6R) - 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthene, Naphthalene, Pentachlorophenol, Phenanthrene, Iron, Benzo(a)anthracene, Fluorene,
BMW-7R - Arsenic, Iron
MW-8 - Iron
MW-9 - 1-Methylnaphthalene, 2-Methylnaphthalene, Benzene, Acenaphthene, Ammonia, Iron
MW-10R - Iron
MW-13 - Benzene, Iron

The wells that document most accurately the contaminants that may be discharging into Elevenmile Creek appear to be MW-6, MW-6R, MW-9, BMW-7R, and MW-8. These are the wells located downgradient of waste and closest to the creek. Contaminants documented in these wells that are above either groundwater or surface water criteria are listed in bold in the following table:

All results in ug/L	[redacted]	MW-6 Nov 07 Feb 08	MW-6R Oct 07 Feb 08	BMW-7R Aug 07 Feb 08	MW-8 Aug 07 Feb 08	MW-9 Aug 07 Feb 08
Arsenic				**29.7** **12.3**		
Benzene		 **1.7**				**2.2** **1.4**
1-Methylnaphthalene		**300** **160**	**96** **74**			**32**
2-Methylnaphthalene		**310** **210**	**37** **15**			**38**
Naphthalene		**1,400** **1,300**	**610** **450**			
Acenaphthene		**500** **210**	**200** **140**			**160** **63**

Benzo(a)anthracene	[redacted]		0.3 0.16	2.1U 0.11I			
Fluorene			320 140	140 96			30
Pentachlorophenol			7.7 20				
Phenanthrene			270 130				
Ammonia			880	1,100 980	220		41,000
Vinyl Chloride			1.8 <4.6U				
Iron			8,080 6,840	4,650 4,040	13,700 7,330	7,390 6,690	31,100 29,300

URS has stated that the August 2007 semi-annual sampling event data were used to calculate hydraulic gradient and flow velocities in the surficial aquifer. The hydraulic gradient was calculated as 0.0026 feet per foot. The flow rate was 0.63 feet per day.

BIOASSESSMENT OF ELEVENMILE CREEK:

In 2004, URS conducted bioassays in Elevenmile Creek and concluded that landfill leachate had no negative impact on the biological community in the area of the landfill. At that time, FDEP recommended alternative methods of testing for biodiversity. In October and November 2007, URS conducted additional biodiversity and bioassay studies including surface water analysis, bioassay testing, sediment analysis, and biodiversity sampling.

The additional bioassay/biodiversity work for this report included four surface water and sediment samples. Two were taken upstream, US-1 and US-2. One was taken adjacent to MW-6 labeled SW-MW-6, and one downstream of MW-6, DS. The samples were sent to ENCO Laboratory for analysis of RCRA metals, VOCs, SVOCs, and PCP. None of the surface water samples contained SVOCs or PCP. Arsenic, barium, and iron were detected in all four surface water samples. The other six metals tested were not detected at any location. The highest value for iron was reported at MW-6 (709 ug/L), indicating possible influence from landfill leachate. Values from all three of the detected metals were below the Table 1, Chapter 62-777, Florida Administrative Code (F.A.C.) target levels, although a value of 43.2 ug/L arsenic was measured upstream. The target level for arsenic is 50 ug/L.

For the biodiversity analysis, Hester-Dendy samplers were used at each of the four locations. They were left on both sides of the creek and allowed to colonize for 28 days. The consultant states that most of the water quality parameters decreased from upstream to downstream, with the exception of dissolved oxygen and flow velocity. Dissolved oxygen was acceptable at each station, all above 5.0 mg/L. Flow velocity ranged from 27.9 cubic feet per second (cfs) to 46.3 cfs.

For the biodiversity study, the artificial substrate samplers were collected after the 28-day period. All organisms were collected from each sampler and preserved. In the laboratory, approximately 200 organisms were randomly selected for identification. The habitat suitability scores ranged from 93 at the downstream location to 111 at the US-2 location. The score at MW-6 was 105 and the score at US-1 was 99. Habitat scores generally range from 0 – 200. A score of 130 – 150 represents a relatively good habitat. Several other biological indicator results were gathered for the four stations; specifically, percentage of dominant taxa, Biotic Index, and the Shannon-Weaver index. The consultant concludes that based on results from the 2004 and 2007 bioassessments, that the stream biodiversity is not affected downstream of the landfill.

Samples from the four surface water locations were sent to Advent Environ Laboratory in Tennessee for surface water toxicity testing. The lab used *Ceriodaphnia dubia*, a water flea, in EPA Method 821-R-02-012 for toxicity tests. They used three dilution exposures: 10, 50, and 100% of the water sample. All four surface water locations had 100% survival of the organism after 48 hours.

Sediment samples from surface water stations MW-6, DS-1, and US-2 were sent to the same laboratory for sediment toxicity tests. The laboratory used methods described in EPA/600/R-99/064. A 10-day survival and growth rate test was conducted using *Hyallela azteca*, an amphipod. All controls met the growth acceptability criteria of a statistically significant growth increase from test initiation. No significant differences were noted in growth or mortality between upstream and downstream samples. Both studies also indicate that the sediment and the surface water are not toxic to sensitive organisms.

Several of the sediment samples had detections of arsenic, barium, chromium, lead, and mercury, but most were below the laboratory detection limits. Arsenic was less than 1.0 mg/kg at the upstream locations, 1.45 at MW-6, and 2.07 mg/kg at the downstream location. The sediment screening level (SSL) for arsenic is 9.8 mg/kg. Iron was detected at all four locations and got progressively higher from upstream to downstream, ranging from 297 mg/kg upstream to 1,220 mg/kg downstream. There is no SSL for iron in sediment.

Eleven VOCs were detected in the four sediment samples. The only VOC detected in either of the upstream locations, US-2, was benzene. The majority of the VOCs were detected at the station near MW-6 and the only PAHs detected were at the MW-6 station. There are no SSLs for VOCs. All of the PAHs were below SSLs.

WELL SURVEY:

As part of the site assessment the facility conducted a potable well survey. The survey showed no public supply wells within ½ mile of the site and no private water supply wells within ¼ mile radius of the site.

ON-SITE SURFACE WATER:

All four of the onsite surface water samples (SW-3, SW-4, SW-6, SW-7) show ammonia above the standard, and all but SW-6 also show iron above the standards.

COMMENTS:

- It appears that the majority of the bioassessment work was conducted by URS employees and/or contractors. No evidence was provided that any of the samplers were certified in the state of Florida for biological work. Information regarding this has been requested from Escambia County but they have not responded as of the date on this memorandum.

- The facility had five temporary monitoring wells that were sampled in 2004, labeled TW-1 through TW-5. It appears that some of these wells may already be abandoned, but the status of the wells should be clarified. If they were not properly installed as permanent wells, they should be abandoned with documentation submitted to the Department.

- The consultant states that they proposed to abandon BMW-7R and in a letter dated October 12, 2007, we concurred. We concurred with the abandonment of BMW-7, not BMW-7R. Based on the finding of arsenic and iron above the cleanup target levels in monitoring well BMW-7R, I recommend that monitoring well remain in the monitoring network.

- The consultant and Escambia County Solid Waste Management recommend incorporating the new wells MW-6R, MW-12, MW-13, MW-13D, and MW-14 into the semi-annual monitoring network through the Fall 2009 sampling event. I

concur with that recommendation. After the Fall 2009 sampling event, Escambia County should request removal of these wells from the monitoring network before they discontinue sampling.

CONCLUSIONS and RECOMMENDATIONS:

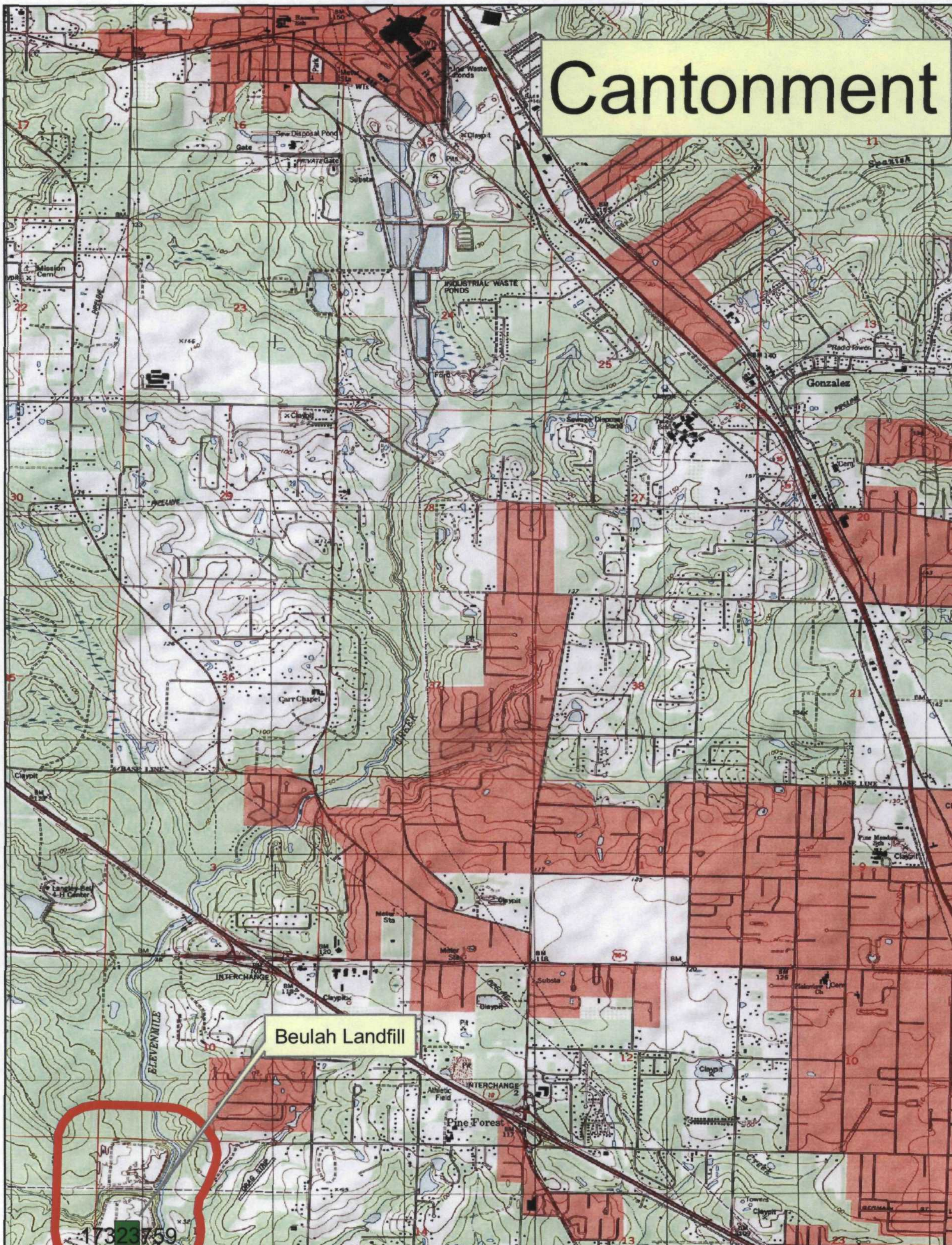
- It appears that the extent of groundwater contamination has been defined and that any groundwater contamination leaving the site discharges downgradient into Elevenmile Creek.

- Escambia County and the consultant recommend monitoring of the landfill until Fall 2009 and then re-assessing whether remedial action is necessary, based on the contaminants of concern in the wells and surface water at that time. I do not concur with this recommendation. Several monitoring wells located closest to Elevenmile Creek, show groundwater contaminants above groundwater cleanup target levels and above the surface water standards of 62-302, F.A.C., as shown in the table above.

- It is not acceptable to continue monitoring contaminants that appear to be flowing into surface waters of the state without beginning remedial action. I recommend Escambia County Solid Waste make a recommendation for remedial action following the requirements of Rule 62-780.700, F.A.C.

- I also recommend the current monitoring schedule be followed until a remedial action plan approval order is issued.

BPW:bw


Cantonment
Beulah Landfill
17323759
INDUSTRIAL WASTE PONDS
Gonzalez
Carr Chapel
Pine Forest
INTERCHANGE
ELEVENMILE

CHAPTER 62-524 NEW POTABLE WATER WELL PERMITTING IN DELINEATED AREAS

62-524.200 Definitions for New Potable Water Well Permitting in Delineated Areas.

(1) "Available Potable Water System" means, for the purpose of this chapter, a public water system, as defined in Rule 62-550.200, F.A.C., which has sufficient capacity and is legally able to serve specific additional connections.

(2) "Delineated Area" means a surface area identified pursuant to Rule 62-524.420, F.A.C., within which ground water contamination is known to exist or which encompasses vulnerable areas or areas in which the Department provides a subsidy for restoration or replacement of contaminated drinking water supplies.

(3) "Ground Water Contamination" means, for the purpose of this chapter, the presence outside an applicable zone of discharge in Class F-I, G-I, or G-II ground water of one or more substances in quantities which exceed a primary drinking water maximum contaminant level as set forth in Chapter 62-550, F.A.C., present an imminent hazard pursuant to Section 403.855, F.S., or for which the State Health Officer in the Department of Health and Rehabilitative Services, based upon a written request from the Department, has advised the Department in writing is present in deleterious amounts. The determination, under this section, of the existence of ground water contamination based upon the presence of deleterious amounts shall not constitute the establishment of a standard under either Chapter 62-520 or Chapter 62-550, F.A.C. If the concentration of any primary drinking water standard in the natural background quality of the ground water is greater than the stated maximum contaminant level, the representative background value shall be the prevailing standard.

(4) "New Potable Water Well" means any excavation that is drilled or bored, or converted from non-potable water use, after delineation in an area delineated pursuant to Rule 62-524.400, F.A.C., when the intended use of such excavation is for the location and acquisition of ground water which supplies water for human consumption. This does not include repair of an existing potable water well.

(5) "Vulnerable area" is an area in which research or monitoring data indicate that ground water is vulnerable to nitrate contamination because of the presence of potential sources of nitrate contamination, and because of land surface and subsurface characteristics.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309, 376.307 FS. History–New 5-16-89, Amended 3-3-92, Formerly 17-524.200, Amended 2-7-95.

62-524.420 Procedures for Delineation of Areas for Application of New Potable Water Well Permitting.

(1) Based upon available data, the Department shall identify and locate, for the purpose of application of the requirements of this chapter, areas within which ground water contamination is known to exist or which encompasses vulnerable areas or areas in which the Department provides a subsidy for restoration or replacement of contaminated drinking water supplies.

(2) The Department shall rely on data from samples collected and analyzed using Department approved quality assurance/quality control procedures. Where quality assurance/quality control procedures are not documented the Department shall evaluate the data for completeness and accuracy in order to determine acceptability for use in delineation under this chapter.

(3) Sources of ground water data to be used for delineation of areas under this chapter shall include:

(a) Local, state, and federal agencies.

(b) Water management districts.

(c) Department programs.

(4) For wells, sites, or sources with known ground water contamination, where insufficient site specific ground water data exist for determination of contaminant plume boundaries, a delineated area shall be established in the following manner:

(a) A 1000-foot setback from the well, site or source boundary.

(b) Where data from the distribution or movement of ground water contamination indicate that a 1000-foot setback is insufficient the Department shall establish an alternate setback based on such data.

(5) For sites with a history of application of ethylene dibromide where insufficient site specific ground water data exist for determination of contaminant plume boundaries, the Department shall delineate an area which encompasses the area of application and a setback, based on data on the distribution of ethylene dibromide contamination, or a 1000-foot setback, whichever is larger.

(6) For sites where a hydrogeologic investigation of ground water has been conducted and the nature and extent of a contaminant plume is documented and sufficient data exist for predictive ground water modelling, the Department shall delineate an area which encompasses the ground water contamination and its predicted movement for the next two years.

(7) Where the source or site which resulted in an area being delineated is the subject of remediation for ground water clean-up, the effect of this remediation shall be considered by the Department in subsequent delineation updates.

(8) For areas in which the Department provides a subsidy for restoration or replacement of contaminated drinking water supplies through extending existing water lines or developing new water supply systems under Section 376.307(4)(b)3. and (c), F.S., the Department shall delineate an area which encompasses such extended water lines or water lines constructed as part of a new water system and a 1000-foot setback.

(9) For areas in which the Department determines that ground water is vulnerable to contamination with nitrate, the Department shall delineate such vulnerable areas. The Department shall determine where vulnerable areas exist by using the following information when available:

(a) Physical properties of soils

(b) Vadose zone media

(c) Hydrogeologic characteristics of aquifer systems

(d) Depth to ground water

(e) Recharge

(f) Karst features

(g) Topography

(h) Presence of Class G-II ground water or other potable ground water with less than 10,000 mg/L total dissolved solids

(i) Water quality data; and

(j) Nitrogen application or loading rates for potential sources of nitrate contamination.

(10) In delineating areas under this rule, the Department shall coordinate with other affected agencies, particularly those receiving delegation under Rule 62-524.800, F.A.C., in the technical aspects of delineation.

(11) The Department shall present delineated areas to the Environmental Regulation Commission for approval at rulemaking public hearings duly noticed as required by Section 120.54, F.S.

(a) At such public hearings the Commission, when approving delineated areas, shall consider the known ground water contamination and its projected movement until the next delineation update.

(b) If requested by the Commission, the Department shall present the data, predictive ground water modelling, and mapping procedure used to delineate each area presented to the Commission.

(c) The Commission shall consider any other competent evidence regarding delineated areas.

(d) Approval by the Commission of a delineated area shall result in that area being included on maps or other means of location and description prepared by the Department as described in subsections (12) and (13). Each approved map or other means of location and description *shall contain an effective date and shall be made available as provided in subsections (12) and (13).*

(12) To facilitate the permitting process, the Department shall provide maps which indicate all sections which contain any portion of a delineated area. Prior to construction of a new potable water well within a mapped section, the potential applicant should contact the appropriate permitting authority which shall determine if the proposed well is within a delineated area. Such maps or other information shall be made available by the Department to interested persons upon written request and upon payment of appropriate costs.

(13) Following each update, the Department shall make available to water management districts, regional planning councils, the Department of Health and Rehabilitative Services, and county building and zoning departments, maps or other information on areas for application of the requirements of this chapter.

(a) Where maps are provided, they shall be of an appropriate scale as determined by the Department based on the accuracy and precision of the data.

(b) For each delineated area the Department shall provide a list of those contaminants to be tested pursuant to Rule 62-524.600, F.A.C., and shall specify any casing or solvent bond restrictions.

(14) Maps or other information on areas for application of the requirements of this chapter shall be periodically updated by the Department. Additional areas, or revision to existing areas, for application of the requirements of this chapter may be delineated at any time as technical information becomes available.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309, 376.307 FS. History–New 5-16-89, Amended 3-25-90, 7-4-91, 5-6-93, Formerly 17-524.420, Amended 2-7-95, 12-9-96.

62-524.430 Maps Containing Delineated Areas.

The following maps, which are incorporated herein by reference, show surface areas, delineated pursuant to Rule 62-524.420, F.A.C. Each map listed contains a month and year which corresponds to the date the Department prepared the most recent map showing any portion of a delineated area. Copies of these maps may be examined at the Department of Environmental Protection, Bureau of Information Systems, or copies may be obtained, upon receipt of reproduction and other appropriate costs, from the Department of Environmental Protection, Bureau of Information Systems, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

(1)	ALACHUA COUNTY:	
	Archer	11/94
	Gainesville East	11/94
	High Springs	11/94
	High Springs SW	11/94
	Micanopy	11/94
	Monteocha	11/94
	Newberry	11/94
	Orange Heights	11/94
	Waters Lake	11/94
(2)	BREVARD COUNTY:	
	Melbourne East	11/94
(3)	BROWARD COUNTY:	
	Cooper City	11/94
	Fort Lauderdale North	11/94
	Fort Lauderdale South	11/94
	North Miami	11/94
	Port Everglades	11/94
(4)	CITRUS:	
	Crystal River	11/94
	Homosassa	11/94
(5)	COLUMBIA:	
	Columbia	11/94
	Fort White	11/94
	Lake City West	11/94
	Mikesville	11/94
(6)	DADE COUNTY:	
	Hialeah	11/94
	North Miami	11/94
	South Miami	11/94
(7)	DESOTO:	
	Arcadia	11/94
(8)	DUVAL COUNTY:	
	Baldwin	11/94
	Jacksonville	11/94
	Jacksonville Heights	11/94
	Marietta	11/94
(9)	ESCAMBIA COUNTY:	
	Cantonment	11/94
	Pensacola	11/94
	Seminole (AL)	11/94
	West Pensacola	11/94
(10)	GILCHRIST:	
	High Springs SW	11/94
	Waters Lake	11/94
(11)	GLADES COUNTY:	
	Moore Haven	11/94
(12)	HAMILTON:	

	Ellaville	11/94
	Fort Union	11/94
(13)	HARDEE:	
	Griffins Corner	11/94
(14)	HERNANDO:	
	Masaryktown	11/94
	Port Richey NE	11/94
	Weekiwachee Springs	11/94
(15)	HIGHLANDS COUNTY:	
	Avon Park	11/94
	Childs	11/94
	Crewsville	11/94
	Frostproof	11/94
	Lake Arbuckle	11/94
	Lake Arbuckle SW	11/94
	Lake June In Winter	11/94
	Lake Placid	11/94
	Sebring	11/94
	Venus SW	11/94
(16)	HILLSBOROUGH COUNTY:	
	Brandon	11/94
	Citrus Park	11/94
	Dover	11/94
	Ft. Lonesome	11/94
	Lithia	11/94
	Lutz	11/94
	Plant City West	11/94
	Sulphur Springs	11/94
	Tampa	11/94
	Thonotosassa	11/94
	Wimauma	11/94
(17)	INDIAN RIVER:	
	Vero Beach	11/94
(18)	JACKSON COUNTY:	
	Alford	11/94
	Bascom	11/94
	Campbellton	11/94
	Cottondale East	11/94
	Cottondale West	11/94
	Cypress	11/94
	Dellwood	11/94
	Fairchild (GA)	11/94
	Graceville	11/94
	Kynesville	11/94
	Malone	11/94
	Marianna	11/94
	Oakdale	11/94
	Grangeburg (AL)	11/94
	Saffold (AL)	11/94
	Sills	11/94
	Sneads	11/94
	Steam Mill (GA)	11/94
(19)	LAKE COUNTY:	
	Astatula	11/94
	Center Hill	11/94
	Clermont East	11/94
	Clermont West	11/94

	Eustis	11/94
	Howey In The Hills	11/94
	Lake Louisa	11/94
	Lake Louisa SW	11/94
	Lake Nellie	11/94
	Leesburg East	11/94
	Mascotte	11/94
	Sorrento	11/94
	Umatilla	11/94
(20)	LEON COUNTY:	
	Tallahassee	11/94
(21)	LEVY:	
	Morriston	11/94
(22)	MADISON:	
	Cherry Lake	11/94
	Madison	11/94
	Nankin (GA)	11/94
	Pinetta	11/94
(23)	MANATEE:	
	Ft. Lonesome	11/94
	Wimauma	11/94
(24)	MARION COUNTY:	
	Belleview	11/94
Lady	Lake	11/94
	Lake Weir	11/94
	Ocala East	11/94
	Ocala West	11/94
	Oxford	11/94
(25)	MARTIN COUNTY:	
	Indiantown	11/94
	Okeechobee 4 SE	11/94
(26)	ORANGE COUNTY:	
	Apopka	11/94
	Astatula	11/94
	Clermont East	11/94
	Eustis	11/94
	Forest City	11/94
	Lake Jessamine	11/94
	Lake Louisa	11/94
	Orlando East	11/94
	Orlando West	11/94
	Sorrento	11/94
	Windermere	11/94
	Winter Garden	11/94
(27)	OSCEOLA:	
	Ashton	11/94
	Intercession City	11/94
	Lake Louisa SW	11/94
	Narcoossee	11/94
(28)	PASCO:	
	Lutz	11/94
(29)	PINELLAS:	
	Elfers	11/94
(30)	POLK COUNTY:	
	Alturas	11/94
	Auburndale	11/94
	Babson Park	11/94
	Bartow	11/94
	Bereah	11/94

	Davenport	11/94
	Dundee	11/94
	Eloise	11/94
	Frostproof	11/94
	Gum Lake	11/94
	Hesperides	11/94
	Homeland	11/94
	Intercession City	11/94
	Lake Arbuckle	11/94
	Lake Louisa SW	11/94
	Lake Wales	11/94
	Lake Weohyakapka	11/94
	Lakeland	11/94
	Mulberry	11/94
	Nichols	11/94
	Plant City East	11/94
	Polk City	11/94
	Providence	11/94
	Socrum	11/94
	Winter Haven	11/94
(31)	PUTNAM:	
	Baywood	11/94
(32)	SANTA ROSA:	
	Milton South	11/94
	Pace	11/94
(33)	SEMINOLE COUNTY:	
	Aurantia	11/94
	Bithlo	11/94
	Casselberry	11/94
	Forest City	11/94
	Geneva	11/94
	Sanford	11/94
	Titusville SW	11/94
(34)	ST. JOHNS COUNTY:	
	Picolata	5/00
(35)	ST. LUCIE:	
	Fort Pierce NW	11/94
	Okeechobee 1 NE	11/94
(36)	SUMTER:	
	Bushnell	11/94
	Webster	11/94
(37)	SUWANNEE:	
	Dowling Park	11/94
	Fort Union	11/94
	Hildreth	11/94
	Hillcoat	11/94
	Live Oak East	11/94
	O'Brien	11/94
(38)	VOLUSIA COUNTY:	
	Aurantia	11/94
	De Land	11/94
	Geneva	11/94
	Orange City	11/94
	Titusville SW	11/94

Specific Authority 373.309, 403.061 FS. Law Implemented 373.309 FS. History–New 3-25-90, Amended 10-4-90, 7-4-91, Formerly 17-524.430, Amended 2-7-95, 6-27-00.

62-524.550 Well Construction Requirements for New Potable Water Well Permitting in Delineated Areas.

(1) New potable water wells shall comply with the minimum construction standards contained in Rule 62-532.500, F.A.C. Additional requirements may be assigned by the permitting authority relative to depth restrictions, location of screened or open hole interval, and length of casing where warranted by local specific information.

(2) Methods for constructing new potable water wells shall be limited to rotary drilling, boring, or other method specifically approved by the permitting authority pursuant to Rule 62-524.700(1), F.A.C., which meets the water well construction criteria in Rule 62-532.500, F.A.C., except as required below.

(a) Well casing and liner pipe shall be new, free of breaks, corrosion and dents, straight and true, and not out of round. Welded or seamless black or galvanized steel pipe or casing, or stainless steel pipe or casing, or approved types of nonmetallic pipe shall be used for well casing or liner pipe.

(b) Solvent-bonded couplings shall be prohibited in areas with known ground water contamination which includes solvent components.

(c) To prevent the interchange of water and loss of artesian pressure, contaminated, unconfined ground water intervals shall be sealed off prior to drilling through the underlying confining interval. Uncontaminated, unconfined ground water intervals shall be sealed off or otherwise protected prior to drilling into deeper, contaminated ground waters.

(d) For any well casing installed in a bore hole, the annular space shall be filled from bottom to top with not less than a nominal two inch thickness of neat cement grout.

(e) A concrete pad measuring three feet by three feet by four inches shall be constructed around the elevated portion of the casing so that the casing is centered in the pad to prevent soil erosion and seepage of surface contamination into the annular space.

(f) A minimum elevation of one foot of casing above land surface shall be required.

(g) A raw water tap shall be provided to allow sampling of the well before exposure to storage or treatment.

(h) The well casing shall be visibly and permanently marked above the land surface with the latitude and longitude and the permit number issued by the permitting authority for that well.

(i) To the extent practical, potable water wells shall be located outside an area delineated under Rule 62-524.420, F.A.C.

(j) Where the source of contamination and the direction of ground water flow are known, in an area delineated under Rule 62-524.420, F.A.C., to the extent practical, potable water wells shall be located upgradient of the source.

(k) New potable water wells shall be located on ground least subject to inundation.

(l) Any new potable water well constructed within a delineated area that does not meet the construction standards of this section shall be abandoned and plugged in accordance with Rule 62-532.500, F.A.C., and applicable water management district rules.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309 FS. History–New 5-16-89, Amended 3-25-90, 3-3-92, Formerly 17-524.550, Amended 12-9-96.

62-524.600 Water Quality Testing for New Potable Water Well Delineated Areas.

(1) New potable water wells shall be tested using methods as specified in Rule 62-524.420, F.A.C., for the presence in the untreated water of the ground water contamination which resulted in the delineation.

(2) The Department shall accept only test results obtained from water samples collected and analyzed by the Department of Health and Rehabilitative Services. The well construction permit applicant shall be responsible for the cost of sample collection, shipping, and analysis.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309 FS. History–New 5-16-89, Amended 3-3-92, 5-6-93, Formerly 17-524.600.

62-524.650 Clearing for Use of New Potable Water Wells in Delineated Areas.

(1) If no ground water contamination is found upon testing of a new potable water well in a delineated area pursuant to Rule 62-524.600, F.A.C., the Department of Health and Rehabilitative Services shall be responsible for issuance of a letter of clearance to the well construction permit applicant.

(2) If ground water contamination is found upon testing pursuant to Rule 62-524.600, F.A.C., or other ground water contamination is found, a well shall not be cleared for use without a demonstration, through water quality testing, that a filter or other permanent remedy prevents the users of the well from being exposed through ingestion, inhalation, or dermal absorption, as appropriate for a contaminant, to ground water contamination.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309 FS. History–New 3-3-92, Formerly 17-524.650, Amended 12-9-96.

62-524.700 Permit Requirements for New Potable Water Wells in Delineated Areas.

(1) A construction permit shall be obtained from the appropriate water management district pursuant to Rule 62-524.800, F.A.C., for all new potable water wells prior to installation or conversion. Applicants shall submit a proposed well design with the completed application, and the permit fee, to the permitting authority. Permit application shall be made under existing well

construction permitting programs pursuant to Chapter 62-532, F.A.C., using forms adopted by the permitting authority for this purpose. In addition to the general requirements of this chapter, the permit shall address the following requirements through special conditions:

(a) Well construction including method of construction, depth, location of cased and screened intervals, casing material and grouting.

(b) Any special cleaning requirements for casing or drilling equipment.

(c) Water quality testing.

(d) Unique well identifiers where needed.

(2) Permitting and construction of new potable water wells, except for a well to be used for a public water system as defined in Rule 62-550.200, F.A.C., are prohibited in delineated areas where a distribution line of an available potable water system is within 500 feet of the boundary of the property for which a well construction permit is being sought. Such prohibition applies unless the property owner or applicant obtains documentation from the public water system or the Department's Water Supply Restoration and Replacement Program, and submits such documentation to the permitting entity, which demonstrates either of the following:

(a) That economic factors caused by physical or legal impediments to construction to a distribution line prevent the property owner or permit applicant from obtaining potable water through connection to the distribution line; or

(b) That necessary water distribution line extensions (excluding plumbing and meters) cannot be completed within 30 days of application to the Department for water supply restoration or replacement.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309 FS. History–New 5-16-89, Amended 3-3-92, Formerly 17-524.700, Amended 12-9-96.

62-524.710 Exemption from New Potable Water Well Permitting in Delineated Areas.

Exemption from the requirements of Rule 62-524.700, F.A.C., shall be granted to an applicant by the Department or the permitting authority upon demonstration using hydrogeological, water quality, and other pertinent information that the exemption will not result in the impairment of the intent and purpose of this chapter. Detailed requirements for each exemption shall be negotiated between the permit applicant and the permitting authority on a case by case basis.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309, 373.326 FS. History–New 5-16-89, Formerly 17-524.710.

62-524.720 Fees for New Potable Water Wells in Delineated Areas.

(1) Well construction permit fees for new potable water wells shall be established by rule by each water management district in an amount to recover all their actual costs, but may not exceed $500.

(2) The clearance fee for new potable water wells shall be $50.

(3) All fees collected pursuant to this rule shall be deposited in the delegated entity's appropriate operating account.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309 FS. History–New 5-16-89, Amended 3-3-92, Formerly 17-524.720.

62-524.730 Inspections of New Potable Water Wells in Delineated Areas.

During the construction, repair, conversion from non-potable use, or abandonment of any well subject to permit under this chapter, the Department or the permitting authority may conduct inspections to ensure conformity with the requirements in this chapter. Duly authorized representatives of the Department or the permitting authority may, at any reasonable time, enter property on which a well subject to permit under this chapter is located and inspect said well.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309, 373.319 FS. History–New 5-16-89, Formerly 17-524.730.

62-524.740 Violations and Penalties for New Potable Water Wells in Delineated Areas.

(1) Prohibited Acts.

(a) It shall be a violation of Section 373.309, F.S., and this chapter to construct, convert from non-potable use, or abandon any potable water well, or use for human consumption any well subject to permit under this chapter without having obtained a permit pursuant to Rule 62-524.700, F.A.C. This prohibition shall apply to both the water well contractor and the well owner.

(b) It shall be a violation of Section 373.309, F.S., and this chapter to use for human consumption, after delineation, any water well subject to permit under this chapter without having performed water quality testing pursuant to Rule 62-524.600, F.A.C.

(c) It shall be a violation of Section 373.309, F.S., and this chapter to use for human consumption, after delineation, any water well subject to permit under this chapter in which contaminants have been found without a demonstration through water quality testing that a filter or other means of preventing the users of such a well from being exposed to ground water contamination is effective.

(2) Penalties.

(a) Any person who violates any provision of this chapter, order, or permit issued under the authority of this chapter shall, upon conviction, be guilty of a misdemeanor of the second degree, punishable as provided in Sections 775.082 and 775.083, F.S. Continuing violation after an order or conviction shall constitute a separate violation for each day the violation occurs.

(b) Any water well contractor who is in violation of paragraph (1)(a) shall, in addition to paragraph (2)(a), also be subject to the penalty provisions in Chapter 62-531, F.A.C., including the license suspension and revocation provisions contained therein.

Specific Authority 373.309, 403.061, 403.062 FS. Law Implemented 373.309, 373.323, 373.336 FS. History–New 5-16-89, Amended 3-25-90, Formerly 17-524.740.