Third Five-Year Review Report

For

Industrial Waste Control Site (IWC)

Sebastian County
Fort Smith, Arkansas

Revised

September 2007

Prepared By
Region 6

United States Environmental Protection Agency
Dallas, Texas

997019

THIRD FIVE-YEAR REVIEW
IWC
ARD980496368
Sebastian County, Arkansas

This memorandum documents approval of the Industrial Waste Control Site's Third Five-Year Review Report prepared by the Environmental Protection Agency with data provided by Forbes Environmental Engineering on behalf of the IWC Settling Defendants.

Summary of Third Five-Year Review Findings

The third five-year review consisted of review of data generated during the third-five year review period, post closure care monitoring and Site inspections. After the second five year review the Site was proposed for a deletion from the National Priorities List. However the Deletion process was put on hold as concentrations above baseline action levels were observed in two monitor wells: MW-12, 13, and WRW (West Recharge Well). A Site Assessment Study (SAS) was performed using Site specific conservative parameters and the most conservative EPA values where Site data was not available. The SAS study included a statistical analysis, an assessment of conditions in relation to remedy design and performance, a natural attenuation (NA) and a risk assessment to establish Site specific target levels. Based on fate and transport studies for the MW-12, 13 and WRW wells, with hypothetical worst case, it was concluded that off-site migration of Contaminants of Concern (COCs) is unlikely. On the basis of the detailed studies the SAS concluded that the COCs will not move outside the Site as measured at the Point of Compliance (POC) well, MW-15.

The following observations support the premise that the remedy at the Industrial Waste Control Site meets the intent and purposes of the remedy design and is protective of human health and the environment.

- The third five-year review did not identify any changes in Federal or State standards that impact the site remedy selection.

- The Site was inspected by the EPA project manager Shawn Ghose P.E., along with Jerry Neill and Kin Siew of the for the Arkansas Department of Environmental Quality (ADEQ) on August 30, 2007. The inspection and third five-year review did not identify any significant changes in site conditions.

- The remedy is currently functioning as the original Remedial Action Plan intended and is thus protective of human health and the environment.

- Institutional controls are in place which restricts land use.

- Fences and gates are maintained and provide an adequate means to restrict access onto the Site.

Actions Recommended

Site maintenance frequency will be reduced after deletion. Appropriate reuse of the site will be instituted to protect the remedy. The only required action will be subsequent Five Year Reviews. The SAS suggested sampling after three years to assure that the conclusions of the study still holds. The State of Arkansas through ADEQ recommends a sampling event as a part of the next Five Year Review in 2012.

Determinations

I have determined that the remedy for the IWC Site is protective of human health and the environment.

Samuel Coleman, P.E.
Director
Superfund Division
U.S. Environmental Protection Agency , Region 6

9/26/07
Date

CONCURRENCES

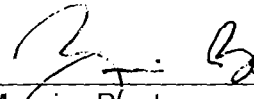
THIRD FIVE YEAR REVIEW

for the

IWC Site

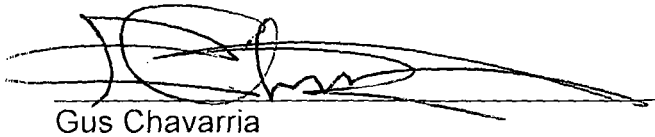
9-24-07.

Shawn Ghose M.S., P.E.
Remedial Project Manager



9/24/07

Marvin Benton
Site Attorney

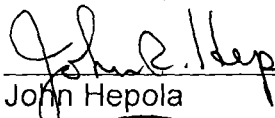


9-25-07

Gus Chavarria
Team Leader---- AR/TX

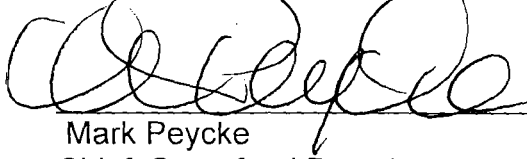
9/25/07

Don Williams
Deputy Assoc.Director------ Remedial Branch



9/25/07

John Hepola
Assoc. Director ------- Remedial Branch



09/25/07

Mark Peycke
Chief, Superfund Branch
Office of Regional Counsel

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EXECUTIVE SUMMARY

This is the third five-year review for the IWC Site (Site) located in Sebastian County outside of Fort Smith, Arkansas. The review was conducted from April 2001 through March 2006. The results of this five-year review indicate that the remedy is protective of human health and the environment. The Cap and Cover covering the Site is in good condition. The French drain and slurry wall system is diverting upgradient groundwater flow around the Site, and the 15 years of monitoring data and investigation studies show that natural attenuation is occurring and contaminants will not migrate offsite. Therefore, the remedies that were implemented for soil and groundwater at the Site continue to be protective of human health and the environment.

Soil Remediation

The remedy that was implemented for soil remediation is protective of human health and the environment. The affected soil was excavated and treated. Verification sampling was conducted to ensure that the affected soil had been removed. The excavations were backfilled with treated soils and covered with a RCRA cap and cover. Topsoil was placed over the clean materials and the Site was seeded. Perimeter fencing is in place and is effective in preventing unauthorized entry or use of the Site. The Site is in good condition and is inspected and maintained on a regular basis.

Groundwater Remediation

The remedy that was implemented for the groundwater is protective of human health and the environment. Although the main source area (Site soils) no longer exists and groundwater transport mechanisms have been removed with a diversion trench and cutoff slurry wall, soils in the saturated zone have been impacted by residual contaminants. The groundwater contaminants continue to naturally attenuate over time and migration off site is prevented.

Determination

These observations indicate that the remedy is effectively minimizing groundwater flow into the remediated area contained by the French Drain, slurry wall, and the Cap and Cover in accordance with the objectives of the remediation design. Therefore, remedies that were implemented at the Industrial Waste Control Site continue to be protective of human health and the environment.

THIRD FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION				
Site Name: Industrial Waste Control Site				
EPA ID: ARD980496368				
Region: 6	**State:** Arkansas	**City/County:** Fort Smith/Sebastian County		
SITE STATUS				
NPL Status	☒ Final	☐ Deleted	☐ Other(specify) *Delisting Pending*	
Remediation Status(choose all that apply)		☐ Under Construction	☐ Operating	☒ Complete
Multiple OUs?	☐ YES	☒ NO	**Construction Completion Date:** March 1991	
Has site been put into reuse?		☐ YES	☒ NO	
REVIEW STATUS				
Reviewing Agency:	☒ EPA	☐ State	☐ Tribe	☐ Other Federal Agency_____
Author Name: Mr. Shawn Ghose, M.S., P.E.				
Author Title: Remedial Project Manager		**Author Affiliation:** EPA		
Review Period: 4/2001 – 10/2006				
Date(s) of site inspection: Aug 30, 2007 by Shawn Ghose M.S., P.E., EPA Region 6 & Jerry Neill of ADEQ				
Type of Review:	☒ Statutory ☐ Policy	☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal Only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review Number:	☐ 1(first)	☐ 2(second)	☒ 3(third)	☐ Other(specify)_____
Triggering Action: ☐ Actual RA Onsite Construction at OU#_____ ☐ Construction Completion ☐ Other(specify)			☐ Actual RA Start at OU#_____ ☒ Previous Five-Year Review Report	
Triggering Action Date: July 2002				
Due Date(five years after triggering action date): July 2007				

FIVE-YEAR REVIEW SUMMARY FORM

Deficiencies:

No significant deficiencies have been identified.

Follow-up Actions:

Site maintenance will be conducted, as in the past. These actions include:

- Site mowing;
- Cover maintenance;
- Well repairs;
- Sign Replacements;
- Repair of the west recharge will be completed;
- Annual Site inspections.

Protectiveness Statements:

Current Site Status

- Water elevations in the landfill monitor wells (MW-1, 6, 7, 8 and 9) have remained relatively stable and there have been no changes corresponding to area rainfall. There has not been sufficient water in these wells to be able to collect water samples.

- Water elevation in the upgradient French Drain piezometers (P-1 and 3) are significantly higher than those reported in their respective down gradient piezometers (P-2 and 4). {Note: P-2 is consistently dry and P-4 elevation is consistently at 513.33 ±0.18 ft. msl.} The changes of water elevations in the upgradient piezometers(1-6 ft.) with respect to area rainfall are much more pronounced than those reported in the downgradient piezometers.

- The French Drain flow and the Cap drainage both correspond with area rainfall.

- No offsite migration of constituents of concern have been detected in mine void downgradient monitor wells (MW-10, 11, and 103D) or property line monitor well (MW-15).

- All site maintenance and activity is coordinated through the EPA and ADEQ,. The Site monitoring and maintenance activities ensure the remedies function as designed.

These observations indicate that the remedy is effectively minimizing groundwater flow into the remediated area contained by the French Drain, slurry wall, and the Cap and Cover in accordance the objectives the remediation design.

Therefore, remedies that were implemented at the Industrial Waste Control Site continue to be protective of human health and the environment.

Other Comments: SAS results indicate that contaminants of concern will not move off-site as indicated by compliance monitoring well M-15 at the property boundary.

List of Acronyms

ACL	Alternative Concentration Levels
ADEQ	Arkansas Department of Environmental Quality
ADPCE	Arkansas Department of Pollution Control and Ecology
AL	Action levels
AOC	Area of Concern
ARARs	Applicable or Relevant and Appropriate Requirements
AT	Average Time
BCL	Baseline Concentration Limit
BW	Body Weight
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CD	Consent Decree
c-DCE	cis-1,2-dichloroethylene
CDI	Chronic Daily Intake
CO_2	Carbon Dioxide
COC	Constituents of Concern
CV	Coefficient of Variance
DAF	Dilution Attenuation Factor
DO	Dissolved Oxygen
ED	Exposure Duration
EF	Exposure Frequency
EPA	United States Environmental Protection Agency
ERW	East Recharge Well
F&T	Fate and Transport
FS	Feasibility Studies
gpm	gallons per minute
GSI	Groundwater Services Inc.
HI	Hazard index
HQ	Hazard Quotient
HRS	Hazardous Ranking Score
HWQS	Hydrological and Waste Quantification Study (same as SRI)
I	Chemical Intake for Toxicant
IR	Ingestion Rate
IRIS	Integrated Risk Information System
IWC	Industrial Waste Control
MDL	Minimum Detection Level
mg/kg	milligram per kilogram
mg/L	milligram per Liter
NA	Natural Attenuation
NAF	Natural Attenuation Factor
ND	Non Detects
NPL	National Priority List
ORP	Oxidation-Reduction Potential
PCAP	Post Closure Activity Plan
PCC	Post Closure Care
PCCP	Post Closure Care Plan (same as PCAP)
PCL	Practical Cleanup Levels
PCOC	Potential Constituents of Concern

PL	Prediction Level
POE	Point of Exposure
POC	Point of Compliance
PQL	Practical Quantification Limit
PRP	Potentially Responsible Parties
RAP	Remedial Action Plan
RBCA	Risk Based Corrective Action
RBPCL	Risks based protective concentration levels
RBSL	Risk Based Screening Levels
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RI	Remediation Investigations
SARA	Superfund Amendments and Reauthorization Act of 1986
SAS	Site Assessment Study
SC	IWC Steering Committee
SEA	Supplemental Endangerment Assessment
SF	Slope Factor
SFS	Supplemental Feasibility Studies
SRI	Supplemental Remedial Investigation
SSC	Significantly Statistical Concentrations
SSTL	Site Specific Target Levels
TCE	Trichloroethylene
TCLP	Toxicity Concentration Leachate Procedure
TDS	Total Dissolved Solids
UCL	Upper Confidence Level
μg/l	microgram per liter
USEPA	United States Environmental Protection Agency
USDOE	United States Department of Energy
VC	Vinyl chloride
VOC	Volatile Organic Compounds
WRW	West Recharge Well

I. INTRODUCTION

EPA Region 6 has conducted the Third Five Year review of the remedy of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) implemented at the IWC Site, located in Sebastian County, Arkansas, outside the city limits of Ft. Smith. This review was conducted for the period of April 2001 through October 2006. It was conducted to satisfy the statutory requirements, and documents the remedy to be protective of human health and the environment. This report documents methods, findings and conclusions of the review. This report is a summary of the Third Five Year Review for the Industrial Waste Control Site (IWC) and includes:

- General Description of the Site Background and past reports.
- Summary of monitoring events conducted during this five year period.
- Relevant activities that occurred during this five year period.
- Five Year Aerial Photographs.
- Discussion of Site Assessment Studies and results.
- Relevant Figures and tables (located at end of text).
- Proposed actions.

The IWC Site is a closed industrial landfill located about 8 miles southeast of Ft. Smith, Arkansas (see Figure 1.0). Figure 1.1 shows the general site layout and Figure 2.0 is a recent aerial photograph. Landfill operations began in the late 1960's with the disposal of municipal waste. From 1974 until late 1978, the Site was a permitted industrial landfill. The landfill operations included liquid disposal surface impoundments and isolated areas for disposal of solid and liquid waste in 55 gallon drums. Upon final closure by the operator, the Site was assessed by the EPA and placed on the National Priority List (NPL) in December 1982. The potentially responsible parties (PRP) were notified and formed the IWC Steering Committee (SC) in November of 1983. Site remedial investigations were completed by the EPA and the SC.

II. SITE CHRONOLOGY

The primary milestones and studies completed to date are:

• EPA Remedial Investigation Report	March, 1986
• EPA Endangerment Assessment	March, 1986
• EPA Feasibility Study	June, 1986
• Supplemental RI: Hydrological and Waste Quantification Study	October, 1987
• Supplemental Endangerment Assessment	February, 1988
• Supplemental Feasibility Study	February, 1988
• EPA Remedial Alternative Selection	June, 1988
• Record of Decision including Remedial Action Plan	June, 1988 June 89

- Consent Decree July, 1989
- Remediation Construction-Startup October, 1989
- Remediation Construction-Completion March, 1991
- Post Closure Care-Startup March, 1991
- Area C Assessment January, 1984
- Downgradient Monitor Well Installation March, 1995
- First 5 Year Review May, 1996
- Monitor Well MW-15 Installation November, 1996
- Post Closure Monitoring Events March, 1996-2006
- Second Five Year Review July, 2002
- Site Assessment Study November, 20063/2004,8/2004,
- Data For Third Five Year Review by IWC Settling Defendants March, 2007

The Third Five Year Review is based on reviewing monitoring reports for the mine void ground water and inspection reports for: sampling events 9/2003, 3/2004, 8/2004, 3/2005, 9/2005, 3/2006 and the Site Assessment Report of 11/2006, which collectively provided a comprehensive overview of the IWC Site. For more detailed information regarding specific topics, refer to the respective comprehensive report.

III. BACKGROUND

The following is a summary of the Site location and a brief discussion of the history of the Site.

A. Site Location

The IWC Site is a closed industrial landfill on an approximately eight-acre tract located about 8 miles southeast of Ft. Smith and 1 mile west of Jenny Lind, Arkansas in Sebastian County. The town of Bonanza is approximately 4.5 miles to the west of the Site. Access to the Site is via a paved, county maintained, road (Racetrack Loop) south of Bonanza Road.

The Site as referred to within this report refers to the property within the property fence line. The remediated areas are all located under the Cap and Cover and all monitor wells lie within the Site boundary.

B. History

Initially, the Site was the location of a surface mining operation, which mined coal from a shallow coal seam in the mid-1940's by strip mining methods. An

extensive network of abandoned underground coal mines just north of where the old strip mine is located, were operated from the 1890's through 1932. The western portion of the strip mine was ultimately converted to the landfill in the late 1960s.

An application for permit to operate the facility as an industrial landfill was filed November 18, 1971, and a temporary permit was issued by the Arkansas Department of Pollution Control and Ecology(ADPC&E) on November 23, 1971. *{Note: The name of the ADPC&E has been changed to the Arkansas Department of Environmental Quality(ADEQ).}* A full permit to receive industrial waste at the Site under the name of GNJ, Inc. was issued by the ADPC&E on May 24, 1974. In August of l974 the Site was sold and came under the name of Industrial Waste Control(IWC).

The IWC operations included the landfill and surface impoundments. The facility received primarily industrial waste including wood shavings, miscellaneous rubbish and drummed solvents from industrial plants in and around Ft. Smith. The surface impoundments referred to as "evaporation ponds" were constructed sometime in the late summer or early fall of 1975. These ponds were reportedly used to store and evaporate drummed liquid wastes received at the Site. In addition, drums were deposited in two isolated drum disposal areas, one in the south area of the surface impoundments and the other located in the southwest corner of the property. The operations were inspected regularly by the ADPC&E. ADPC&E inspection reports noted that the ponds were constructed in clay and underlain by shale and that vertical migration of fluids from the pond should be minimal.

In general, quarterly ADPC&E inspection reports indicated satisfactory Site conditions. However, in the mid-1970s, concerns and issues were raised by the local residents and the agency in regard to a surface impoundment release. In response to ADPC&E directives, the operator notified the Agency that liquid solvents were no longer accepted. Closure activities were initiated shortly thereafter. On August 8, 1978, the ADPC&E was notified that the landfill had been closed and covered with compacted material(believed to be the spoils from the former strip mine) and graded to ensure adequate surface drainage. The status of the surface impoundments at the time is unclear, but in late 1979 the ADPC&E inspection reports indicated that a leachate problem existed, and the EPA was notified.

Preliminary site assessments were conducted by the EPA in 1980 and 1981. As a result, the IWC site was placed on the National Priorities List(NPL) on December 30,1982. A Remedial Action Master Plan was completed for the Site on September 30, 1983. The EPA notified potentially responsible parties (PRPs) regarding the site. A group of the PRPs organized into the IWC Steering Committee ("the Committee") in November 1983.

The Committee met with the regulatory agencies in November 1983 to discuss voluntary remediation. The EPA started its site Remedial Investigation(RI) in March of 1984. The RI final draft and Endangerment Assessment(EA) were completed on March 31, 1986. The EPA Feasibility Study(FS) was completed on June 3, 1986.

At the request of the IWC Committee the EPA authorized the Committee under an Administrative Order on Consent to conduct an independent remedial investigation referred to as the Hydrological and Waste Quantification Study(HWQS). The HWQS Work Plan was approved by the EPA and the ADPC&E(referred to collectively as "the Agencies"). The investigation was conducted from March through early July, 1987. All field investigation activity conducted by the Committee was overseen by the EPA, and coordinated through the ADPC&E. The HWQS report was submitted to the Agencies in October of 1987. An independent Supplemental Feasibility Study and Supplemental Endangerment Assessment was prepared by the Committee and submitted to the Agencies in February 1988.

Feasibility Studies evaluated the various remedy options and proposed a specific remedial action alternative. The EPA and the ADPC&E determined that the proposed remediation alternative met the mandates of Superfund. A press release and a fact sheet summarizing the alternative were distributed to the general local population and interested parties on April 19, 1988. A public meeting was held with the area residents and local officials on May 9, 1988 at the South Sebastian County Courthouse. Written comments and questions were received during the comment period which ended June 2, 1988. The EPA concluded that overall, the residents and local officials did not oppose the proposed remedial action, and the EPA's Record of Decision (ROD) was signed on June 28, 1988. A Summary of Remedial Alternative Selection (6/88) (See RAS-Section 7.2) was prepared by the EPA and included with the ROD.

A final Remedial Action Plan describing the conceptual tasks to be completed to meet the objectives of the ROD was prepared and was incorporated into the final executed Consent Decree. The Consent Decree was entered into the United States District Court on July 21, 1989.

Upon execution of the Consent Decree, the Remedial Action Design Plans and Specifications were prepared and upon review and revisions were approved by the EPA on August 11, 1989. The Design Specifications provide detailed procedures and specifications in how the RAP was to be implemented subject to approved Change Orders. The Remedial Design Phase developed the construction designs, specifications, drawings, schedules, procedures, and performance criteria to be used in implementing the RAP. The Design Phase also included bid documents, contract documents, payment measurements, cost estimate, QA/QC, and Health and Safety Plans. The documents were compiled in two volumes referred to as "Contract Documents and Specifications"(Volume I)

and “Attachments”(Volume II). Volume II included the Consent Decree, ROD with comments, RAS and correspondence index, and the RAP.

The remediation contractor (Tricil Corporation) was selected in September of 1989. The Remediation Construction Contract was executed on September 20, 1989, and Notice to Proceed was issued on October 10, 1989. EPA assigned the Army Corps of Engineers(CORP) to act as their onsite representative during remediation. The IWC Committee retained IT Corporation as their remediation project engineer and coordinator.

Construction mobilization began on October 17, 1989. Construction was completed with completion of demobilization and approved final inspection. The Certificate of Completion was issued by the Engineer on March 29, 1991. The Site Remediation Report was completed by the Project Engineer and Coordinator in March 1992. The EPA submitted its Close Out Report June 10, 1992 which determined that all appropriate response actions had been implemented, and no further action was necessary.

The Post Closure Activity Plan (January 1991)(PACP)(January 1991)(PCAP) as approved by the EPA specified the actions to be carried out during the Post Closure Period. The Post Closure Period began on the date of the Certificate of Completion (3/29/91) and continues for 30 years (3/29/21) unless modified with concurrence from the EPA and ADPC&E. This report constitutes the First Five Year Review report of the remediation and post closure activity as required by CERCLA.

In 2004, the EPA initiated the IWC Deletion process, due to its 13-year history of relatively consistent and stable Site conditions since closure. However, the Deletion process was placed on hold as a result of increasing trends in the concentrations of monitored constituents above baseline action levels observed in Site monitor wells MW-12, 13 and WRW. A Site Assessment Study was undertaken by the PRP to assess the ground water conditions, with the approval of the EPA and Arkansas Department of Environmental Quality (ADEQ).

IV. Remedial Action

The following summarizes the initial site assessments, remedial action plan and remedy performance evaluation.

A. Remedial investigation

The initial Site investigations identified five areas that presented potential concern and warranted some level of physical remediation. These areas were:

- Area A – The landfill.

- Area B – An area of potential soil contamination due to landfill operation activities. The area was extended to include an area (Area PA) discovered during remediation.
- Area C– Location of surface impoundments used for liquid waste disposal, and drummed waste disposal.
- Area D– Isolated area of drummed liquid and solid waste disposal.
- Area 09B – An isolated area around MW-09B which reported atypical concentrations of VOCs.

B. Endangerment Assessment

The Endangerment Assessment evaluated the potential sources, pathways and receptors to determine potential risks as a result of the Site conditions. It generally concluded:

- There was no evidence that significant concentrations of Site contaminants had migrated offsite via soil, surface water or ground water.
- The majority of the identified contaminants in the wastes and in soils were non-carcinogens.
- Contamination in the soils did not appear to have migrated and did not present an unacceptable risk to ground water at the time, and would not unless there was a mechanism to leach significant concentrations and a mechanism for transport.
- Only the ground water reported in MW-09B presented a significant potential risk.

C. Remedial Action Plan

The EPA selected the final remedial action alternative based on the selection criteria mandated by CERCLA, taking into consideration applicable, relevant and appropriate regulations. The Remedial Action Plan was developed and became part of the final Record of Decision. The primary focus of the Remedial Action Plan was to minimize the potential risks to the water stored in the mine void reservoir by conducting the following tasks:

- Reduce toxicity and volume
    - Excavate soils that exceeded Clean-up Criteria (1000ppm Total VOC) encountered in Areas B, C, D, 09B, and along the Slurry Wall and French Drain pathway
    - Treat excavated soils using chemical fixation and stabilization to reduce total concentrations to below Clean-up Criteria and meet treatment standards based on EPA Toxicity Concentration Leachate Procedure (TCLP)
    - Place treated soils meeting TCLP standards back into the excavation of Area C, solidify, and contain within a Slurry Wall keyed into the weathered bedrock and Site Slurry Wall

    - Remove drums of liquid from Areas C and D, and transport to offsite permitted commercial disposal facility
- Reduce Mobility
    - Remove leachate transport mechanism by:
        - Installing a French Drain upgradient of the Site to intercept shallow rain infiltration migration above weathered bedrock and divert it around the remediated area
        - Installing a Slurry Wall downgradient and parallel to the French Drain to cutoff backflow from the impacted Site soils into the French Drain, and secondarily provide backup for the French Drain
        - Installation of a Slurry Wall around Area C
        - Covering the entire remediated area including the Landfill, French Drain and Slurry Wall with a multilayer RCRA Cap and Cover to prevent rainfall infiltration into the remediated area
- Long Term Security
    - Cap and Cover over remediated area
    - Post Closure Activity Plan
        - Site monitoring and inspections
        - Operation and Maintenance
    - Site Security Fence
    - Restricted access and use

D. RAP Implementation

The remedial construction was implemented to meet the RAP objectives. The remediated area is the area below the Cap and Cover within the perimeter and above the effective depth of the French Drain and Site Slurry Wall. The remedy design components effectively address the remediated area above the weathered bedrock in accordance with the RAP objectives.

Area C excavation was completed in the weathered bedrock below the effective depths of the French Drain and Site Slurry Wall and below the remediated area.

V. Progress Since Last Five Year Review

The Five Year Review completed in July 2002 found the soil and groundwater remedy to be functioning as designed therefore protective of the public health and the environment. During the Deletion process in September 2003, two monitor wells recorded higher than base line levels of contaminants. A Site Assessment Study (SAS) concluded in November 2006 that the increase above base line values were related to natural attenuation locally around the monitor wells and that contaminants of concern would not migrate off-site at the compliance monitor well at the property boundary. Thus the remedy was determined to be protective of the public health and the environment.

VI. Five Year Review Process

Shawn Ghose, EPA Remedial Project Manager for the site, led the IWC Site Five Year Review. The IWC Settling Defendants and ADEQ were informed of the Five Year Review at the beginning of the process. On completion of the review, copies of the report will be filed at the local (Ft. Smith Library), State (@ ADEQ in Littlerock, AR) and EPA repositories. A public notice of the Third Five Year Review will be published in the Ft. Smith newspaper.

This Five-Year Review consisted of reviewing the data against the established criteria, conducting a Site inspection, and interviews of local residents.

VII. Five Year Review Findings

A. Interviews

During the inspection as discussed below the EPA RPM met with the following residents:

1] Susan McCool 7931 Race Track Loop (479) 998-8911
2] Blu McMullin 6933 Race Track Loop (479) 996-0112
3] Oscar and Julie Stiley 7103 Race Track Loop (479) 573 0726—Attorney was at Ft Smith during the inspection
4] Henry and Brandy Smith 7420 Race Track Loop—unavailable

The residents near the Site all praised the work done during the remediation, and were unanimous in suggesting that EPA delete the Site from the NPL. The residents did not have any complaints or concern.

The deed restrictions were recorded by the IWC Settling Defendants on February 2001, and verified at the Sebastian County Clerk's office by the EPA RPM. The land use restrictions apply to the Site in its current status, and prevent the use of the Site for any beneficial purpose However, upon deletion, while many of the restrictions will remain, the deed records may be revised to allow limited appropriate use.

B. Site Inspection

The site inspection for the Five Year Review was conducted on August 30, 2007. Mr. Jerry Horton, representing the IWC Settling Defendants, showed EPA into the site. Representing EPA were Remedial Project Managers (RPM) Shawn Ghose and David Abshire. The State of Arkansas was represented by Kin Siew, supervisor of inactive Superfund sites, and Jerry Neill, the ADEQ project manager for the IWC site.

The Site is in a rural area and the nearby residents have water supplied by Sebastian County Water District.. The RPMs checked the condition of the multilayer cap, the monitor wells, the discharge well connecting the French drains to collect and divert surface flows. The slurry walls to prevent back flow into the French drain could only be checked indirectly by the piezometers as it is buried under the multilayer cap. The cap was in good condition, recently mowed. Monitor wells were marked and locked. The piezometers are well marked. Piezometers P1 and P3 in upgradient French Drain positions have higher water levels than the down gradient P2 and P4 piezometers showing the effectiveness of the slurry wall performing it's design functions. The west recharge well was partially filled, and the east recharge well had very little water flow into it.

C. Risk Information Review

The following standards were identified as applicable or relevant and appropriate requirements (ARARS) in the Record of Decision. The standards were reviewed for changes that could affect the protectiveness of the remedy.

Federal
Resource Conservation and Recovery Act
Comprehensive Environmental Response, Compensation, and Liability Act
Superfund Amendments and Reauthorization Act

State
Arkansas Water Quality Standards

The IWC Site continues to be in compliance with the Federal and State ARARS.

D. Data Review

A review of records and monitoring through March 2006 resulted in the following findings.

- the observed increasing trends are not an indication of a significant change in field conditions, but rather the ongoing affects of natural attenuation:
    - the byproducts will not be detected in the ground water at the point of compliance at the periphery of the Site (MW-15), and
    - will not migrate offsite;
- the remedy is functioning as designed; and
- Site conditions do not present a significant risk to the public health and the environment offsite.

VIII. Assessment

The following conclusions support the determination that the implemented remedy at the IWC Site is continuing to be protective of human health and the environment.

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

Institutional Controls and Other Measures: Site and neighboring land use is not anticipated to change in the near future. Deed restrictions have been filed in 2001 to provide notice of the existing cap and previous use of the Site. The remedy involved excavating the contaminated soil in the main area of the Site to an industrial cleanup standard and covering this area with uncontaminated soil to cut off the direct exposure pathway. The cap was vegetated with a variety of grasses. Groundwater is diverted around the remediated area and the Site is fenced with signs and locked gates, and maintained to provide an adequate means of restricting access.

Remedial Action Performance: The soil remediation, including excavation and offsite incineration of the affected soils, has been effective in minimizing the potential for dermal contact with the Chemicals of Concern (COC) and has removed the source area for groundwater impacts. The groundwater is effectively diverted around the remediated area by the French drain and slurry wall system and the remedy is functioning as designed.

System Operations and Maintenance (O&M): Site O&M consists of occasional relatively minor fencing and well repair, sign replacement, and recharge system maintenance. In addition, the site is mowed twice a year. The Site is inspected on a regular basis and no major deficiencies have been encountered since the remedy was implemented.

Early Indicators of Potential Remedy Failure: There is no indication of remedy failure. The Site is inspected on a regular basis and operation and maintenance activities performed as needed.

Question B: Are the assumptions used at the time of remedy selection still valid?

Changes in Standards To Be Considered: This Five-Year Review did not identify any changes in Federal or State standards that impact the soil or groundwater remedies at the IWC Site.

Changes in Exposure Pathways: This Five-Year Review did not identify any changes in exposure pathways since the completion of the soil remediation. There is no indication that the treated wastes were not properly characterized, removed and treated during the soil remediation.

No current or planned changes in land use are anticipated. Access to the remediated area is restricted because of the fencing, signs and locked gates. In addition, a deed restriction has been filed to protect the existing cap and provide notice regarding land use. Also, there is no indication that the groundwater hydrology was not adequately characterized prior to the implementation of the groundwater remedy.

Changes in Toxicity and Contaminant Characteristics: The toxicity or other characteristics have not changed for the contaminants of concern, except as would be anticipated as a result of natural attenuation.

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

No additional information has been identified that questions the protectiveness of the remedy. A Site Assessment Study was undertaken by the PRPs to determine that natural attenuation was occurring and the Site does not present a risk or hazard to human health or the environment. The findings of the SAS confirmed that natural attenuation is occurring, the remedy is functioning as designed and the Site remedy is protective of human health and the environment.

IX. Issues

No significant issues have been identified and the remedy remains protective.

X. Recommendations and Follow-up Actions

It is recommended that the following actions should be implemented:

- The NPL deletion process should be reactivated;
- The Site should be monitored on an annual basis, using risk based action levels established by the SAS. A sampling event should take place in three years to verify SAS results.

X. Protectiveness Statements

The remedies that were implemented for soil and groundwater at Site continue to be protective of human health and the environment. Since the remedies for soil and groundwater are protective of human health and the environment, the remedy for the Site is protective of human health and the environment.

Soil Remedy

The remedy that was implemented for the affected soils is protective of human health and the environment. The excavation, treatment, and containment of the affected soil has been effective in preventing exposure due to direct contact and fugitive dust and has improved groundwater conditions by removing source material. Perimeter fencing is in place and is effective in preventing unauthorized entry or use of the Site. The surface vegetation at the Site is in good condition and is inspected and maintained on a regular basis.

Groundwater Remedy

The remedy that was implemented for the groundwater is protective of human health and the environment. Since the affected soil at the Site has been removed and the ground water flow through the remediated area has been prevented by the French drain and slurry wall, residual contaminants in the isolated saturated soils should continue to attenuate naturally over time. No local contaminants will move off-site. Thus the groundwater remedy is protective of human health and the environment.

XI. Next Five Year Review

The next five-year review is required by September 2012.

APPENDIX

INTERVIEW RECORDS

Five-Year Review Interview Record Industrial Waste Control (IWC) Ft. Smith, AR	**Interviewee: Oscar and Julie Stiley** Phone: 479-573-0726 email:

Site Name	**EPA ID No.**	**Date of Interview**	**Interview Method**
Industrial Waste Control	EPA ID# ARD980496368	08/30/07	By phone as Oscar was at Ft.Smith on 8/30/07

Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Shawn Ghose	EPA Region 6	214-665-6782	Ghose.shawn@epa.gov	6SF-AP 1445 Ross Ave Dallas, Texas 75202

Interview Questions :

1. Do you have any complaints or concerns regarding the IWC site in your neighborhood??.

Response: EPA did a great job when they were cleaning up nearly 17 years back. Oscar really appreciated the way the IWC people have been very diligent in taking care of the site and been very pleasant and helpful to the neighbors. Oscar an attorney suggested that the site be delisted so IWC could be rewarded for having done an exemplary clean up job and not have to spend money any more. Mr Stiley thought that may be flowers or plants can be grown at the site if it was transferred to private hands..

RPM Response: There are restrictions on the use of the land at this time. After Deletion EPA could change some restrictions which will be beneficial to the community but protects the remedy implemented in 1990-91.

Five-Year Review Interview Record Industrial Waste Control (IWC) Ft. Smith, AR	Interviewee: Blu McMulin Phone: 479-996-0112 email:

Site Name	EPA ID No.	Date of Interview	Interview Method
Industrial Waste Control	EPA ID# ARD980496368	08/30/07	76933 Race Track Loop

Interview Contacts	Organization	Phone	Email	Address
Shawn Ghose	EPA Region 6	214-665-6782	Ghose.shawn@epa.gov	6SF-AP 1445 Ross Ave Dallas, Texas 75202

Interview Questions :

1. Do you have any complaints or concerns regarding the IWC site in your neighborhood??.

Response: EPA did a great job when they were cleaning up nearly 17 years back. But now EPA should complete the job so the site could be used for benefit to the community. May be it could be used for raising hay for horses.

RPM Response: There are restrictions on the use of the land at this time. After Deletion EPA could change some restrictions which will be beneficial to the community but protects the remedy implemented in 1990-91. Hay is currently being bailed

Five-Year Review Interview Record Industrial Waste Control (IWC) Ft. Smith, AR	**Interviewee: Susan McCool** Phone: 479-998-8911 email:

Site Name	**EPA ID No.**	**Date of Interview**	**Interview Method**
Industrial Waste Control	EPA ID# ARD980496368	08/30/07	7931 Race Track Loop

Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Shawn Ghose	EPA Region 6	214-665-6782	Ghose.shawn@epa.gov	6SF-AP 1445 Ross Ave Dallas, Texas 75202

Interview Questions :

1. Do you have any complaints or concerns regarding the IWC site in your neighborhood??.

Response: EPA did a great job when they were cleaning up nearly 17 years back. But now EPA should complete the job so the site could be used for benefit to the community. May be it could be used for recreational purpose.

RPM Response: There are restrictions on the use of the land at this time. After Deletion EPA could change some restrictions which will be beneficial to the community but protects the remedy implemented in 1990-91.

DEED RECORDS

SCHEDULE D

EXCLUDED LAND USE ACTIVITIES

- Dumping of domestic, agricultural, animal, municipal, or industrial waste materials or debris
- Dumping or removal of fill dirt
- Discharge of domestic, agricultural, animal, municipal, or industrial waste waters or other liquids not generated as a direct result of remedial or corrective actions at the IWC Site
- All earth moving activities not directly related to remedial or corrective actions or regular maintenance at the IWC Site
- All construction activities not directly related to remedial or corrective actions at the IWC Site
- All drilling activities not directly related to remedial or corrective actions at the IWC Site
- All agricultural or cultivation activities not directly related to maintenance of remedial actions at the IWC Site
- Livestock production activities
- Recreational activities
- All other restrictions designated by the United States Environmental Protection Agency and more particularly described at 40 CFR Subpart G

SITE ASSESSMENT STUDIES

SITE ASSESSMENT STUDIES

The SAS were undertaken with the concurrence of the EPA and ADEQ to assess the residual conditions as described in Section 4.7 to determine whether conditions presented a significant concern which would preclude delisting the Site from the NPL. The studies and results are outlined in Section 2.0. Figure 7.1 is a 3D rendition of the study area. Figure 7.2 show the generalized groundwater surface and gradient, and Figure 7.3 shows the general model configuration. The following reviews the general methods and process.

Natural Attenuation Assessment

Natural attenuation (NA) is the natural propensity for biodegradable compounds to degrade into their daughter products. Consequently, it is considered a mitigating risk factor, if it can be shown to be occurring. The parent host at the Site is TCE, which under favorable conditions will biodegrade into c-DCE then VC to ethene and eventually ethane. An indication that biodegradation is occurring is a decrease in the parent, with a corresponding increase in the daughter products. This was the apparent behavior observed in MW-12, MW-2, and to a lesser extent in MW-13 (not enough data). It is less discernable in WRW due to erratic COC concentrations as a result of intermittent French Drain flow, but at least shows a slight trend indicating the possibility that NA was a factor. Since there was insufficient Site data to assess the trends in MW-13 and the WRW, MW-2 was considered the extreme worse case and MW-12 considered the reasonable worse case and considered to be representative of these the outliers.

The NA trends observed in MW-2 are pronounced, but based on only a few data points. The NA trends in MW-12 are discernible but less pronounced with over 8 years of data points. This indicates that the MW-12 conditions are relatively stable, which is an EPA condition for NA. Therefore, a NA assessment was conducted in accordance with EPA protocol to determine if there was sufficient evidence to back up the observations.

The first step was to weigh the presence of site-specific parameters in accordance with EPA assigned scores. The total score based on Site conditions for MW-2 ranged from 15-16 depending upon marginal factors. MW-12's score ranged between 13-15. Therefore, the scores indicate that NA is very likely occurring at the Site. (See Table 3.0)

In comparing the 30 indicator parameters within the plume as represented by MW-2 and MW-12, 27 are significantly different in at least one of the plume wells relative to background wells completed outside the plume. This indicates that there is a significant difference, which combined with the NA score, present a reasonable case that there is sufficient evidence to support that NA is occurring at the IWC Site, as result of the biodegradation of the chlorinated solvent (TCE). Under these conditions, EPA protocol requires that an assessment of the fate and transport of the COC over time and distance be conducted to quantitatively confirm biodegradation is occurring using site-specific information.

Fate and Transport

The fate and transport assessment was conducted, since there was sufficient evidence to support that NA was occurring, based on both the screening score and general behavioral trends.

The plume was defined by MW-2, considered to be the extreme worse case source since it was located within Area C with the highest reported concentrations, and MW-12 located inside the downgradient leading edge. MW-15 is identified as the point of compliance, since it is the closest monitoring well to the property line completed in the weathered bedrock, and the mine void reservoir is the offsite receptor of concern since it is a potential water source.

The analytical model, which is based on EPA guidelines, estimated the distance that the ground water contamination is likely to migrate over 15 and 30 years, for a combination of eight scenarios with and without natural attenuation. The simulations show that as the concentrations of TCE, c-DCE, and VC are decreasing, the ETH and Cl (daughter by-products) are increasing adding to the evidence in support of NA, and that the COC will not reach MW-15. No changes in the plume are visible after 15 years. Therefore, the model shows it is highly unlikely that the COC from the Site will migrate offsite due to the site physical characteristics even without biodegradation (the extreme worse case), and would not migrate offsite with biodegradation, which is the reasonable representative case for the Site conditions.

A risk assessment was then conducted to establish risk based concentrations limits and ensure that the conditions do not and will exceed the limits.

Risk Assessment

The baseline risk assessment was conducted using model programs based on EPA Guidelines.

Risk based screening levels (RBSL) and site-specific target levels (SSTL) were determined for residential Tier 1 and 2 scenarios, which is the most conservative model. In general, the COC reported in MW-2, 12 and WRW exceeded generic Tier 1 RBSL. Consequently, a site-specific risk assessment was conducted using residential Tier 2 model to determine site-specific target levels (SSTL) based on extreme and reasonable worse case scenarios.

The results of the model with 1st order decay to reflect biodegradation were that all COC in all monitoring locations are less than respective SSTL. Since this is a conservative representation of the Site conditions, the current onsite residual conditions as measured in MW-2, 12 and WRW do not present a significant threat to human health or the environment.

Using the SSTL in relation to the current COC the transport model was run to determine whether the SSTL will be exceeded in the future, if so in what kind of time frame, and whether the COC will reach receptors in concentrations greater than RBSL. The results show that the COC would not exceed RBSL in MW-15 since biodegradation is occurring. (See Tables 4.1-4.2) Similar results were obtained for the mine void reservoir, with even longer time frames. Since this is the most conservative regulatory limit, it is highly unlikely that COC will exceed RBSL in Receptor 1, and even more unlikely that the COC will migrate offsite in concentrations that would present a risk to human health in Receptor 2 (natural coal exposure notwithstanding).

Risk Probability

For a risk to be present there must be as source, pathway and exposure. In the case of the IWC Site the pathway for soil contact, air and shallow ground water have been eliminated by the remediation controls for the conditions identified in RAP. These same controls cut off soil and air residual conditions exposure pathways as well, and there is no direct ground water path from MW-12 to the mine void reservoir. However, to be conservative, the SAS assumed a ground water pathway from MW-12 to the mine voids, in addition to the french drain discharge via WRW, and risks were determined for residential Tier 2 conditions.

The EPA limit for probabilistic risks for carcinogens is 1 in 1 million (10^{-6}) for individual COC and 10^{-5} for cumulative risk. VC is a known carcinogen and TCE is a suspected carcinogen. c-DCE is known not to be a carcinogen. The calculated risks for each carcinogen at each receptor from each source were less than the carcinogenic individual and cumulative limits by several orders of magnitude. (See Tables 5.1-5.3)

Hazard Quotient

Toxicity hazards are measured as a ratio of the anticipated COC concentration at the receptors to the reference dosage established by the EPA as the conservative threshold dose below which a harmful effect would not occur. The ratio is referred to as hazardous quotient or HQ. A HQ of one or less is acceptable. The cumulative HQ or hazard index (HI) is also one. TCE is considered both a suspected carcinogen and a toxicant; c-DCE is only a toxicant; and VC is not a toxicant. The HQ and HI for both TCE and c-DCE in each receptor from each source are all less than one. (See Tables 4.1-4.2 above)

Maximum carcinogenic and toxic risk values did not exceed target limits in Tier 2 analysis in any of the receptors, regardless of source used, including MW-2 as the extreme worse case under the residential Tier 2 scenario. Therefore, the findings indicate the site does not present a significant risk or hazard.

Revised Action Limits

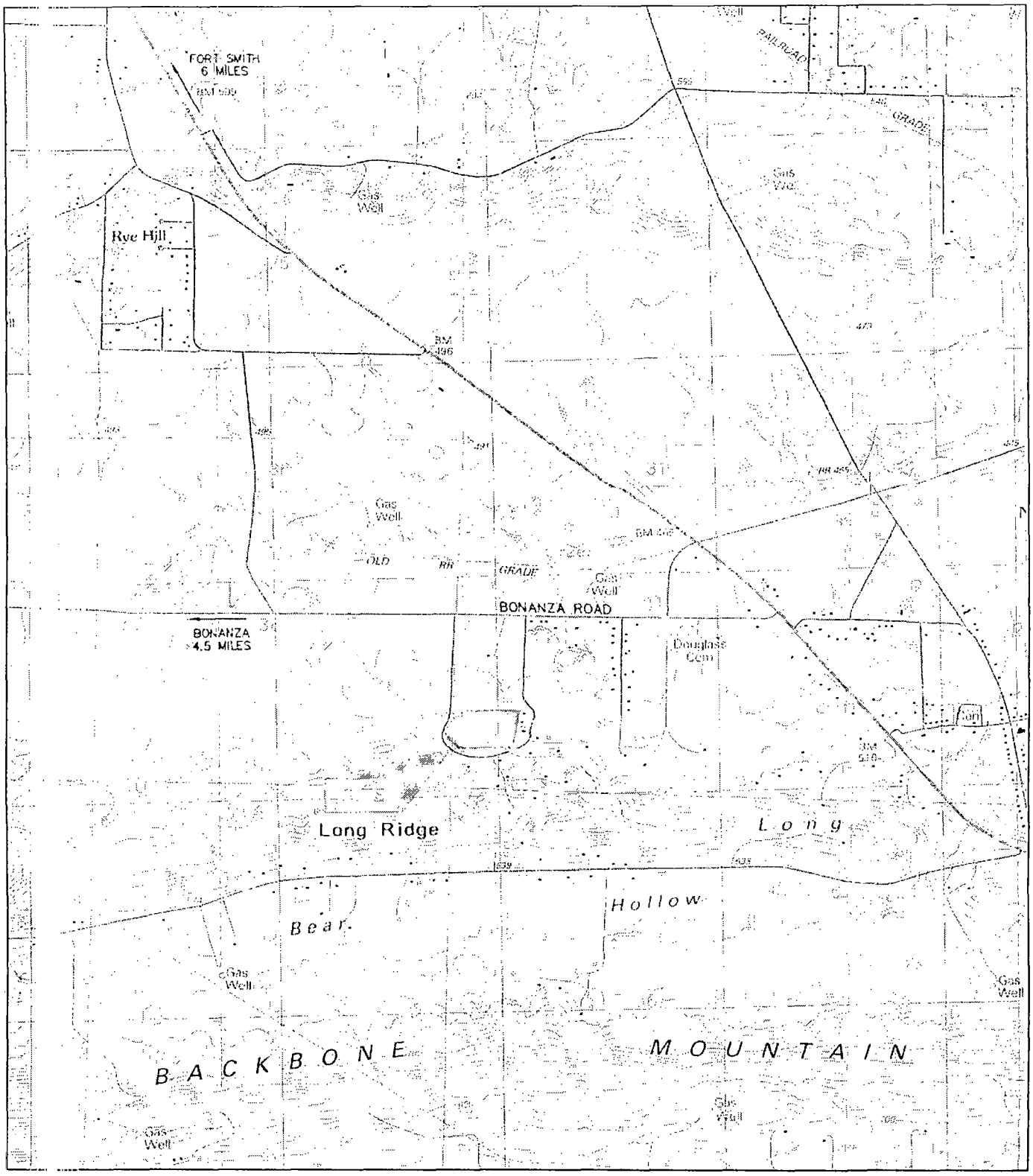
The action limits are the risk based indicator parameters concentration levels above which action is required. If a parameter exceeds action limits, the initial action is to resample the specific well for the specific parameter to confirm the exceedance in accordance with the Post Closure Activity Plan. If the exceedance is not confirmed no further action is necessary. If it is confirmed, appropriate action is necessary as warranted and approved by the EPA and ADEQ. Such followup actions may increase monitoring frequency and/or points, assessment, and/or remediation or control measures.

Based on the SAS it was determined that the increasing concentrations reported in MW-12, 13 and WRW are likely due to natural attenuation , in which cane concentrations of TCE daughter products are likely to increase. Continued sampling is more a matter of confirming attenuation than monitoring concentrations levels against statistical background. Therefore, risk based action levels are the appropriate benchmark concentrations for those constituents which have exceeded current action limits as discussed above. Table 6.0 shows the revised monitoring action limits.

Summary of Findings

All assessments were conducted using the most conservative parameters to establish a reasonable worse case representative of site conditions. Under these conditions the results show:

- the current COC onsite conditions exceed residential Tier 1 RBSL, but
- do not exceed Site specific residential Tier 2 SSTL, and
- will not exceed RBSL with biodegradation, and
- are unlikely to exceed RBSL at MW-15 or the offsite mine void reservoir, even if biodegradation were not occurring, for a very long time—if ever.
- Neither carcinogenic risks nor toxic hazards exist or will exist at the receptors.



N

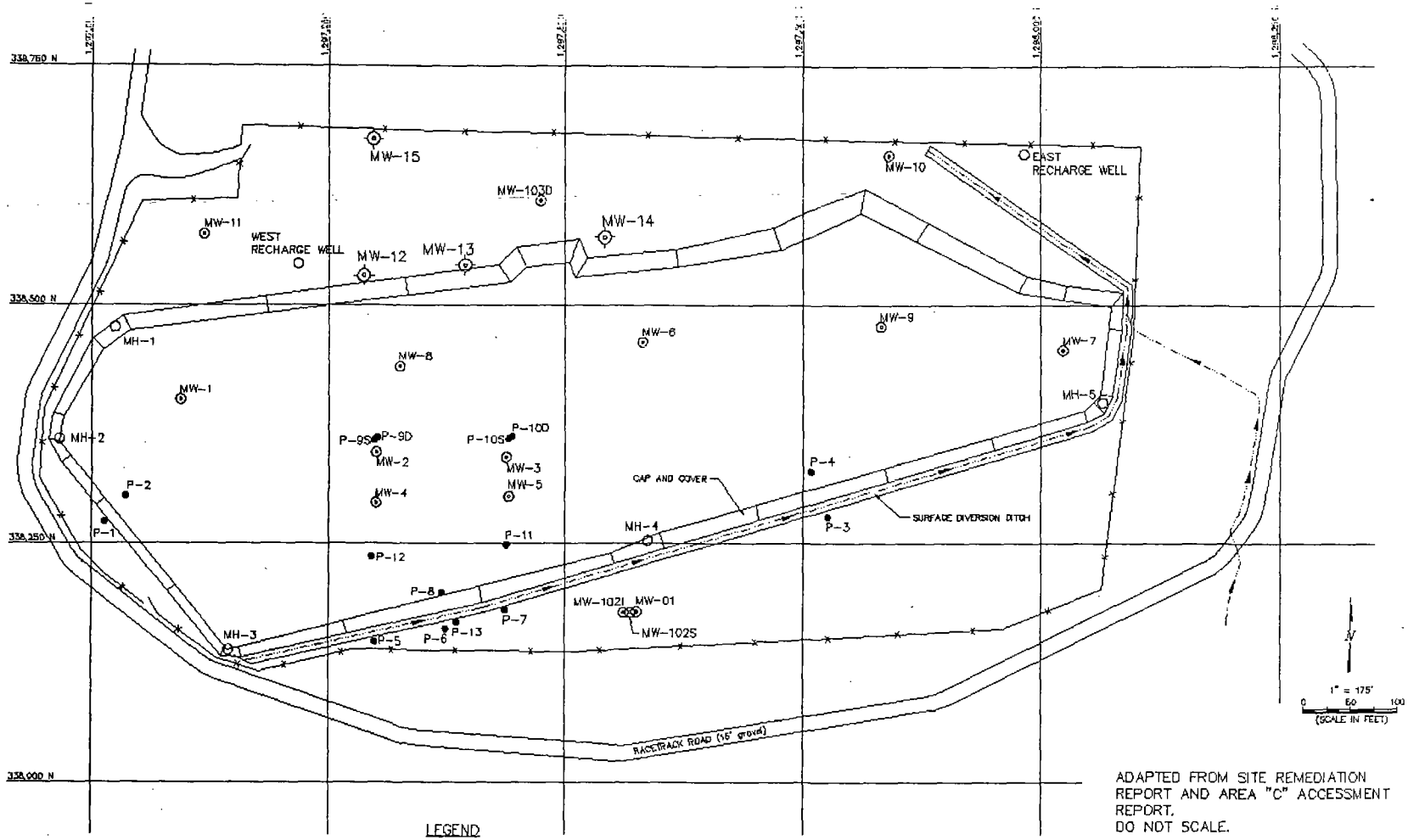
0 2000
(SCALE IN FEET)

U.S.G.S. QUADRANGLES:
SOUTH FORT SMITH, ARK.–OKLA., HACKETT, ARK.–OKLA.
BARLING, ARK., GREENWOOD, ARK.

FORBES ENVIRONMENTAL CONSULTING

SITE LOCATION MAP
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY, ARKANSAS

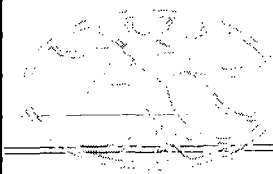
FIGURE 1.0



ADAPTED FROM SITE REMEDIATION REPORT AND AREA "C" ACCESSMENT REPORT.
DO NOT SCALE.

LEGEND

- MONITOR WELL
- PIEZOMETER
- FRENCH DRAIN MANWAY
- DOWN GRADIENT MONITOR WELLS BELOW MINE VOIDS



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SITE LAYOUT AND MONITOR WELL LOCATION
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY. ARKANSAS

FIGURE 1.1

FORBES ENVIRONMENTAL CONSULTING

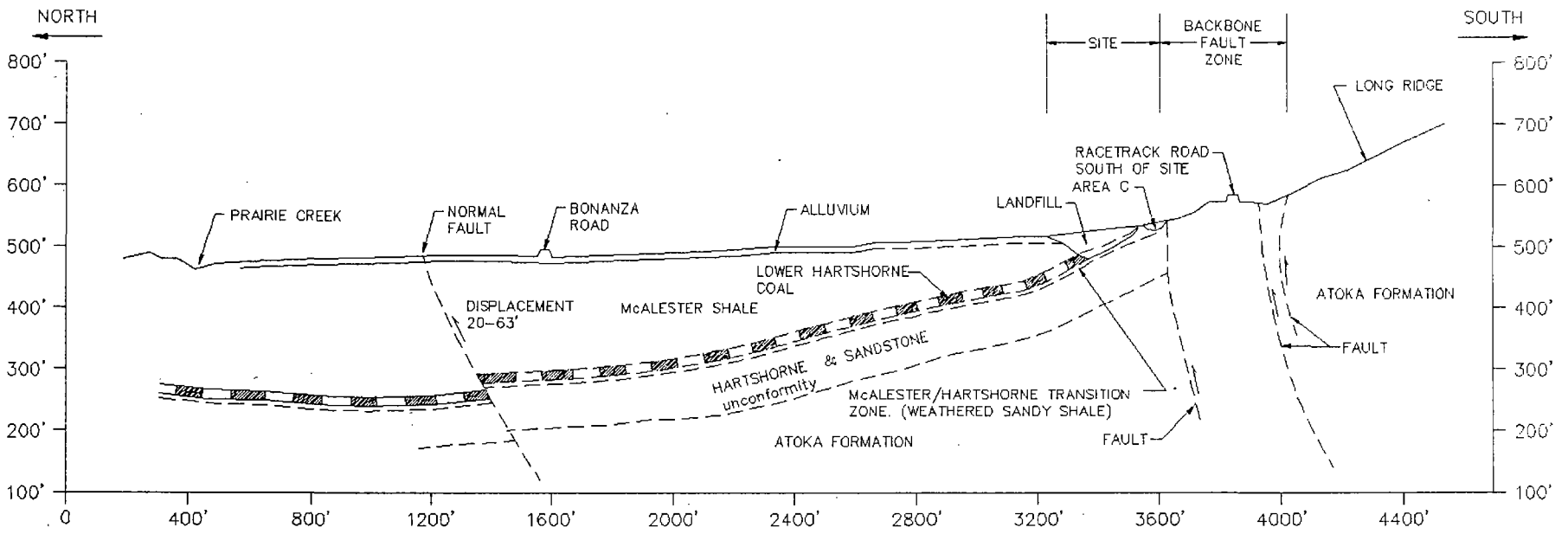
CURRENT AERIAL-3/28/06
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY. ARKANSAS

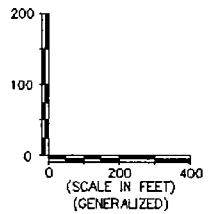
FIGURE 2.0

FORBES ENVIRONMENTAL CONSULTING

GENERAL AREA LAND USE
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY. ARKANSAS

FIGURE 3.0





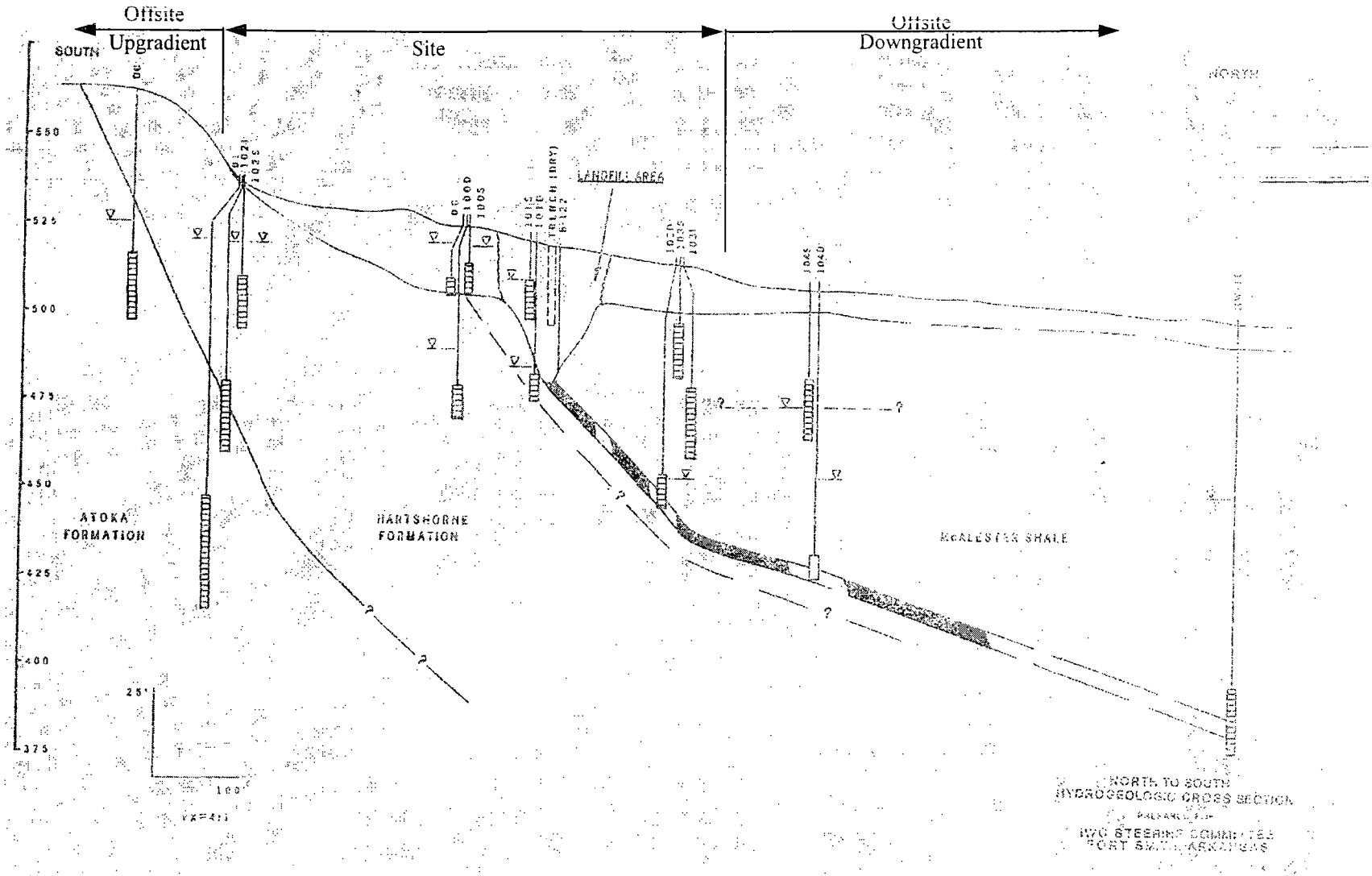
REVISED FROM USEPA/RI & HWOS

NOTE:
GEOLOGIC CROSS SECTIONS BASED ON ON-SITE DRILLING DATA AND EXISTING GEOLOGIC LITERATURE.

FORBES ENVIRONMENTAL CONSULTING

GEOLOGICAL CROSS SECTION
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY. ARKANSAS

FIGURE 4.0

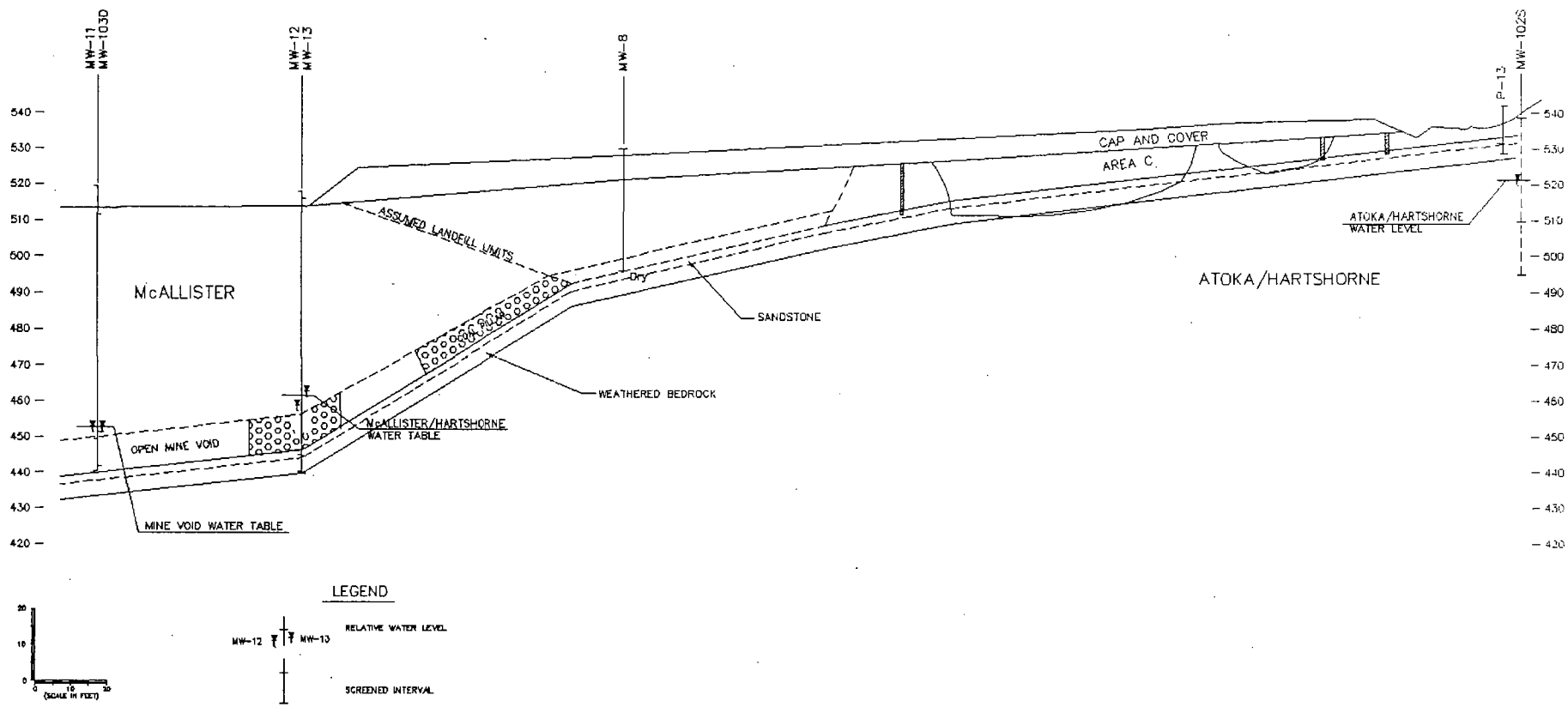


TAKEN FROM HWQS REPORT

FORBES ENVIRONMENTAL CONSULTING

REGIONAL GROUNDWATER UNITS
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY, ARKANSAS

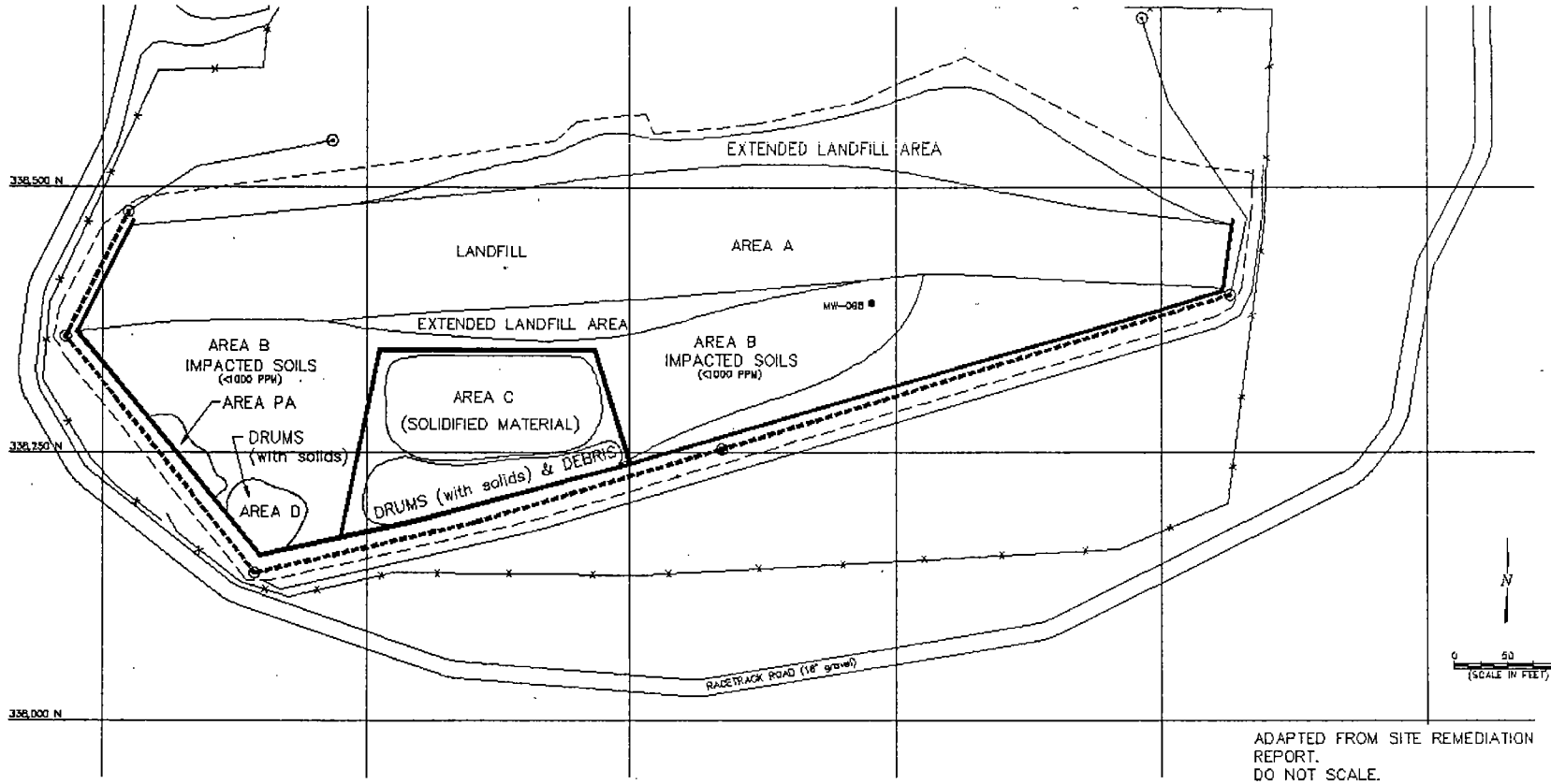
FIGURE 5..1



FORBES ENVIRONMENTAL CONSULTING

SITE GROUNDWATER UNITS
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY, ARKANSAS

FIGURE 5.2



ADAPTED FROM SITE REMEDIATION REPORT.
DO NOT SCALE.

LEGEND

- SLURRY WALL
- FRENCH DRAIN
- TOE OF CAP AND COVER
- FRENCH DRAIN MANWAY

NOTES:

LANDFILL BOUNDARY APPROXIMATE.

NO KNOWN DRUMS (with liquid) LEFT ON SITE.

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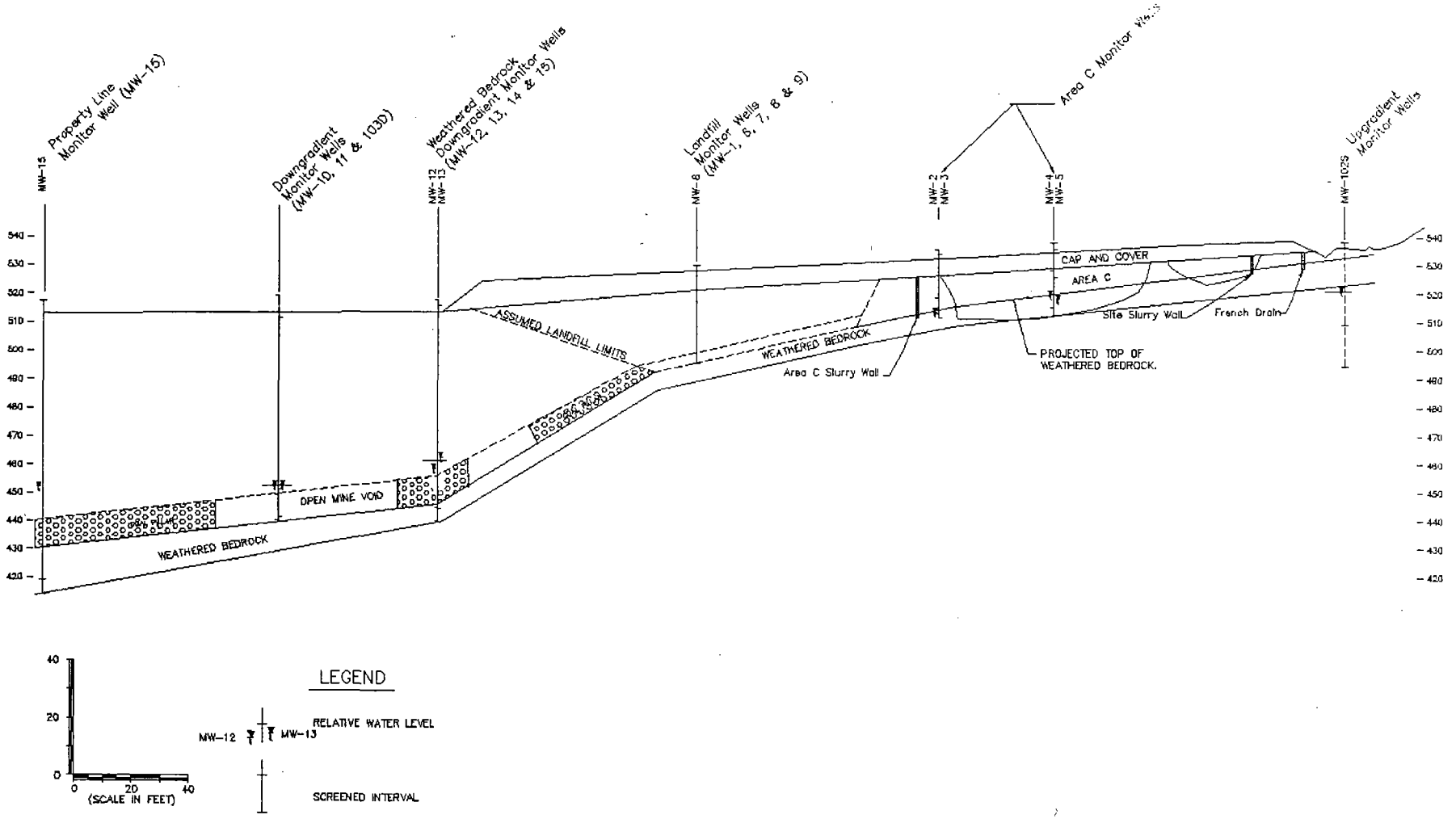
REMEDIATED AREA
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY. ARKANSAS

FIGURE 6.1



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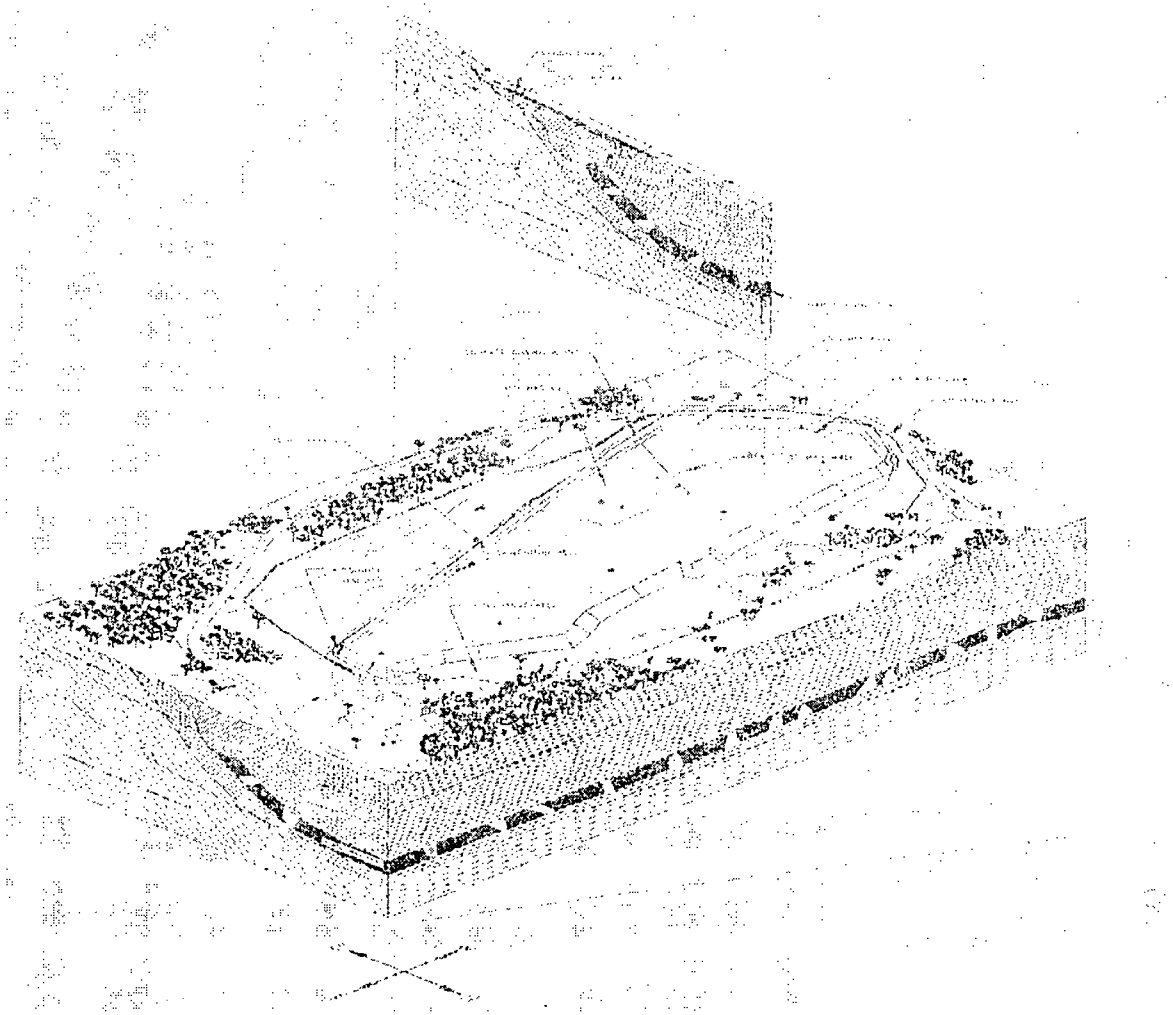
REMEDY CROSS SECTION
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY, ARKANSAS

FIGURE 6.2

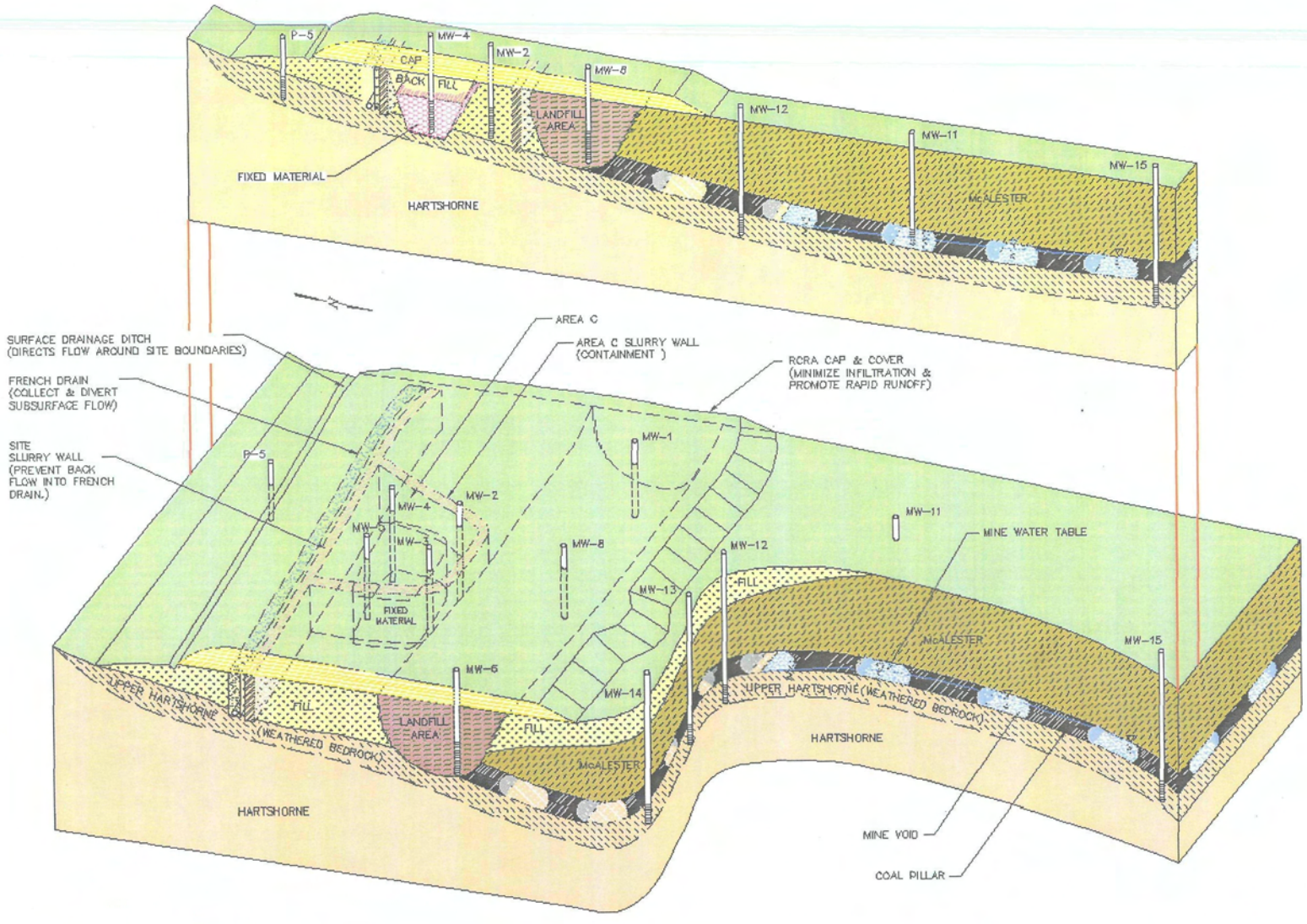


Taken from SRR Vo. II

FORBES ENVIRONMENTAL CONSULTING

SITE BLOCK DIAGRAM
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY, ARKANSAS

FIGURE 7.0



NOTE:
ALL AREA C MONITOR WELLS NOT SHOWN.

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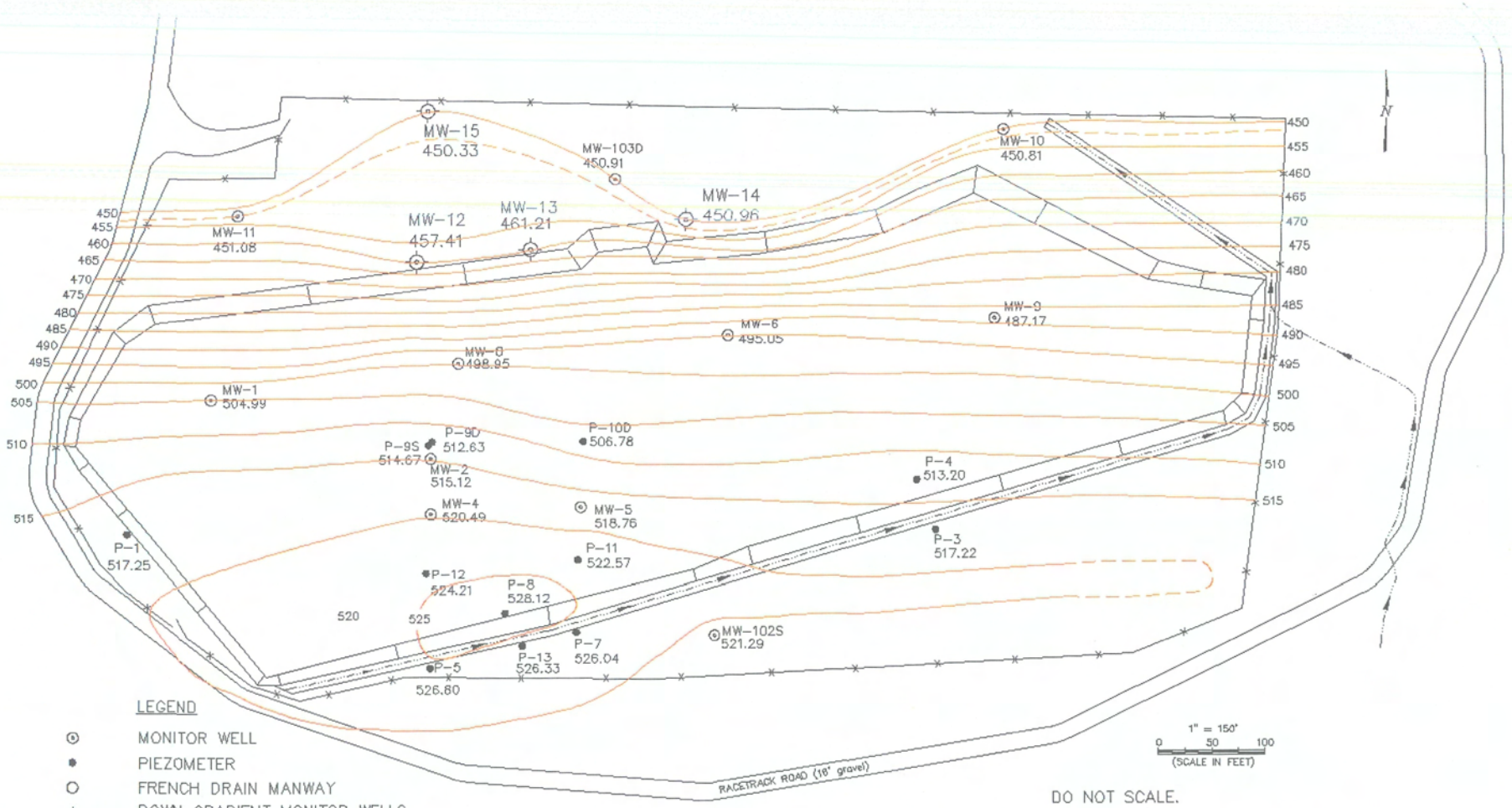
REMEDIATION ISOMETRIC
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY. ARKANSAS

FIGURE 7.1



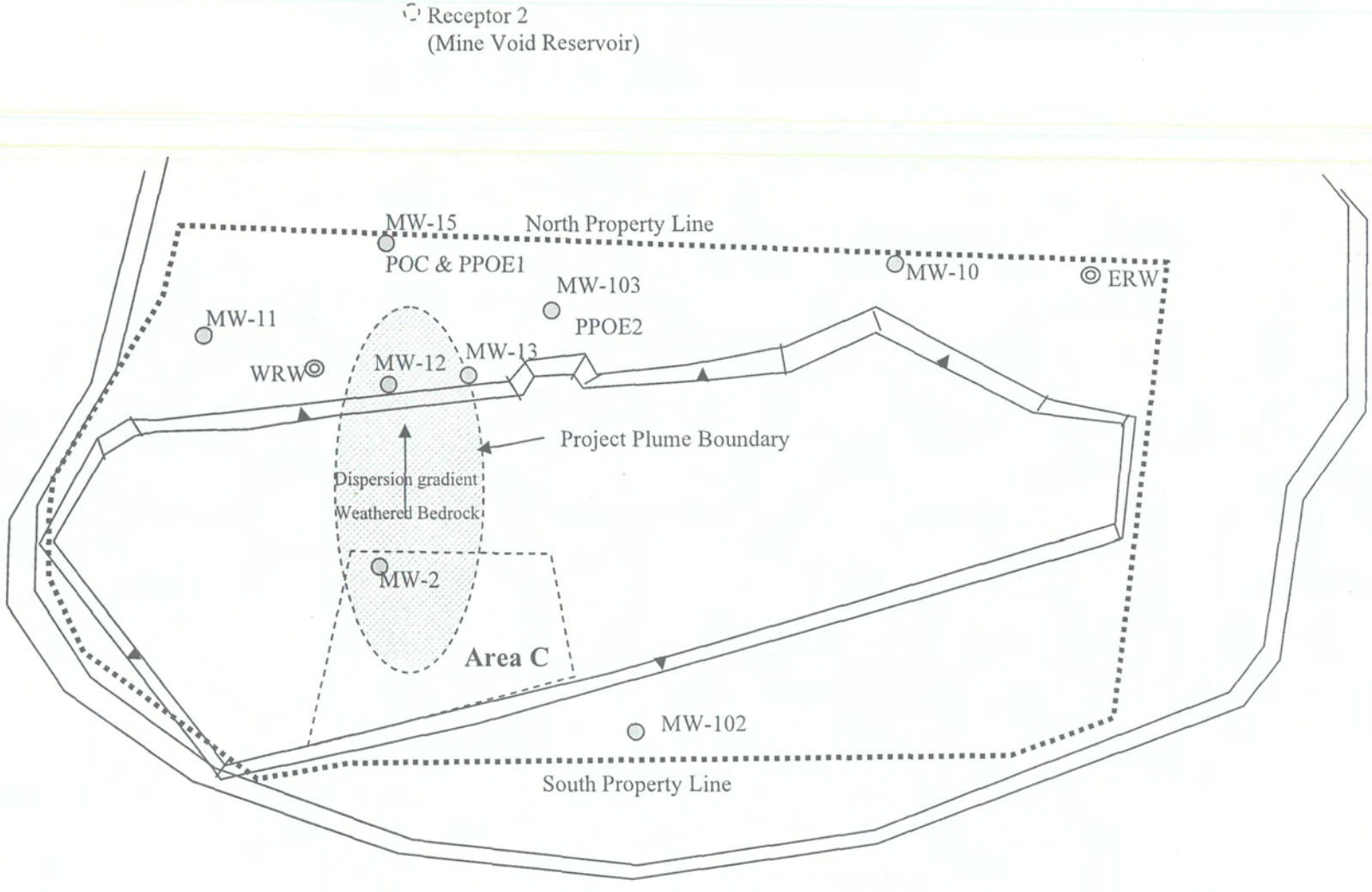
DO NOT SCALE.

Water elevation collected on 8/24/04 during Event #39.

FORBES ENVIRONMENTAL CONSULTING

GROUNDWATER SURFACE AND GRADIENT MAP
INDUSTRIAL WASTE CONTROL SITE
SEBASTIAN COUNTY. ARKANSAS

FIGURE 7.2



FORBES ENVIRONMENTAL CONSULTING

AOC MODEL CONFIGURATION
INDUSTRIAL WASTE CONTROL SITE

FIGURE 7.3

Post-Closure Semi-Annual Monitoring Report, August 2004 Sampling, Thirty-Ninth Quarter, (Forbes, September 2004).

Post-Closure Semi-Annual Monitoring Report, March 2005 Sampling, Fortieth Quarter, (Forbes, March 2005).

Post-Closure Semi-Annual Monitoring Report, September 2005 Sampling, Forty-First Quarter, (Forbes, September 2005).

Post-Closure Semi-Annual Monitoring Report, March 2006 Sampling, Forty-Second Quarter, (Forbes, April 2006).

IWC Site Assessment Study and Five Year Report (Forbes, November 2006)