Abridged version: full version in Site #C915204 e-docs

Final Engineering Report

for Hydro-Air Components, Inc.
Former Steelfields Area IV

Voluntary Cleanup Program &
Brownfields Cleanup Program

Steelfields Site
Buffalo, New York
(NYSDEC VCA SITE #V00619-9)
(NYSDEC BCP SITE #C915204)

November 2007 0062-013-100

Prepared for:

STEELFIELDS LTD

&

HydroAir COMPONENTS

Prepared by:

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STEELFIELDS, LTD. / HYDRO-AIR COMPONENTS, INC.
FINAL ENGINEERING REPORT
AREA IV

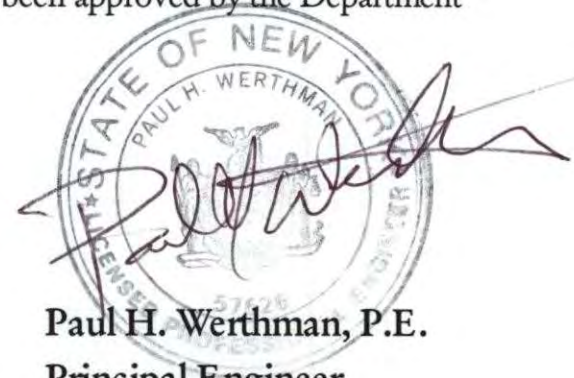
CERTIFICATION:

I, Paul H. Werthman, residing in Erie County, New York, certify that at all pertinent times hereinafter mentioned was, a currently registered professional engineer; was the individual who had primary engineering responsibility for the implementation of the subject remedial program; and that all requirements of the remedial program have been complied with.

The data submitted to the Department demonstrates that the remediation requirements set forth in the Work Plan for Voluntary Cleanup Program Remedial Design/Remedial Action prepared for Steelfields Ltd., by TurnKey Environmental Restoration, LLC, dated September 2002 and the Remedial Design Work Plan prepared for Hydro-Air Components, Inc. by Benchmark Environmental Engineering & Science, PLLC, dated September 2006 and any other relevant provisions of ECL 27-1419 have been or will be achieved in accordance with the time frames, if any, established in the respective work plans, as revised and approved by the Department.

Any use restrictions, institutional controls, engineering controls and/or any operation and maintenance requirements applicable to the site are contained in an environmental easement that created recorded pursuant to ECL 71-3605, and that any affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

A Site Management Plan has been submitted by the applicant for the continual and proper operation, maintenance, and monitoring of any engineering controls employed at the site including the proper maintenance of any remaining monitoring wells, and that such plan has been approved by the Department



Paul H. Werthman, P.E.
Principal Engineer

STEELFIELDS, LTD. / HYDRO-AIR COMPONENTS, INC.

FINAL ENGINEERING REPORT

AREA IV

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1.0 INTRODUCTION

1.1 Background

In October, 2002 Steelfields Ltd. purchased several vacant industrial properties in South Buffalo, New York (See Figure 1-1 and Figure 1-2) out of bankruptcy from the LTV Steel Company and Hanna Furnace Corporation (a wholly owned subsidiary of the National Steel Corporation). At the same time, Steelfields entered into a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC). Pursuant to the VCA, NYSDEC approved a Work Plan for Voluntary Cleanup Program Remedial Design/Remedial Action for the Former Steel and Coke Manufacturing Site prepared by TurnKey Environmental Restoration, LLC, dated September 2002 (VCA Work Plan) on December 27, 2002.

In August of 2006, Hydro-Air Components, Inc. purchased from Steelfields approximately 30.9 acres of the property that is subject to the VCA Work Plan, the parcel known as Area IV – Former Donner-Hanna Coke Yard Parcel (Area IV or Site). Hydro-Air entered into a Brownfields Cleanup Agreement (BCA) with NYSDEC on August 21, 2006 to continue to completion the remedial program activities on Area IV that had been commenced under the VCA Work Plan. Pursuant to the BCA, NYSDEC approved a Remedial Design Work Plan for Steelfields Area IV (Hydro-Air) Site dated September 2006, as amended (BCA Work Plan).

1.2 Purpose and Scope

This Final Engineering Report documents remedial program activities performed on Area IV (the Site) pursuant to the VCA Work Plan and BCA Work Plan. Remedial program activities associated with other parcels of Steelfields' real property or performed prior to the VCA and BCA Work Plans are documented in separate reports.

1.3 Report Organization

This report includes the objectives of the remedial programs, a summary and documentation of each remedial program activity broken down by those performed

pursuant to the VCA and those performed pursuant to the BCA, and a description of the post-construction long-term groundwater monitoring. The report includes:

- Record drawings;
- Summaries of soil/fill excavation quantities;
- Soil/fill analytical data verifying cleanup objectives were met;
- Analytical data, source locations and quantities of off-site borrow soils brought on-site;
- Community Air Monitoring and Documentation Air Monitoring data and reports documenting Work Plan requirements were met; and
- Notices provided in accordance with the approved Citizen Participation Plans.

This Report also documents the subsequent use restrictions, engineering and institutional controls, and other operation, monitoring and maintenance measures that will be implemented to maintain conditions that are protective of human health and the environment.

2.0 CLEANUP OBJECTIVES

2.1 General

Cleanup objectives for the Site soil/fill include not only implementing remedial measures that are protective of public health and the environment, but also mitigating potential short-term impacts to site construction workers and the surrounding community during the remedial program construction and redevelopment activities.

A Soil/Fill Management Plan, which is incorporated in the BCA Work Plan and in this Report as Appendix H, was complied with during the BCA remedial program activities. It is similar to an earlier Soil/Fill Management Plan, which was complied with during the VCA remedial program activities. Activities under both plans are described in this Report and the present Soil/Fill Management Plan will remain in effect to address potentially contaminated soil/fill that may be excavated or handled during any subsequent remedial activities, infrastructure construction or other redevelopment activities. That Soil/Fill Management Plan also addresses placement of final soil and/or vegetative cover prior to the occupancy and use of areas that have been impacted by such activities.

The following objectives were integral to the remedial program and redevelopment activities at the Site to protect the public health and the environment:

- Community air monitoring with engineering controls, as necessary, during periods of remedial construction and site redevelopment to prevent unacceptable fugitive releases of airborne particulates (i.e., dust). Community air monitoring will follow New York State Department of Health (NYSDOH) and NYSDEC approved procedures.

- Control of surface erosion and run-off during remedial program, infrastructure and redevelopment construction activities.

- Surface stabilization to mitigate potential wind or water-borne migration of surficial soil/fill constituents in disturbed areas of the property that are not undergoing immediate redevelopment (viz., areas outside redeveloped parcels where remedial construction or utility installation has take place).

- Construction of pavement, buildings and/or vegetative coverage prior to occupancy of impacted areas.

Specific objectives of the Brownfield Cleanup Program (BCP) to protect the environment include:

- Remove, treat, or contain surface and subsurface impacted soil/fill to mitigate the potential for it to leach volatile organic, semi-volatile organic, and/or inorganic constituents in sufficient concentrations to degrade the quality of on-site groundwater, off-site shallow groundwater, or surface water in the Buffalo River or the surrounding community.

- Prevent degradation of off-site groundwater quality potentially resulting from the Site.

2.2 Site –Specific Action Levels in Soil/Fill

In accordance with the approved VCA and BCA Work Plans, the following site-specific action levels (SSALs) were established for surficial and subsurface soil/fill on the Site:

PARAMETER	MAXIMUM CONCENTRATION IN SOIL/FILL (mg/kg)
Individual VOC	1
Total VOCs	10
Total SVOCs	500
Arsenic	75
Barium	1,000
Cadmium	15
Chromium	1,000
Lead	1,000
Mercury	10
Selenium	61
Silver	10
Cyanide (Total Amenable)	1,600

Existing surficial and subsurface soil/fill on the Site with constituent concentrations less than or equal to these SSALs were determined not to require excavation or cleanup. As

such, on-site soil/fill with constituent concentrations at or below these SSALs have been deemed suitable for grading, backfilling excavations, raising grades or other on-site uses during remedial program and redevelopment activities. In addition, pursuant to Section 2.1 of the BCA Work Plan, soil and/or fill in the bottom of excavations in Subareas E and G that contains any of the volatile organics benzene, toluene, ethylbenzene or xylene (BTEX) compounds in excess of the applicable SSALs are not required to be excavated provided that they are treated *in situ* by the use of oxygen release compounds (ORC) to enhance natural biodegradation in accord with the NYSDEC-approved Sub-Areas G&E In-Situ Treatment Plan program which is appended to the BCA Work Plan as Appendix F.

Criteria for determining the acceptability of off-site borrow sources for final cover soils are delineated in the Soil/Fill Management Plan (Appendix H). All soil and fill imported from off-Site for use as subsurface, surficial, or soil cover during the remedial program and redevelopment activities was analyzed and confirmed compliant with the SSALs in accordance with the Soil/Fill Management Plan (SFMP) contained in the applicable VCA or BCA work plan. In addition, after receipt of a letter from the Department, dated December 7, 2006, advising of the incorporation of specific Soil Cleanup Objectives into the Brownfield Cleanup Program, all soil and fill imported from off-Site for use as subsurface, surficial fill, or soil cover during subsequent BCA remedial program and redevelopment activities, as summarized in Section 4 of this Report, was analyzed and confirmed compliant with the NYSDEC Brownfields Cleanup Program Track 2 –Restricted Commercial Soil Cleanup Objectives (SCOs) (table included on following page)."

Table 375-6.8(b): Restricted Use Soil Cleanup Objectives

Bold number applicable

Parameter	Restricted Commer-cial	Protection of Ground-water
Metals (mg/kg)		
Arsenic	**16**	16
Barium	**400**	820
Beryllium	590	**47**
Cadmium	9.3	**7.5**
Chromium, hexavalent [h]	400	**19**
Chromium, trivalent[h]	**1,500**	NS
Copper	**270**	1,720
Total Cyanide [h]	**27**	40
Lead	1,000	**450**
Manganese	10,000	**2,000**
Total Mercury	2.8	**0.73**
Nickel	310	**130**
Selenium	1,500	**4**
Silver	1,500	**8.3**
Zinc	10,000	**2,480**
PCBs/Pesticides (mg/kg)		
2,4,5-TP Acid (Silvex)	500	**3.8**
4,4'-DDE	62	**17**
4,4'-DDT	**47**	136
4,4'-DDD	92	**14**
Aldrin	0.68	**0.19**
alpha-BHC	3.4	**0.02**
beta-BHC	3	**0.09**
Chlordane (alpha)	24	**2.9**

PCBs/Pesticides (mg/kg) (con'd)		
delta-BHC	500	**0.25**
Dibenzofuran	350	**210**
Dieldrin	1.4	**0.1**
Endosulfan I	200	**102**
Endosulfan II	200	**102**
Endosulfan sulfate	**200**	1,000
Endrin	89	**0.06**
Heptachlor	15	**0.38**
Lindane	9.2	**0.1**
Polychlorinated biphenyls	**1**	3.2

Semi-volatile Organic Compounds (mg/kg)		
Acenaphthene	500	**98**
Acenapthylene	500	**107**
Anthracene	**500**	1,000
Benz(a)anthracene	5.6	**1**
Benzo(a)pyrene	**1**	22
Benzo(b)fluoranthene	5.6	**1.7**
Benzo(g,h,i)perylene	**500**	1,000
Benzo(k)fluoranthene	56	**1.7**
Chrysene	56	**1**
Dibenz(a,h)anthracene	**0.56**	1,000
Fluoranthene	**500**	1,000
Fluorene	500	**386**
Indeno(1,2,3-cd)pyrene	**5.6**	8.2
m-Cresol	500	**0.33**
Naphthalene	500	**12**

Semi-volatile Organic Compounds (mg/kg) (con'd)		
o-Cresol	500	**0.33**
p-Cresol	500	**0.33**
Pentachlorophenol	6.7	**0.8**
Phenanthrene	**500**	1,000[c]
Phenol	500	**0.33**
Pyrene	**500**	1,000
Volatile Organic Compounds (mg/kg)		
1,1,1-Trichloroethane	500	**0.68**
1,1-Dichloroethane	240	**0.27**
1,1-Dichloroethene	500	**0.33**
1,2-Dichlorobenzene	500	**1.1**
1,2-Dichloroethane	30	**0.02**
cis-1,2-Dichloroethene	500	**0.25**
trans-1,2-Dichloroethene	500	**0.19**
1,3-Dichlorobenzene	280	**2.4**
1,4-Dichlorobenzene	130	**1.8**
1,4-Dioxane	130	**0.1**
Acetone	500	**0.05**
Benzene	44	**0.06**
Butylbenzene	500	**12**
Carbon tetrachloride	22	**0.76**
Chlorobenzene	500	**1.1**
Chloroform	350	**0.37**
Ethylbenzene	390	**1**
Hexachlorobenzene	6	**3.2**
Methyl ethyl ketone	500	**0.12**
Methyl tert-butyl ether	500	**0.93**
Methylene chloride	500	**0.05**
n-Propylbenzene	500	**3.9**

Volatile Organic Compounds (mg/kg) (con'd)		
sec-Butylbenzene	500	**11**
tert-Butylbenzene	500	**5.9**
Tetrachloroethene	150	**1.3**
Toluene	500	**0.7**
Trichloroethene	200	**0.47**
1,2,4-Trimethylbenzene	190	**3.6**
1,3,5- Trimethylbenzene	190	**8.4**
Vinyl chloride	13	**0.02**
Xylene (mixed)	500	**1.6**

3.0 SUMMARY & DOCUMENTATION OF REMEDIAL ACTIVITIES PURSUANT TO VCA EXECUTED BY STEELFIELDS, LTD.

3.1 General

In accordance with the Remedial Work Plan for the Voluntary Cleanup Program RD/RA (revised Sept 2002) the following Remedial Activities were completed in or adjacent to Area IV, and can be generally categorized as:

- **Metallurgical coke reclamation** – *Residual metallurgical coke and coke fines from previously stored coke piles was excavated and taken off-site in a large-scale reclamation/recycling project. Upon removal of coke the surface was sampled and 12-24" of cover soil was placed upon the entire mined area.*

- **Tar-impacted soil/fill excavation, transport, & disposal** - *Tar-impacted soil/fill exceeding SSALs was excavated and temporarily stock-piled on the Steelfields Area III clay-lined former bio-pad for characterization. Portions of the overburden and underburden were excavated and transported directly to the Steelfields Area II containment cell for final placement. Stockpiled non-hazardous tar (as characterized by TCLP testing for benzene) was also taken to the Steelfields Area II containment cell for final placement. All tar-impacted soil/fill characterized to exceeded TCLP limits for benzene (>0.5 mg/L) was taken off-site to prior approved recycling facilities.*

- **Limited blue-stained-impacted soil/fill excavation, & disposal** - *A very limited amount of blue-stained-impacted soil/fill was encountered in Area IV and was transported to the Steelfields Area II containment cell where it was rendered non-hazardous and consolidated for final placement.*

- **Backfill, final grading, & restoration** - *All areas that were excavated were then backfilled to grade with either on-site or imported soil/fill.*

3.2 Coke Reclamation

3.2.1 *General*

Area IV was historically used as a storage yard for metallurgical coke from the former Donner-Hanna Coke Plant. A substantial quantity of coke mixed with other fill materials, in

varying thickness, was present over the entire parcel. As a result, the VCA Work Plan called for this material to be removed and taken off-site for reclamation/reuse/or recycling.

3.2.2 *Excavation/ Verification Sampling / Backfilling*

The Area IV coke reclamation was completed in phases from east to west. Clearing and grubbing of the entire parcel was begun in September of 2003. All vegetative material was stockpiled for future chipping and disposal. Coke excavation was begun in September 2003 after most of the vegetation had been cleared and continued through July of 2004 (refer to Table 3-1 for quantities). Metallurgical coke over the entire 31 acres was graded and stockpiled for off-site transport. Approximately, 43,500 tons of metallurgical coke and coke fines were excavated from Area IV, stockpiled, screened, and transported off-site via truck for screening, blending, and sale for reuse by other commercial entities. Excavation ranged from 8" to 24" in depth, and was discontinued upon reaching a soil/fill subgrade that contained insufficient amounts of granular coke product to be marketable.

The Area IV parcel was divided into approximately 1-acre grids (refer to Figure 3-1), and subgrade soil/fill was sampled according to the Proposed Verification Sampling Program outlined in a letter to and approved by the NYSDEC dated June 7, 2004 (included in Appendix C – Related Project Correspondence). Confirmatory subgrade samples designated A4-Acre-1 through A4-Acre-17 all met SSAL objectives (results are included as package 1 of Appendix B) allowing for placement of surface soil cover and backfill.

Placement of surface soil cover and backfill in areas excavated for metallurgical coke was undertaken on a continuous basis as subgrade surface soil verification sampling results were received and approved by the NYSDEC during 2004. Between 12" and 24" of soil cover was placed over the approved subgrade from east to west to elevations as shown in the Revised Area IV Grading Plan submitted to the NYSDEC on August 25, 2004 (refer to Appendix C – Related Project Correspondence) and documented in the stamped and signed topographical survey attached in Appendix E.

3.2.3 *Recycling*

All coke material that was excavated and stockpiled on-site was transported off-site between September 2003 and July 2004. Approximately 43,500 tons of metallurgical coke material was removed from the site during this period. A minor modification to the VCA

RD/RA Work Plan was documented in a letter to Mr. Greg Sutton, PE dated June 24, 2004 entitled "Summary of RD/RA Work Plan Modifications for Area 4" and approved by the NYSDEC (refer to Appendix C – Related Project Correspondence). Removal of the residual coke fines within the subgrade much of which was intermixed with significant amounts of soil and fill was determined to be economically not feasible. This letter documents that the coke was separated and screened from the associated soil/fill to the extent practicable, and that the remaining intermixed residual coke fine, soil, & fill was sampled and found to be in compliance with the SSALs and thereby acceptable to remain and thus soil cover was to be placed directly on this subgrade.

3.3 Off-Site Coke Reclamation

3.3.1 *General*

Area IV was historically used as a storage yard for coke from the former Donner-Hanna Coke Plant. A substantial quantity of coke overlay in varying thickness, the entire parcel. As a result, the VCA Work Plan called for this coke to be removed and taken off-site for reclamation/reuse/or recycling. In addition to this, a small area adjacent to the Area IV parcel, along the eastern boundary, also known as a portion of the Abby Street right-of-way (ROW) and City of Buffalo property, had the presence of metallurgical coke and coke fines in varying thickness. The VCA Work Plan called for this coke to be removed in a similar manner to the coke reclamation performed in Area IV. It further noted that all soil materials for backfilling off-site properties shall meet TAGM 4046 values.

3.3.2 *Excavation/Verification Sampling / Backfill*

An off-site area adjacent to the eastern boundary of Area IV, measuring approximately 700 feet (in a north south direction) by 84 feet (east of the existing fence line), was cleared in the early fall of 2003. In accordance with Appendix E1 of the Voluntary Cleanup Agreement RD/RA Work Plan, soil/fill with coke residuals was excavated in this off-site area. Excavation of soil/fill with coke residuals averaged approximately: 24 inches in the north end; 12-18 inches in the central portion; and clearing in the southern end (refer to Figure 3-4).Further excavation was completed in November, and documented in a letter dated 11/17/03 entitled "Off-Site Coke Removal Additional Soil/Fill Verification Data and

Request for Approval to Backfill" (refer to Appendix C – Related Project Correspondence). An additional nominal 6-inches of soil/fill was excavated from the northern and middle portions of the off-site area east of the Area IV fence line. An additional nominal 12-inches of soil/fill was excavated from the southern portion of the off-site area and subgrade samples were taken (refer to Appendix B – Tables of Soil/Fill Verification Results). Confirmatory subgrade samples all met SSAL objectives (results are included in Appendix B). Upon NYSDEC site inspection and approval (refer to Appendix C – Related Project Correspondence), the entire off-site area was backfilled. Backfilling of the Off-Site Area was completed in early December of 2003. Soil/fill was imported from an off-site source, and met the NYSDEC TAGM #4046 requirements and background levels. Upon final re-grading, this area was hydro-seeded as final restoration.

The coke residuals from this off-site area were staged temporarily within the eastern limits of Area IV in tandem with the coke residuals on Area IV that were being excavated, stockpiled, screened and transported off-site, as described in Section 3.2.2 above. Like the on-site coke residuals, the staged coke residuals from off-site were transported off-site prior to the confirmatory sampling of the sub-grade soil/fill on Area IV that is described in Section 3.2.2.

3.3.3 *Groundwater Management*

No groundwater was encountered during this off-site coke reclamation effort.

3.4 Tar-impacted Soil/Fill

3.4.1 *General*

The VCA Work Plan projected approximately 25,000 to 30,000 cubic yards of tar impacted soil/fill material and related soil/fill exceeding SSALs to be excavated, from both Areas III and IV, and transported off-site for hazardous or non-hazardous (depending on TCLP test results) landfill disposal or energy recovery. The tar-impacted soil/fill in Areas III & IV (refer to Figure 3-2) along the western border were defined based on characterizations conducted during the Phase II Environmental Site Assessment (Malcolm Pirnie, Inc. 1997). This Final Engineering Report documents excavation, verification sampling and backfill of

tar impacted soil/fill in both Steelfields Areas III and IV, as the remediation of this waste material was not segregated by Areas.

3.4.2 *Pre-Excavation Characterization*

Tar impacted soil/fill in Areas III & IV along the western border was subdivided into 6 separate Sub-Areas. Sub-Areas A & B were present in Area III and Sub-Areas C through F were located in Area IV (refer to Figure 3-2). Pre-excavation characterization was carried out in January 2005 in accordance with correspondence between TurnKey & the NYSDEC entitled "Areas III & IV – Revised Tar Soil/Fill Residuals Sampling Plan" dated December 29, 2004 (included in Appendix C – Related Project Correspondence). Composite samples were taken for all Sub-Areas to determine the general characteristics of the tar impacted soil/fill for disposal facilities permitting. A graphic summary of the results of these sampling activities is set forth in Figure 3-2.

An additional test-pit characterization was undertaken in July 2005 to determine whether or not the tar impacted soil/fill in Areas III & IV exhibited hazardous waste characteristics based upon Toxicity Characteristic Leaching Procedure (TCLP) for volatile organic compounds (VOCs) prior to excavation (refer to CD-ROM/Electronic Attachment 4).

3.4.3 *Excavation/ Verification Sampling / Backfilling*

Excavation began in June of 2005 at the southwestern most corner of Sub-Area B in Area III. Tar impacted soil/fill was excavated eastward by Modern Construction, LLC (Modern) using a dedicated Caterpillar 345b Excavator with a 48" bucket. Excavation continued northward through Sub-Area A and then southward through Sub-Area C. All tar impacted material present was excavated and stockpiled on the bio-pad for disposal. Soil/fill and slag overburden that was excavated and previously characterized to meet SSALs and/or non-visually impacted was used on-site as backfill and/or road base for construction roadways.

Excavation in Area IV for Sub-Areas C through F continued through July of 2006 progressing from Sub-Area C to D and E and separately through F. Lateral excavations of Sub-Areas were extended until visual impacts appeared minimal. A soil/fill grab sample was then taken from approximately every 100 linear feet (LF) of sidewall from the excavation

and field screened for the presence of volatile organic compounds using a MiniRae 3000 PID to test the head space of said samples. If the grab sample screened < 10 ppm, a verification sample was collected and sent to the lab for quantitative verification. If screening was > 10ppm, excavation continued laterally, usually in increments of approximately 10 feet. Verification samples results that did not exceed SSALs were marked for backfill, while excavation was continued if results exceeded SSALs. The table entitled "Verification Sampling Analytical Results", which is incorporated into this Report as Package 2 of Appendix B, outlines the progression of verification samples in Area IV. Figure 3-3 documents the lateral extents of the tar soil/fill removal in Area IV, as well as the representative passing sample locations. Excavation floor samples were taken at a frequency of approximately 1 per 10,000 square feet (SF).

3.4.4 *Deviations and/or Corrective Measures*

All final soil/fill verification samples collected and analyzed met SSAL criteria with the following exceptions:

- A4-TAR-F2-NSW-1B – sample taken on or about July 13, 2006 exceeded SSALs slightly for total xylenes, and was approved for backfill by on-site NYSDEC personnel during construction meeting soon after sampling date after a visual inspection (refer to Figure 3-3, note 9);
- A4-TAR-E1-WSW-1 – sample taken on or about April 13, 2006 slightly exceeded SSALs for lead, however, was approved for backfill by on-site NYSDEC personnel during a construction meeting soon after sampling date (refer to Figure 3-3, note 8);
- A4-TAR-E-FLOOR-1S, A4-TAR-E-FLOOR-2N, A4-TAR-G-FLOOR-W/S (incorrectly labeled as A4-TAR-E-FLOOR-W/S) excavation floor samples taken July 19, 2006 slightly exceeded SSALs for benzene; however were approved to remain in place by NYSDEC personnel subject to in-situ ORC treatment of residual benzene (refer to Figure 3-3, note 3 and to Section 3.5 of this document for further discussion).

Figure 3-3 documents the location of where these samples were taken and notes further reasons for the deviations. Full analytical of samples can be found in Appendix B of this document.

3.4.5 *Disposal*

The Work Plan for Tar Soil/Fill Residuals Recycling & Disposal dated March 15, 2005 and approved by the NYSDEC was developed to provide additional design and remedial action plans and details the tar impacted soil/fill in both Areas III and IV beyond the conceptual detail contained in the VCA Work Plan. Section 2.3 of that Work Plan outlined the acceptable reuse or disposable options for the tar soil/fill. The material determined to be characteristically hazardous was excavated, stockpiled in Area III upon the existing, low-permeability, clay-lined former bio-pad, and then transported to one of 3 facilities contracted directly with Steelfields for disposal or reuse/recycling. These facilities included Piney Creek Power Plant in Clarendon, PA; Covanta Energy Company in Niagara Falls, NY; and Soil Remediation Inc. in Lowellville, OH. The quantity of tar impacted soil/fill disposed of off-site is documented in Appendix D of this Final Engineering Report.

3.4.6 *Groundwater Management*

Water collected in excavations during remediation consisting of groundwater and surface water run-off, was pumped from the point of collection to the Area II Terminal Basin for Storage. Water in storage was then pumped from the Area II Terminal Basin into the Buffalo Sewer Authority collection system under BPDES Permit No. 03-02-BU100.

3.5 In-Situ ORC Application

3.5.1 *General*

Though excavation of tar soil/fill through Area IV reached native soil at depths of 8-12' below grade, several floor verification samples indicated the presence of residual benzene at elevations exceeding SSALs in underlying native soil. *In situ* treatment of this chemical residual in native soil using ORC was proposed by TurnKey on behalf of Steelfields, Ltd. in a letter entitled "Subareas G & E – Proposed In-Situ Treatment of Residual Soil & Groundwater" dated 07/27/06 and approved by NYSDEC in correspondence entitled "Approval of Subareas G & E – Proposed In-Situ Treatment of Residual Soil & Groundwater" dated 07/28/06 (refer to Appendix C). These specific sample locations are previously noted in Section 3.4.4 of this Final Engineering Report, and are depicted in Figure 3-3.

3.5.2 *ORC Well Installation*

The in-situ ORC application was proposed and approved based upon the relatively low concentrations of benzene in subgrade native silty-clay soils, and the susceptibility of benzene to natural aerobic biodegradation by indigenous microbes. The proposed in-situ treatment method consisted of installing three in-situ treatment wells with 5-foot screens that extend to a depth approximately 24-inches into the native soils. Each well is located within the general vicinity of each of the floor samples that exceeded SSALs as documented in section 3.4.4 of this Report (refer to Figure 3-5). ORC "socks" are suspended in each of the wells to slowly release oxygen to the shallow water column and saturated soils. It is duly noted that the installation, development, and documentation of the ORC wells was not performed by TurnKey, but by Modern Construction LLC and its subcontractors on behalf Steelfields LTD. Information regarding this remedial program task is documented in Appendix G under separate cover, stamp, and signature.

3.5.3 *Maintenance & Monitoring*

The progress of *in situ* treatment using oxygen-releasing compounds (ORC) is to be monitored and reported periodically through measurement of dissolved oxygen, pH, oxidation-reduction potential (ORP), temperature, alkalinity and water levels in new ORC monitoring wells designated as A4-ORC-1, A4-ORC-2 and A4-ORC-3 in accordance with the documents referenced in Section 3.5.1 of this Report (refer to Appendix C) and the ORC Monitoring & Maintenance Plan that is included as Part I, Attachment A6 of the Site Management Plan (refer to Electronic Attachment 3). The ORC wells will be inspected, the ORC chemicals will be restored, and the groundwater within will be sampled and analyzed for the parameters listed above at regular intervals as specified in the ORC Monitoring & Maintenance Plan and reported to NYSDEC).

3.6 Blue-Stained Impacted Soil/Fill

3.6.1 *General*

The April 1999 Voluntary Cleanup Site Assessment Report identified three Sub-Areas within Area III where "blue-stained" soils were deposited. The blue-stained soil/fill was easily identified by the bright Prussian-blue color imparted by the intermixed spent wood chip waste from the adjacent former coke plant gas purifier boxes. This waste material was known to typically contain elevated concentrations of complex iron cyanide removed from the coke gas. Other coke plant byproducts or sludges containing elevated concentrations of benzene were apparently commingled with the spent purifier box wood chips in these areas. While this was not anticipated to be a work task in Area IV, a portion of the blue-stained soil/fill in Sub-Area G of Steelfields Area III extended southwesterly into Area IV. A limited amount of soil/fill was excavated in this vicinity, taken to and placed for final disposition in the Steelfields Area II containment cell in accordance with protocol established through remediation of the blue-stained soil/fill in Area III (see Sec. 3.6.3).

3.6.2 *Excavation/Verification Sampling / Backfilling*

Excavated blue-stained soil/fill was encountered in Area IV along the northern common boundary with Area III. Excavation was a continuation and extension of Sub-Area G in Area III and proceeded from east to west to a point where the excavation encroached upon the Area III & IV tar impacted soil/fill areas. The excavation was expanded until visual impacts were minimized at which point a single grab sample was then taken for approximately every 100 LF and screened for the presence of volatile organic compounds (VOCs) using a MiniRae 2000 PID. If screening was > 50ppm, excavation continued laterally along the length of the excavation in increments of 100' at a width of approximately 10 feet. If the grab sample screened < 50 ppm, a verification sample was collected and sent to the lab for analysis. Verification samples sent to the lab with constituent concentrations less than or equal to the SSALs were marked for backfill, while excavation was continued if results exceeded SSALs. The table entitled "Verification Sampling Analytical Results" contained in Package 2 of Appendix B outlines the progression of verification samples in Area IV.

In addition, approximately 30 CY of blue-stained soil was encountered in the southeast corner of the Area IV parcel or part of the coke removal task. (Refer to Figure 3-3, for location.) This material was excavated laterally to visually impacted limits, and a composite sample was taken in accordance with the VCA Work Plan Soil/Fill Management Plan and transported to the lab for a characterization of constituents of concern (refer to Appendix B – Package 2). Review of the analytical data indicated that this material did not exceed SSALs, and was only visually impacted. As a result, the material visually impacted was removed, transported to and disposed of in the Area II containment cell. The excavation was backfilled with approved off-site borrow material being used for surface cover in that portion of Area IV.

3.6.3 *Treatment, Disposal, and/or Corrective Measures*

Blue-stained soil/fill that exhibited hazardous characteristics for benzene was excavated and transported to the Area II containment cell. The excavated blue-stained soil/fill was immediately placed in 300-400 CY batch piles or windrows measuring approximately 30-40' wide by 3' high by 100' long. Each batch was field screened to determine the qualitative VOC content prior to treatment. Screening consisted of placing untreated soil/fill samples in sealable plastic bags, allowing the samples to sit for 10-20 min. at 65-70°F, then inserting the tip of a hand-held PID into the headspace of the bagged sample. The PID was outfitted with a 10.6 eV lamp.

Potassium permanganate, in solid crystalline granule form, was shipped to the site in 3,300 lb hopper-bottom bins or "totes" fitted with a metal frame butterfly valve at the bottom. The chemical granules were applied directly from the totes to each soil/fill batch, shortly after the batch was placed in the designated treatment area. The chemical bins were suspended by 4 cables from a CAT 345b tracked excavator. The excavator then distributed the chemical by slowly moving the suspended chemical tote back and forth across the width of the windrow with the boom while slowly tracking along the side length of the windrow. Chemical addition was avoided during high wind, heavy rain, and/or dense fog conditions.

Within minutes after distribution of the permanganate on a batch, a Volvo EC290 tracked excavator equipped with an AlluPower Mixer PM300 initiated mechanically blending the chemical into each soil/fill windrow batch.

Mixing typically occurred once per day or once every other day, depending on the total number of batches being treated. Each batch was screened for headspace prior to verification sampling. If >50 ppm VOCs were measured in the headspace, the batch was tilled on several subsequent days.

If a particular batch's headspace screening was <50 ppm VOCs, a composite sample of the batch was taken in accordance with the VCA Work Plan Soil/Fill Management Plan and transported to a local certified lab for analysis of TCLP benzene. As analytical results of each batch characterized it as non-hazardous, the material was deposited within the Area II containment cell.

3.6.4 *Groundwater Management*

Water collected in excavations during remediation consisting of groundwater and surface water, was pumped from the point of collection to the Area II Terminal Basin for Storage. Water in storage was then pumped from the Area II Terminal Basin into the Buffalo Sewer Authority collection system under BPDES Permit No. 03-02-BU100.

3.7 Backfill

3.7.1 *General*

Backfilling in areas that were excavated, mined, and/or re-graded was performed to restore grade to prior existing elevations and/or to new design specifications. All soil/fill used on-site followed the guidelines and procedures as outlined in the Soil/Fill Management Plan contained in the VCA Work Plan. For those activities that occurred after the execution of the BCA in August 2006, backfilling complied with the guidelines and procedures of a similar Soil/Fill Management Plan, which is incorporated in the BCA Work Plan and in this Report as Appendix H.

3.7.2 *On-Site Soil/Fill*

While site work was ongoing, overburden and excavation soil/fill not impacted was excavated and stockpiled for use as backfill. This material was found mostly as construction roadways and/or cover material previously placed on-site.

3.7.3 *Borrow Source Soil/Fill*

All material brought on-site for backfill and/or surface cover under the VCA was tested and found to meet all required analytical restrictions, including SSALs. For the remedial program work conducted prior to Hydro-Air's acquisition of the site in August 2006, the applicable SSAL's and other restrictions applied to imported soil and fill were contained in a Soil/Fill management Plan (SFMP) that was contained in the VCA Work Plan. As described in the Section 4, the SFMP applied to activities conducted since August 2006 is contained in the BCA Work Plan and is substantially similar to the previous SFMP. In addition to the SFMP requirements in the BCA Work Plan, after receipt of a letter from the Department, dated December 7, 2006, advising of the incorporation of specific Soil Cleanup Objectives into the Brownfield Cleanup Program, all soil and fill subsequently imported to the site was analyzed and confirmed compliant with the NYSDEC Brownfields Cleanup Program Track 2 –Restricted Commercial Soil Cleanup Objectives (SCOs). Soil/fill was brought on-site and used as backfill and surface cover from several off-site borrow sources. These sources include a clay railroad berm located adjacent to Electric Avenue, South Buffalo (referred to as Electric Avenue or EATP); a clay stock pile located in a new residential development on Camelot Dr. near Angle Road in West Seneca (referred to as Camelot); a railroad berm located near 100 Commerce Parkway, Buffalo directly behind the Kenworth Warehouse (referred to as 100 Commerce Pkwy or Kenworth), a topsoil source located on Walden Ave. near Pavement Rd. (referred to as Walden & Pavement); and a stockpile located near Cobham Rd and 20A in Orchard Park (referred to as Cobham).

All analytical results taken in accordance with the SFMP have been included electronically as ATTACHMENT 1 to this document.

3.8 Off-Site Southwestern Groundwater Investigation & Remedial Actions

3.8.1 *General*

During initial site investigations near the southwestern corner of Area IV, monitoring well, A4-MW-1A, contained elevated concentrations of benzene. As a result, NYSDEC raised concerns of the off-site impact of a potential plume emanating from the tar impacted areas in the subsurface soil/fill of the western side of Area IV. In addition to the removal of the source material in Area IV (the tar impacted soil/fill & the residual coke and coke fines),

the NYSDEC required an investigation to determine the presence and extent of a potential off-site groundwater impact.

3.8.2 *Investigation Summary*

On January 27, 2005, TurnKey personnel conducted the investigation activities in accordance with the NYSDEC-approved Plan for Off-Site Groundwater Investigation West of Area IV originally presented in the Remedial Design/Remedial Action (RD/RA) Work Plan as Appendix E-4 (revised September 2002). The results of this investigation were documented in a report submitted to the NYSDEC entitled "Off-Site Soil/Fill Investigation: Area IV – Southwest Groundwater" dated 2/10/05 (refer to Appendix C – Article #13).

During this investigation, groundwater samples were obtained from four temporary piezometers installed off-site along the western perimeter of Steelfields Area IV and analyzed for STARS Method 8021 VOCs. Only n-butylbenzene (2.2 ug/L), 1,2,4-trimethylbenzene (3.0 ug/L), 1,3,5-trirmethylbenzene (1.8 ug/L), o-xylene (0.65 ug/L), and m-xylene (0.53 ug/L) were detected at piezometer A4-SWGW-TW-2. All detected compound concentrations were well below the individual NYSDEC Class "GA" Groundwater Quality Standards (GWQSs) of 5 ug/L. All other VOCs reported for the remaining three temporary well locations were reported as "non-detect". This original analysis concluded that no further off-site groundwater investigation or remediation was deemed necessary.

3.8.3 *Remedial Actions and/or Corrective Measures*

In response to the report referenced above, the NYSDEC issued a letter dated 02/15/05 and entitled "Review of Off-Site Soil/Fill Investigation: Area IV – Southwest Groundwater" (refer to Appendix C). Although concurring with the conclusions of the investigation, the NYSDEC further requested a summary of all data effecting the local groundwater environment, including the Altifft Landfill site, into a conclusive report. In response, TurnKey prepared and submitted the requested additional summary report to the NYSDEC on August 23, 2005 (refer to Appendix C – Article #19). This report concludes the following: "Although benzene has apparently impacted shallow overburden groundwater quality in the immediate vicinity of Area IV monitoring well A1-MW-1A at the Steelfields site based on historical data, it has been found to not impact downgradient off-site shallow overburden groundwater southwest of Area IV based on this supplemental field

assessment. Historical laboratory analyses of soil/fill beneath the Tift Street Bridge also confirm that benzene impacts observed within Area IV of the Steelfields Site as well as the Altifft Landfill Site appear to be separate and localized impacts. Source removal (i.e., tar and blue-stained soil/fill) is continuing in Areas III and IV at the Steelfields Site and, upon completion in late 2005, is expected to significantly reduce and/or eliminate the localized on-site benzene impacts observed in Area IV groundwater."

3.9 Air Monitoring Programs

3.9.1 *Community Air Monitoring*

The Community Air Monitoring Program was established in accordance with the appropriate NYSDEC and NYSDOH regulations and requirements, presented in Appendix I of the Voluntary Cleanup Agreement Work Plan, and revised, submitted and approved by the NYSDEC in August 2003. The primary purpose of this program was to provide real-time air monitoring and provide a measure of protection for the downwind community from potential airborne contaminant releases resulting from remedial program work activities. A meteorological station was installed outside the construction trailers in Area II to monitor and document weather conditions. This station was used daily in association with construction activity through the 2006 calendar year.

Reports documenting and summarizing monitored data were completed on a monthly basis. The Community Air Monitoring Program for the Steelfields, Ltd portion of this project executed under the VCA was completed in combination with Areas II, III, and IV. Appendix I of this document includes the monthly reports that are associated with work done and completed in Area IV. Additional reports covering other parcels that are subject of the VCA are not included if activity in Area IV was not ongoing at that time.

3.9.2 *Documentation Air Monitoring*

In accordance with the Community Air Monitoring Plan, and in an effort to quantify concentration of selected parameters, documentation air monitoring was performed for the following activities:

- At the start of a large-scale ground intrusive remedial program task

- At the start of a significantly different work task involving impacted soils handling
- If the real-time monitoring thresholds were exceeded for a predetermined amount of time, and
- As necessary to address specific off-site air quality concerns.

Appendix I includes reports summarizing the documentation of Air Monitoring events that took place in relation to work in Area IV.

3.10 Citizen Participation

In accordance with the Citizen Participation Plan of the VCA Work Plan (CPP), a draft fact sheet announcing the completion of remedial program construction activities soon will be forwarded to NYSDEC for review and approval and, once approved, mailed to the recipients designated on the CPP mailing list**.**

4.0 SUMMARY AND DOCUMENTATION OF REMEDIAL ACTIONS PURSUANT TO BCA EXECUTED BY HYDRO-AIR COMPONENETS, INC.

4.1 General

In accordance with the Remedial Design Work Plan for the Brownfields Cleanup Program dated September 2006 (BCA Work Plan), the following remedial program activities were completed in Area IV after execution of the BCA, and can be generally categorized as:

- **Construction and Implementation of Soil/Fill Management Plan** – *All remaining remedial program activities and site development and construction activities were completed in accordance with the BCA Work Plan, including its Soil/Fill Management Plan, and subject to cover by: building, pavement, or vegetation and/or soil. Soil capping was completed in the western portion of the Site that was subject to remedial program excavation activities.*

- **Active Sub-Slab Depressurization System –** *A sub-slab depressurization system was designed and installed within the Hydro-Air Facility as a precautionary engineering control to mitigate the potential for volatile organic constituents in subsurface groundwater or soil gas to migrate into the building air space via soil vapors. Operation and Maintenance of this system is addressed in the Site Management Plan (refer to Electronic Attachment 1).*

- **Implementation of Long-Term Groundwater Monitoring Plan** – *The purpose of this post-remediation plan is to monitor perimeter groundwater quality in accordance with the Brownfield Cleanup Agreement (Appendix F). The monitoring wells called for in this Plan have been installed, developed, and subjected to an initial round of monitoring in accordance with the Plan.*

4.2 Construction and Implementation of Soil/Fill Management Plan

4.2.1 *General*

Following execution of the Brownfield Cleanup Agreement on August 21, 2006, a building with a footprint of approximately 156,700 SF was constructed by Hydro-Air Components, Inc. on the eastern portion of the Area IV site. In addition, limited amounts of tar impacted soil/fill that were encountered during excavation for utility lines and a light

standard within the parking area south of the Hydro-Air Facility building and during final subgrade preparation in the western portion of the site were excavated and removed.

4.2.2 *Excavation, Visual Verification and/or Sampling, & Backfill*

During site redevelopment and building construction, site work was completed in accordance with the Soil/Fill Management Plan included as Appendix A of the Remedial Design Work Plan for Steelfields Area IV (Hydro-Air) Site.

Soil/fill intrusive activity related to building construction (i.e. building foundations, storm water detention pond, parking areas, geothermal piping galleries, and utilities) was focused within the eastern portion of the parcel. Excavations related to the above activities were periodically observed in accordance with the Soil/Fill Management Plan. Any soil/fill exhibiting visual impacts was separated and characterized and, based on the characterization results, either used as backfill or taken off-site for disposal in accordance with the Soil/Fill Management Plan .

On or about January 18, 2007, a small amount of visually impacted soil/fill was encountered during excavation for the utility lines and foundation area for a light standard within the parking area south of the Hydro-Air Facility building. (Refer to Figure 3-3, note 10 for approximate location.) The small amount of impacted soil/fill excavated (approximately 20-30 CY) was stockpiled on polyethylene film and characterized for TCLP Volatile Organic Compounds (VOCs) and TCLP chromium & lead. The results indicated that the soil/fill did not exhibit hazardous waste characteristics and therefore was disposed of off-site at Modern Landfill, Inc., Harold and Pletcher Road, Lewiston, New York 14092, in combination with other soil/fill that had been excavated from the Abby Street roadway improvements.

On or about January 30, 2007, during final subgrade preparation in the western portion of the Site, a limited amount of tar impacted soil/fill was encountered in a discreet area of approximately 30-40' x 125' along the south property line (refer to Figure 3-3, note 6). The area was excavated to the limits of visually impacted soil/fill as determined visually in the field and approved by on-site NYSDEC personnel. The excavated materials were characterized for purposes of disposal and backfill. On-site NYSDEC personnel orally approved of the use of materials that were not visually impacted for use on-Site as backfill shortly thereafter. An additional 567.49 tons of tar impacted soil/fill was disposed of at

Modern Landfill, Inc., Harold and Pletcher Road, Lewiston, New York 14092 (refer to Appendix D for disposal records).

4.2.3 *Site Restoration*

All areas disturbed by remedial program activities or construction of the new facility and not covered by the building footprint, pavement, concrete, or other structures was covered with a minimum of 12" of soil cover and seeded in accordance with the BCA Work Plan Soil /Fill Management Plan. The specifications and verification results of the soil cover material that was placed on site are included in Electronic Attachment 1. Vegetative growth has established itself over approximately 50% of the Site. It appears that the vegetation has not been fully established due to the unusually low precipitation and high temperatures during and after the completion of the hydroseeding process and vegetation may grow in these areas as temperatures moderate and if normal precipitation returns to the area. Those areas that do not exhibit vegetation by late September will be subjected to another round of hydro-seeding if necessary to complete the restoration process..

Final grades are documented in the topographical survey map included in Appendix E of this Report.

4.3 Active Sub-Slab Depressurization System

An Active Sub Slab Depressurization System (ASD) was installed within the Hydro-Air Components, Inc. new office and manufacturing building. The following text explains the general workings of a depressurization system, and the general system design. The design and operation, monitoring, & maintenance requirements for this system are specified in the Active Subslab Depressurization System Operations Manual, which is Part I, Attachment A5 of the Site Management Plan (refer to Electronic Attachment 3). Drawings of the system are also attached to this Report (Figures 4-3 and 4-4).

4.3.1 *General*

As required in the BCA Work Plan, a sub-slab depressurization system was designed and installed in the newly constructed Hydro-Air Facility. This system was designed to protect indoor air from potential intrusion of VOCs from subsurface soil/fill.

4.3.2 *Design*

The sub-slab depressurization system was designed as two independent zones: the office zone and the warehouse zone. The warehouse zone was further divided into four separate smaller systems connected by stone trenching.

The system in each of the five zones consists of 4 – 10ft sections of 6" perforated sch. 40 solvent-welded PVC pipe arranged in cross assembly (Refer to Figure 4-4). The perforated PVC piping was placed within a 12" wide x 8" deep envelope of clean no. 2 stone which was extended in each direction to the limits of the building. A solid 6" sch. 40 PVC riser was connected to one lateral pipe per system, near a building column. This vertical riser was extended through the roof adjacent to an existing building column for support. An exhaust fan was installed in line with the pipe above the roof line, and at a minimum distance of 25' from any building air intake.

The active sub-slab depressurization (ASD) system utilized for this project was designed in accordance with the EPA design document entitled "Radon Prevention in the Design and Construction of Schools and Other Large Buildings" Third Printing with Addendum, June 1994 and the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006. It also is designed in accordance with the NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006 and applicable EPA standards. For more details of the design of this system, please refer to Figures 4-3 and 4-4 of this Report.

4.3.3 *Installation / Implementation*

The ASD was installed as designed. Start-up of the system occurred during the month of April 2007. The operating system was first inspected by a TurnKey representative on 5/17/07 and certified as operational.

4.4 Air Monitoring Programs

4.4.1 *Community Air Monitoring*

The Community Air Monitoring Program was established in accordance with the appropriate NYSDEC and NYSDOH regulations and requirements, as specified in Appendix B of the BCA Work Plan. The primary purpose of this program was to provide

real-time air monitoring and provide a measure of protection for the downwind community from potential airborne contaminant releases resulting from remedial program work activities. A meteorological station was installed outside the construction trailers in Area II to monitor and document weather conditions. This station was used daily in association with construction activity through the 2006 calendar year and continuing through April 25, 2007, when work that was intrusive of soil or fill was completed.

Reports documenting and summarizing monitored data were completed on a monthly basis. The Community Air Monitoring Program for the Hydro-Air Components, Inc. portion of this project executed under the BCA are included in Appendix I of this Report .

4.4.2 *Documentation Air Monitoring*

In accordance with the Community Air Monitoring Plan, and in an effort to quantify concentration of selected parameters, documentation air monitoring was performed for the following activities:

- At the start of a large-scale ground intrusive remedial program task
- At the start of a significantly different work task involving impacted soils handling
- If the real-time monitoring thresholds were exceeded for a predetermined amount of time, and
- As necessary to address specific off-site air quality concerns.

Appendix I includes electronic copies of all Documentation Air Monitoring Reports.

4.5 Citizen Participation

In accordance with the Citizen Participation Plan of the BCA Work Plan (CPP), a draft fact sheet announcing the completion of remedial program construction activities will be submitted to NYSDEC for review shortly and, when it is approved, it will be mailed to the recipients designated on the CPP mailing list**.**

5.0 LONG-TERM GROUNDWATER MONITORING FOR AREA IV

The BCA Work Plan requires implementation of a Long-Term Groundwater Monitoring (LTGWM) Plan at the Site to monitor the effectiveness of the source area

removals, treatment, and controls implemented in accordance with the BCA. The LTGWM Plan has been included as Appendix F to this Report and is an attachment to the Site Management Plan in Electronic Attachment 3. Under the Plan, groundwater quality trends will be monitored along the perimeters of the Site and internally within Area IV in accordance with the schedule presented in Table 4-2. The groundwater monitoring wells necessary to implement that Plan have been constructed, developed and subjected to an initial round of sampling in accordance with the LTGWM. The First Semi-Annual Long-Term Groundwater Monitoring Report of those activities is being forwarded to the NYSDEC under separate cover.

6.0 SITE MANAGEMENT PLAN

The LTGWM Plan is part of a Site Management Plan which is annexed to this Report as Electronic Attachment 3. The Site Management Plan documents the institutional controls, engineering controls and operation, monitoring and maintenance measures that will maintain the Site as protective of the environment and human health going forward. In accordance with the BCA and BCA Work Plan, these measures are incorporated into an Environmental Easement (Appendix A) as legal obligations that run with the land and are binding on Hydro-Air Components, Inc. and any subsequent successor owner of the Site.

TABLES

TABLE 3-1

COKE RECLAMATION QUANTITIES

Final Engineering Report - Steelfields Area IV / Hydro- Air Components, Inc.
Steelfields, LTD. & Hydro-Air Components, Inc.
Buffalo, New York

MONTHLY TOTALS	QUANTITY TRANSPORTED OFF-SITE (TONS)
SEPTEBMER 2003	7038.7
OCTOBER 2003	16995.09
NOVEMBER 2003	9788.99
DECEMBER 2003	1168.21
JUNE 2004	3106.54
JULY 2004	5404.38
TOTAL	43501.91

TABLE 3-2

OFF-SITE BORROW MATERIAL QUANTITIES

Final Engineering Report - Steelfields Area IV / Hydro- Air Components, Inc.
Steelfields, LTD. & Hydro-Air Components, Inc.
Buffalo, New York

Source Name	Total Imported Volume (CY)	General Use
Electric Avenue	20,000	Soil / Fill
Kenworth	15,000	Soil / Fill
Walden & Pavement	2,000	Soil / Fill
Cobham	500	Soil / Fill
Camelot	500	Soil / Fill
TOTALS	**38,000**	**Soil / Fill**

ADDITIONAL CONSTRUCTION RELATED OFF-SITE BORROW MATERIAL QUANTITIES

Buffalo Crushed Stone	2,200 (tons)	#2 Crusher Run Building Foundation
Gernatt	300 (tons)	Round #1A Gravel ASD System Bedding
Gernatt	1,200 (tons)	Cusion Sand Geo-Thermal System Bedding

Notes:
1. All values estimated by truck count & source material suppliers.
2. CY = cubic yards

TABLE 4-1

GROUNDWATER MONITORING NETWORK AND SAMPLE FREQUENCY

Steelfields Area IV (Hydro-Air) Site
Hydro-Air Components, Inc.
Buffalo, New York

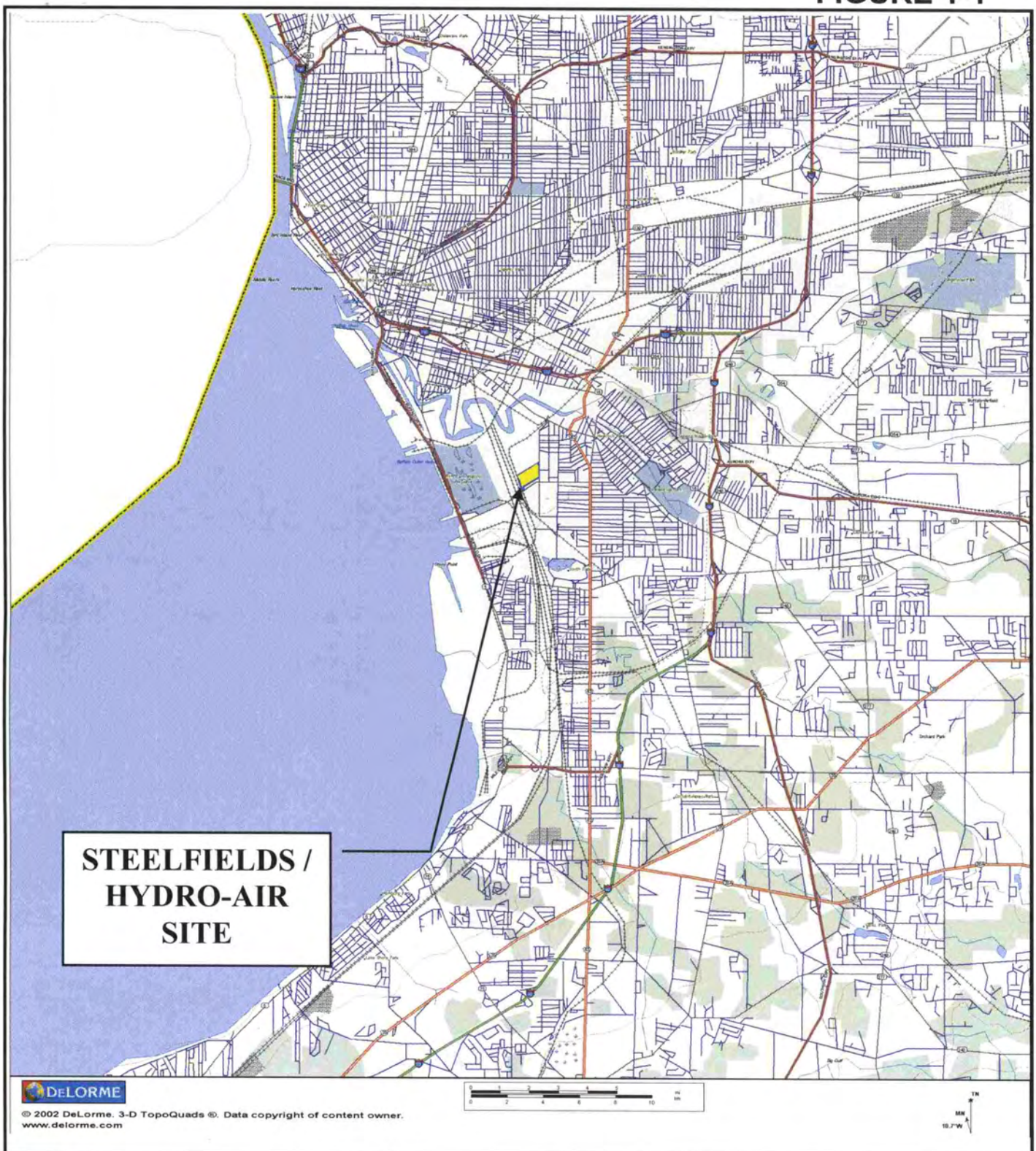
Well Designation	Type of Well		Former Well Designation	Monitoring Event				
				Year 1		Year 2		Year 3
	New	Existing		1 SA	2SA	1 SA	2SA	Annually
AREA IV - Monitoring Wells								
A4-MW-5 [1]	x		--	x	x	x		x
A4-MW-7 [1]	x		--	x	x	x		x
A4-MW-8 [1]	x		--	x	x	x		x
A4-MW-9	x		--	x	x	x		x
A4-MW-10	x		--	x	x	x		x
AREA IV - In-Situ Remediation Wells								
A4-ORC-1	x		--	x	x	x		x
A4-ORC-2	x		--	x	x	x		x
A4-ORC-3	x		--	x	x	x		x

Notes:

1. These wells were previously installed, however they were destroyed due to construction activities. As such, the wells will be replaced and are identified as "new".

FIGURES

FIGURE 1-1



BENCHMARK
ENVIRON ENTAL ENGINEERING & SCIENCE, PLLC
726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599

PROJECT NO.: 0062-010-100
DATE: FEBRUARY 2007
DRAFTED BY: WJM

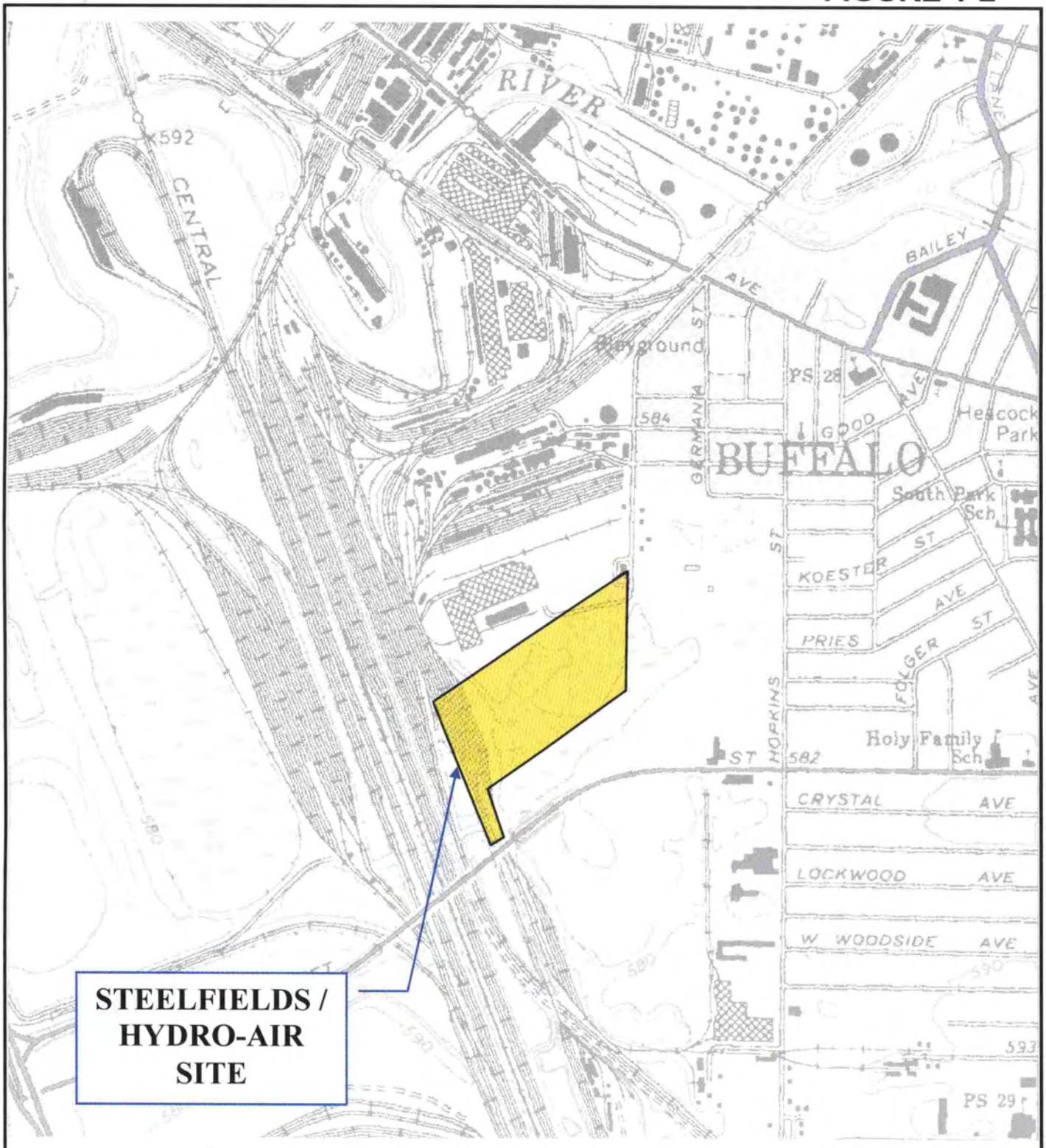
REGIONAL MAP

FINAL ENGINEERING REPORT

STEELFIELDS AREA IV SITE / HYDRO-AIR COMPONENTS
BUFFALO, NEW YORK

PREPARED FOR
STEELFIELDS, LLC. / HYDRO-AIR COMPONENTS, INC.

FIGURE 1-2



BENCHMARK
ENVIRON ENTAL
ENGINEERING &
SCIENCE. PLLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599

PROJECT NO.: 0062-010-100

DATE: FEBRUARY 2007

DRAFTED BY: WJM

SITE VICINITY MAP

FINAL ENGINEERING REPORT

STEELFIELDS AREA IV SITE / HYDRO-AIR COMPONENTS
BUFFALO, NEW YORK

PREPARED FOR
STEELFIELDS, LLC. / HYDRO-AIR COMPONENTS, INC.

FIGURE 1-3

BENCHMARK
ENVIRONMENTAL
ENGINEERING &
SCIENCE, PLLC

726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0599

PROJECT NO.: 0062-010-100

DATE: FEBRUARY 2007

DRAFTED BY: PW / WJM

SITE MAP

FINAL ENGINEERING REPORT

STEELFIELDS AREA IV SITE/ HYDRO-AIR COMPONENTS
BUFFALO, NY

PREPARED FOR
STEELFIELDS, LLC / HYDRO-AIR COMPONENTS, INC.

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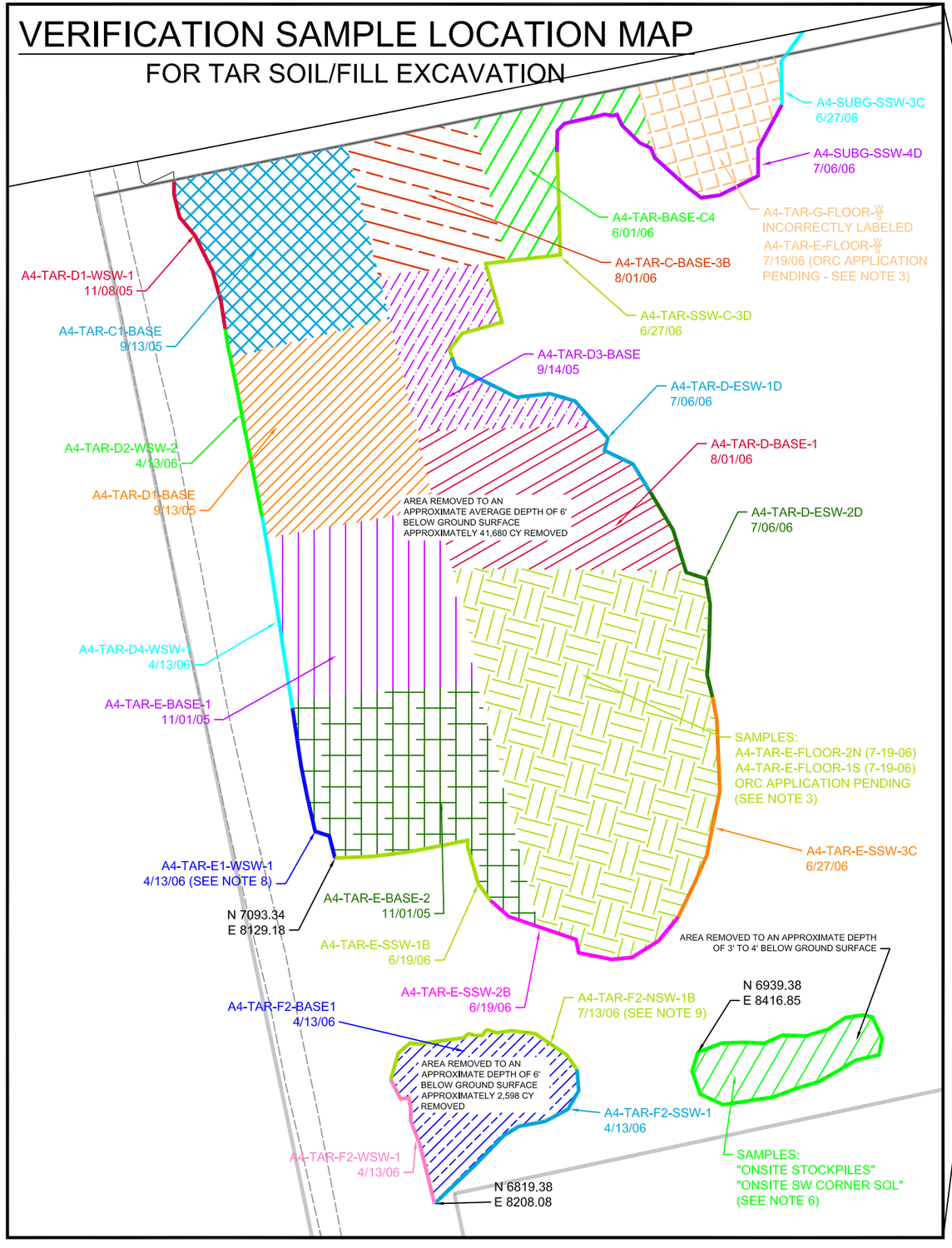
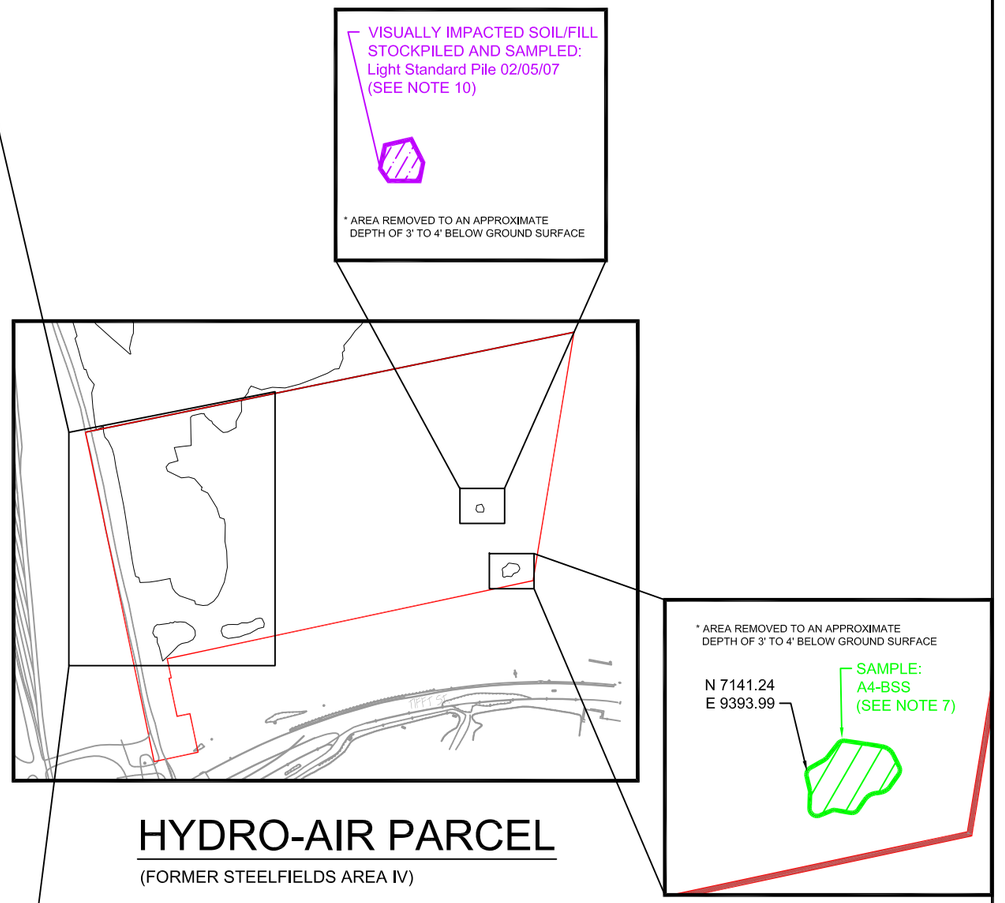
VERIFICATION SAMPLE LOCATION MAP

FOR TAR SOIL/FILL EXCAVATION





HYDRO-AIR PARCEL

(FORMER STEELFIELDS AREA IV)

NOTES:

1. ALL EXCAVATION SAMPLES COLLECTED AND ANALYZED IN ACCORDANCE WITH THE STEELFIELDS VOLUNTARY CLEAN-UP AGREEMENT SOIL/FILL MANAGEMENT PLAN.
2. CORRESPONDING SAMPLE RESULTS AND ANALYTICAL DATA CAN BE FOUND IN ATTACHMENT A.
3. SAMPLES A4-TAR-E-FLOOR-2N, A4-TAR-E-FLOOR-1S, AND A4-TAR-G-FLOOR W/S (INCORRECTLY LABELED A4-TAR-E-FLOOR W/S) SLIGHTLY EXCEEDED BENZENE LIMITS IN THE SSALS, AND WILL BE TREATED IN-SITU WITH ORC APPLICATION IN ACCORDANCE WITH THE NYSDEC APPROVED PLAN DATED JULY 26, 2006. (APPENDIX B)
4. EXCAVATION LIMITS BASED UPON SURVEY INFORMATION SUPPLIED BY NIAGARA BOUNDARY AND MODERN CONSTRUCTION.
5. ALL SAMPLES APPROVED BY NYSDEC ON-SITE PERSONNEL FOR BACKFILL.
6. EXCAVATION LIMITS DETERMINED VISUALLY IN FIELD AND APPROVED BY ON-SITE NYSDEC PERSONNEL (SEE APPENDIX C FOR CORRESPONDENCE). SOIL/FILL EXCAVATED AND CHARACTERIZED FOR DISPOSAL AND/OR SITE BACKFILL. (SEE APPENDIX B FOR ANALYTICAL DATA) (SEE ALSO APPENDIX D FOR OFF-SITE DISPOSAL).
7. EXCAVATION LIMITS DETERMINED VISUALLY IN FIELD AND APPROVED BY ON-SITE NYSDEC PERSONNEL (SEE APPENDIX C FOR CORRESPONDENCE). SOIL/FILL EXCAVATED AND CHARACTERIZED FOR DISPOSAL AND/OR SITE BACKFILL. APPROXIMATELY 20-30 CUBIC YARDS REMOVED AND TRANSFERRED TO STEELFIELDS AREA II CONTAINMENT CELL.(SEE APPENDIX B FOR ANALYTICAL DATA)
8. SAMPLE EXCEEDED SSALs FOR LEAD AT 1,050 MG/L. DURING WORKING DISCUSSIONS WITH NYSDEC, M. MOORE (NYSDEC) ON-SITE PERSONNEL APPROVED DEVIATION FROM SSAL LIMIT OF 1,000 MG/L BASED UPON CLOSE PROXIMITY WITH PROPERTY LINE DITCH AND RAILROAD TRACKS.
9. SAMPLE SLIGHTLY EXCEEDED SSALs FOR TOTAL XYLENES, TO WHICH M. MOORE (NYSDEC) ON-SITE PERSONNEL APPROVED SLIGHT DEVIATION AFTER VISUAL INSPECTION.
10. VISUALLY IMPACTED SOIL/FILL EXCAVATED, STOCKPILED, SAMPLED AND DISPOSED OF IN ACCORDANCE WITH THE SOIL/FILL MANAGEMENT PLAN. REFER TO SECTION4.2.2 OF THIS REPORT FOR DESCRIPTION AND APPENDIX B FOR ANALYTICAL RESULTS.

DATE:
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TAR SOIL/FILL VERIFICATION SAMPLING LOCATIONS
TAR SOIL/FILL SUBAREAS C,D,E & F RECORD DRAWING
HYDRO-AIR
FORMER STEELFIELDS AREA IV
BUFFALO, NEW YORK
PREPARED FOR
HYDRO-AIR COMPONENTS, INC.

FIGURE 3-3

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AREA IV - OFF-SITE AREA DESIGNATIONS

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STEELFIELDS AREA IV SITE / HYDRO-AIR COMPONENTS
BUFFALO, NEW YORK

PREPARED FOR
STEELFIELDS, LLC / HYDRO-AIR COMPONENTS, INC.

FIGURE 3-4

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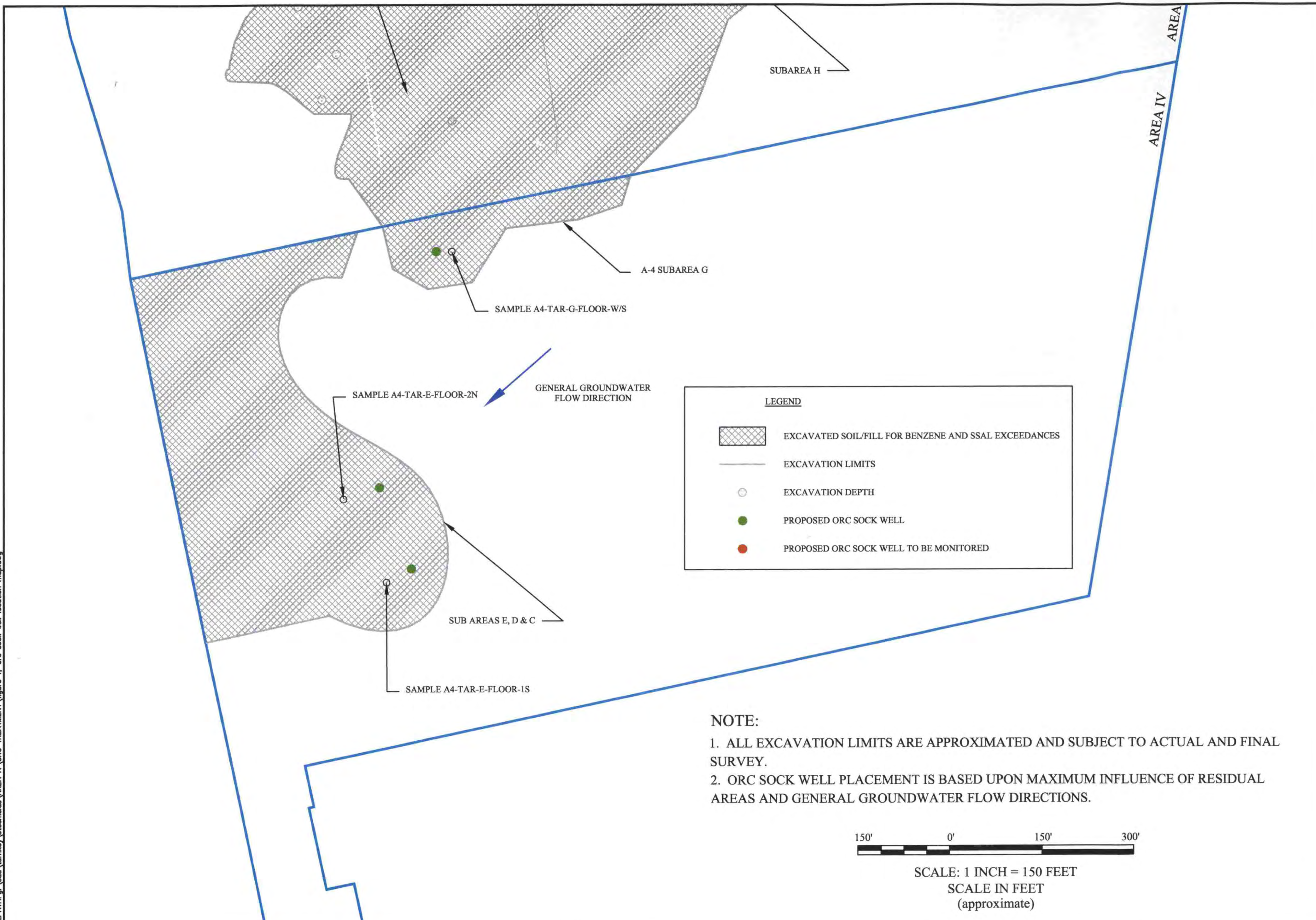

NOTE:

1. ALL EXCAVATION LIMITS ARE APPROXIMATED AND SUBJECT TO ACTUAL AND FINAL SURVEY.
2. ORC SOCK WELL PLACEMENT IS BASED UPON MAXIMUM INFLUENCE OF RESIDUAL AREAS AND GENERAL GROUNDWATER FLOW DIRECTIONS.

DATE: JULY 2008
DRAFTED BY: BCH/WJM
FILEPATH: g:\cad\turnkey\steelfields\AREA IV\ORC TREATMENT\figure 1; orc sock well location map.dwg

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726 EXCHANGE STREET
SUITE 624
BUFFALO, NEW YORK 14210
(716) 856-0635

JOB NO.: 0062-008-404

ORC SOCK WELL LOCATION MAP

PROPOSED IN-SITU TREATMENT OF RESIDUAL SOIL & GROUNDWATER

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BUFFALO, NEW YORK

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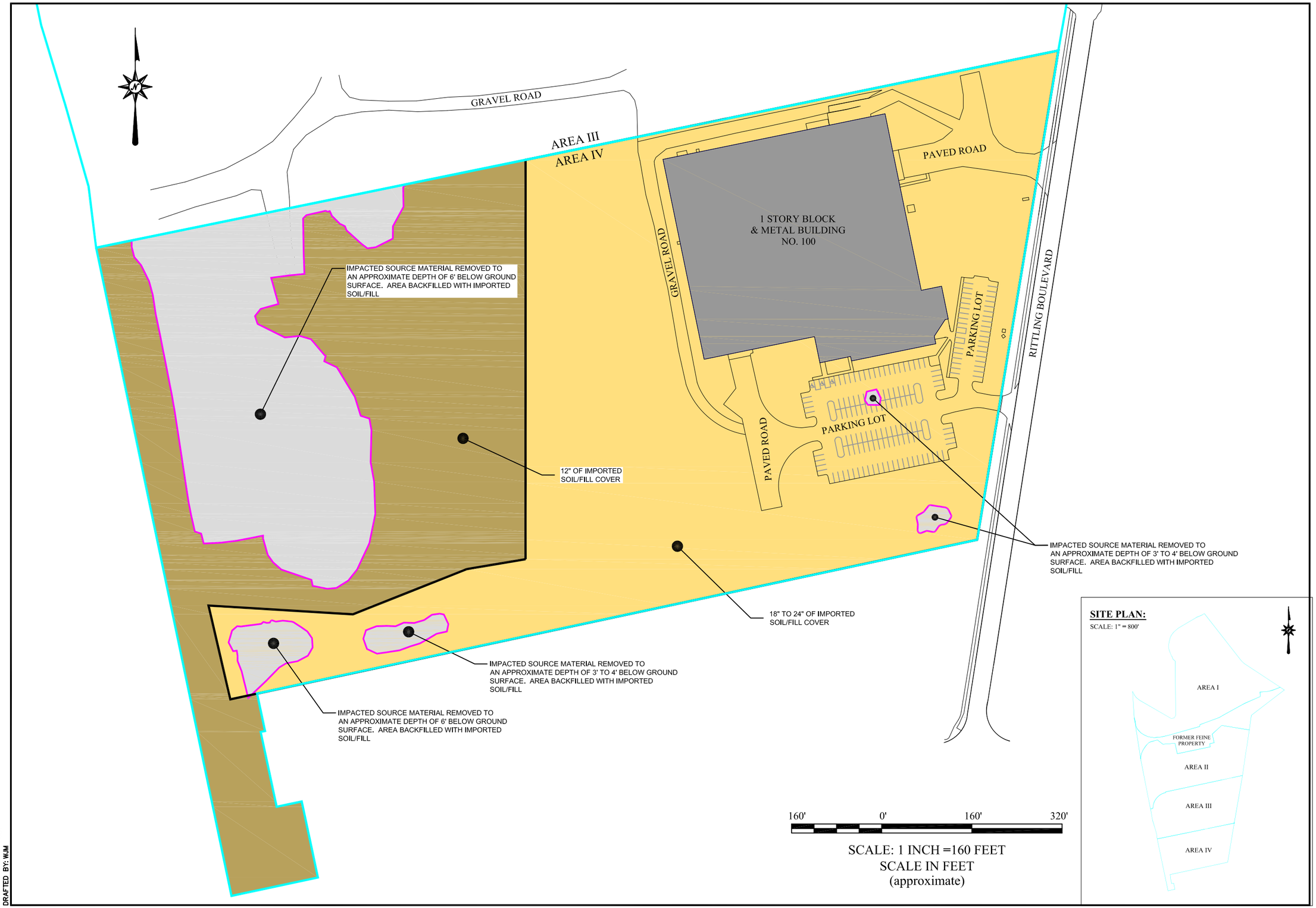
STEELFIELDS, LTD.

FIGURE 3-5



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AREA IV - SURFACE COVERAGE
POST REMEDIAL EXCAVATION AND SOIL COVER RECORD

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STEELFIELDS AREA IV - FORMER DONNER-HANNA COKE YARD
BUFFALO, NEW YORK

PREPARED FOR
STEELFIELDS LLC/ HYDRO-AIR COMPONENTS, INC.

FIGURE 3-6

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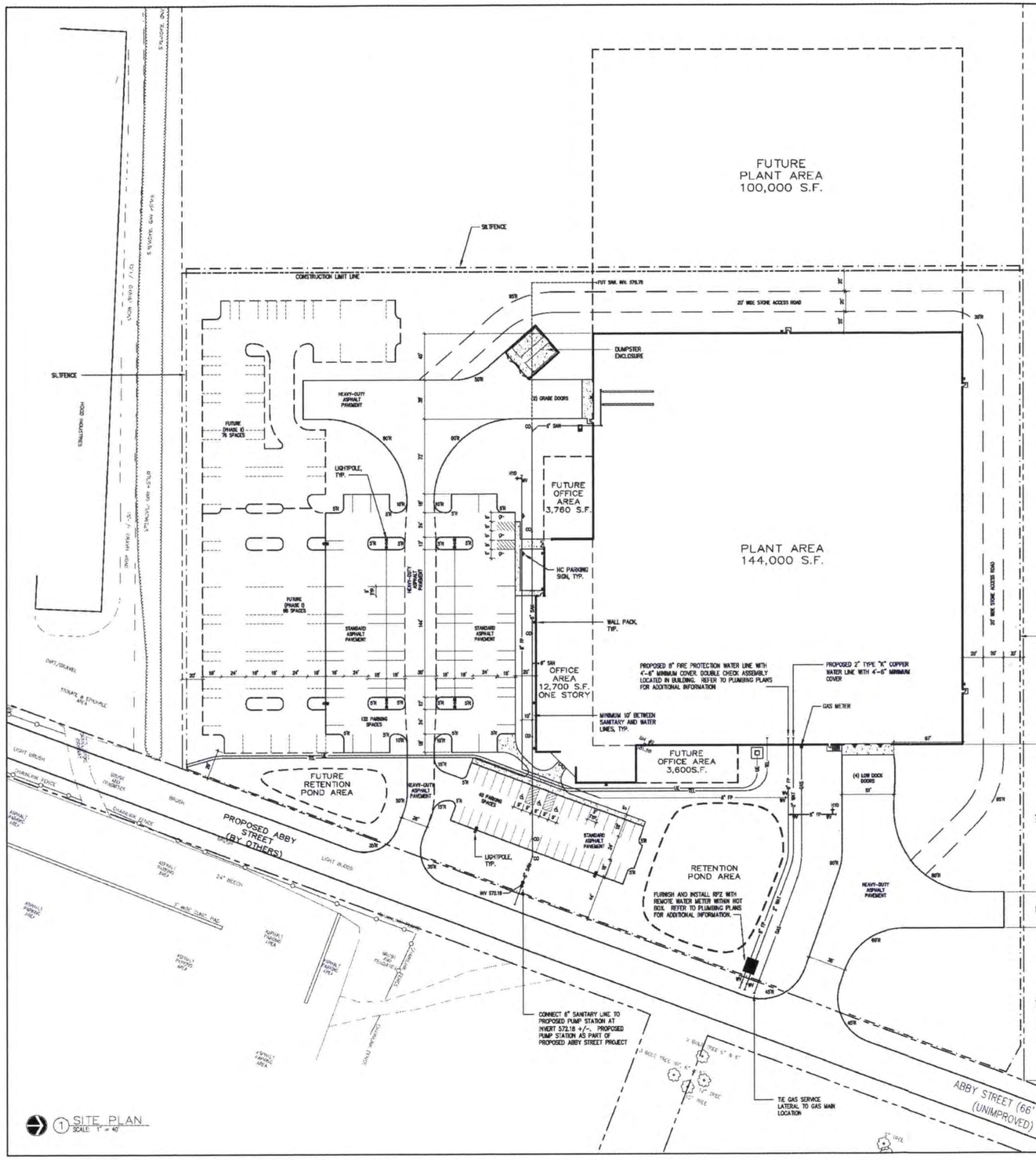

① SITE PLAN
SCALE: 1" = 40'

SITE IMPROVEMENT NOTES

1. ALL CAR PARKING AREAS SHALL BE STANDARD ASPHALT PAVEMENT; RE: 1, L-4.
2. ENTRANCES, TRUCK ACCESS ROADS, AND TRUCK TURNING AREAS SHALL BE HEAVY-DUTY ASPHALT PAVEMENT; RE: 2, L-4.
3. ALL SIDEWALKS SHALL BE STANDARD CONCRETE PAVEMENT; RE: 3, L-4.
4. CONCRETE APRONS SHALL BE HEAVY-DUTY CONCRETE PAVEMENT; RE: 4, L-4.
5. INSTALL LIGHT POLE, CONCRETE BASE AND HIGH-PRESSURE SODIUM FIXTURE AS REQUIRED TO MEET THE FOLLOWING STANDARDS; RE: 8, L-5 & 9, L-5:
   1.0 FOOT CANDLE – PARKING AREAS, DRIVEWAYS, STREETS
   0.5 FOOT CANDLE – WALKWAYS, BUILDING ENTRANCES AND GATHERING AREAS

SITE DATA REQUIREMENTS

ZONING DISTRICT	=	Light Industrial – M1							
SUPPLEMENTAL HEIGHT, LOT, YARD AND BULK REGULATIONS		Min. Lot req.	Width 350'	Depth 625'	Front	Side	Rear	Max. Bldg. Htg. 40'	Max. Lot Coverage % 75%
		STRUCTURE			25'	5'	5'		
		PARKING, LOADING & STACKING			25'	5'	5'		
PARKING REQUIREMENTS (1 PARKING SPACE PER 1,000 GROSS FOR AREA BUT DOES NOT EXCEED 1 FOR EACH 5 EMPLOYEES)	=	Space size = 9' x 18' = 162 sf. min.							
		Spaces required = 244 MAX.							
		Spaces provided = 346 MAX.							
SITE ACREAGE	=	16.50 ac.	718,967 sf.						
BUILDING SIZE	=	5.69 ac.	244,000 sf.						
PARKING/PAVEMENT	=	3.96 ac.	172,401 sf.						
GREENSPACE	=	6.84 ac.	302,586 sf.						

THE KROG CORP.
4 CENTRE DRIVE
ORCHARD PARK, NEW YORK 14127
716-667-1234
Fax. 716-667-1258
Contractors Engineers Developers

HYDRO AIR

ABBY STREET
BUFFALO, NEW YORK

SITE LAYOUT AND UTILITIES PLAN

CK ASSOCIATES
53 East Home Road
Bowmansville, New York 14026
p.716.681.8708

DRAWN BY:	CAR
APPROVED BY:	CAR
DATE:	AUGUST 15, 2006
SCALE:	AS NOTED
PROJECT NO:	06-013
DRAWING NO:	L - 1r

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JOB NO.: 0062-010-100

HYDRO-AIR
SITE LAYOUT & UTILITIES PLAN
FINAL ENGINEERING REPORT

HYDRO-AIR COMPNENTS SITE
BUFFALO, NEW YORK

PREPARED FOR
STEELFIELDS LLC. / HYDRO-AIR COMPONENTS, INC.

FIGURE 4-1

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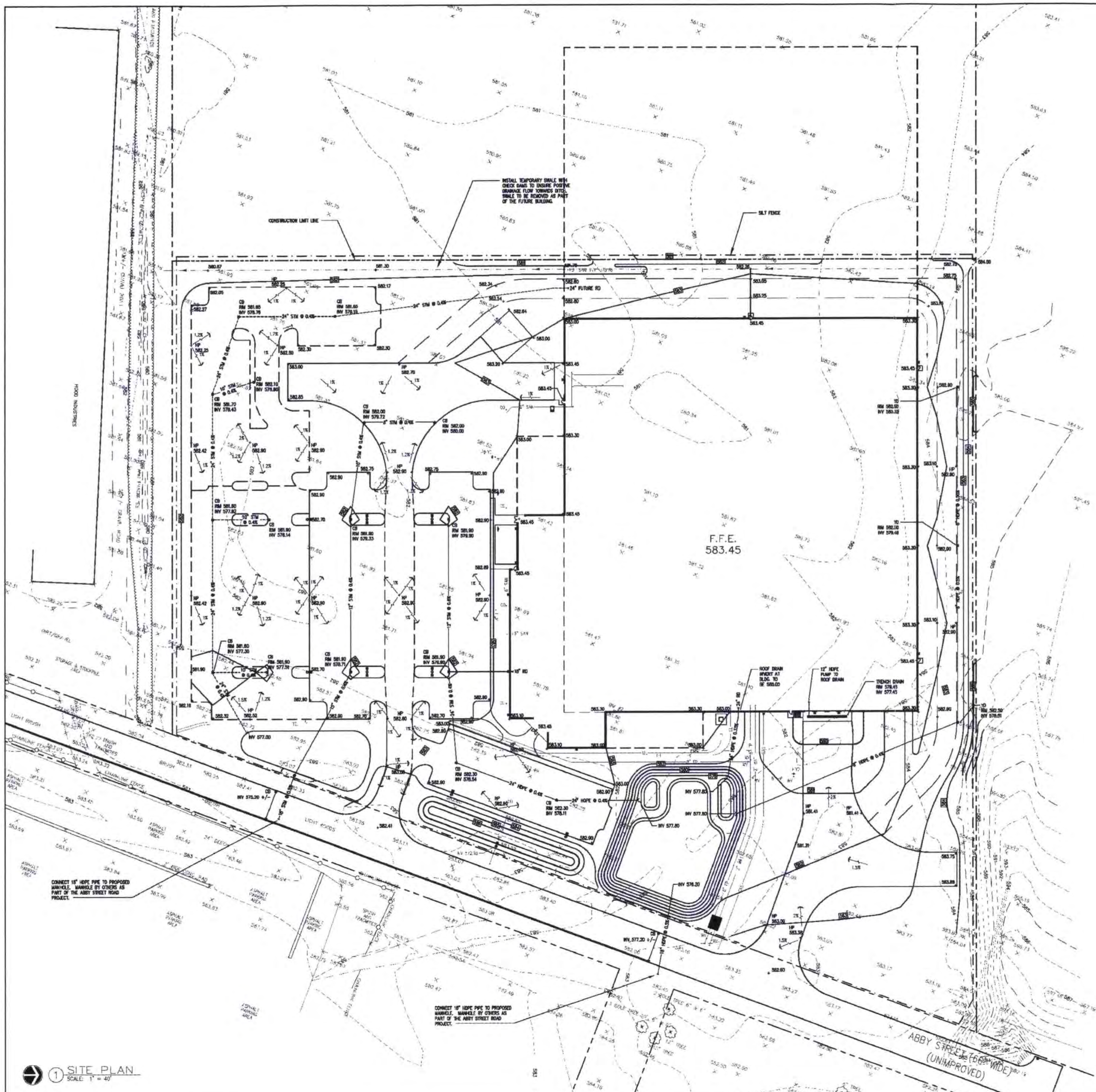

① SITE PLAN
SCALE: 1" = 40'

SITE GRADING AND DRAINAGE NOTES

1. ALL SEDIMENT AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY MAJOR CLEARING AND GRADING OPERATIONS. REFER TO DRAWING EC-1 FOR EROSION AND CONTROL INFORMATION.
2. REFER TO DETAILS 11, L-4 AND 12, L-4 FOR CATCH BASIN, AND PIPE BEDDING AND BACKFILL INFORMATION.

NOTICE

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Fax. 716-667-1258
Contractors Engineers Developers

HYDRO AIR

ABBY STREET
BUFFALO, NEW YORK

SITE GRADING AND DRAINAGE PLAN

CK & ASSOCIATES
53 East Home Road
Bowmansville, New York 14026
p.716.684.6256
Landscape Architecture • Site Planning and Development

DRAWN BY:	CAR
APPROVED BY:	CAR
DATE:	AUGUST 15, 2006
SCALE:	AS NOTED
PROJECT NO:	06-013
DRAWING NO:	L - 2r

HYDRO-AIR
SITE GRADING & DRAINAGE PLAN

FINAL ENGINEERING REPORT

HYDRO-AIR COMPNENTS SITE
BUFFALO, NEW YORK

PREPARED FOR
STEELFIELDS LLC. / HYDRO-AIR COMPONENTS, INC.

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FIGURE 4-2

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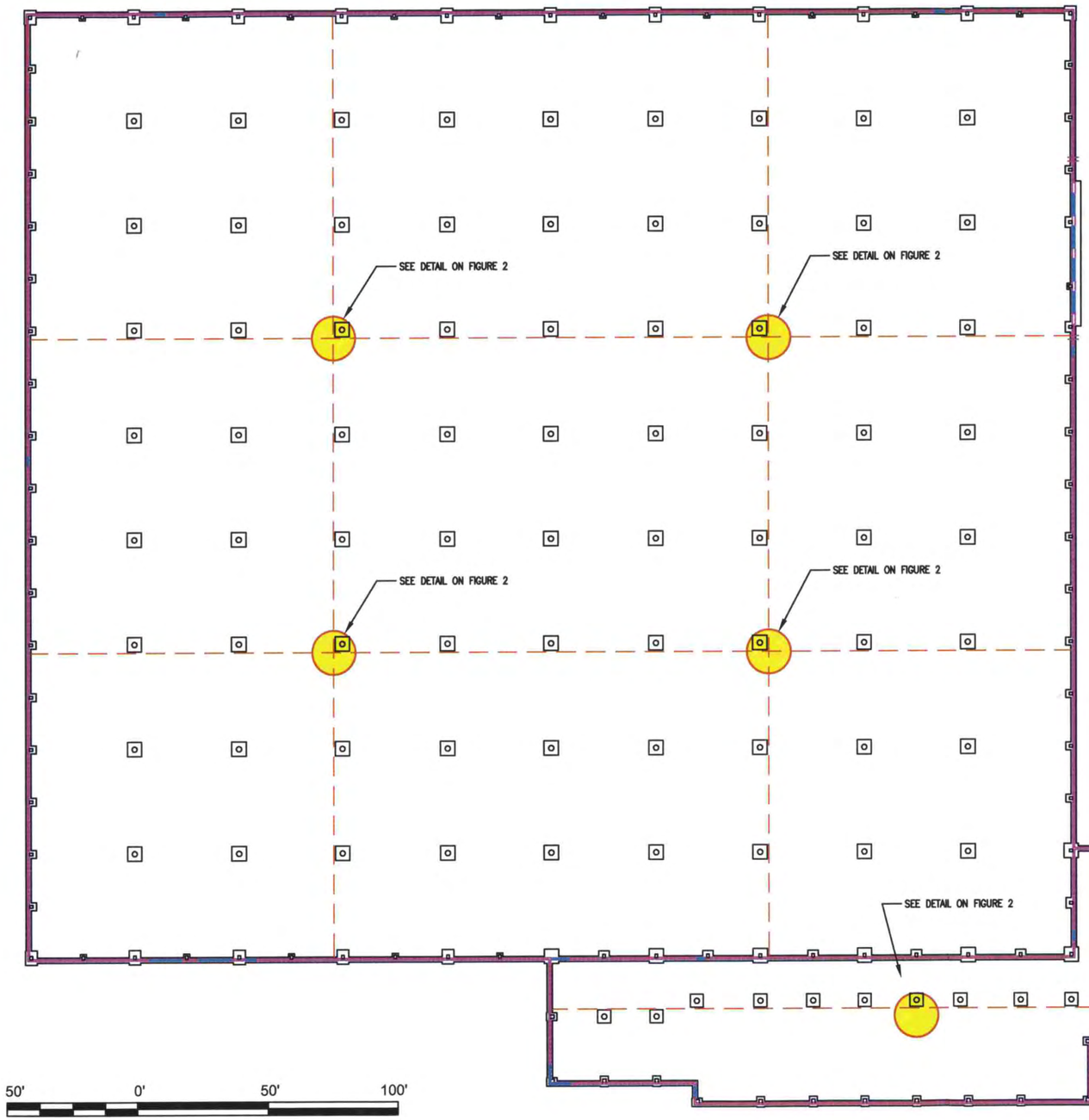

LEGEND:

- TYPICAL BUILDING PIER & FOOTER
- ACTIVE SUBSLAB DEPRESSURIZATION SYSTEM LOCATION (TYP. OF 5)
- 12 INCHES WIDE x 8 INCHES DEEP TRENCH FILLED WITH CLEAN NO. 2 STONE

50' 0' 50' 100'

SCALE: 1 INCH = 50 FEET
SCALE IN FEET
(approximate)

JOB NORTH

NORTH

DATE: SEPTEMBER 2006
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ACTIVE SUBSLAB DEPRESSURIZATION SYSTEM

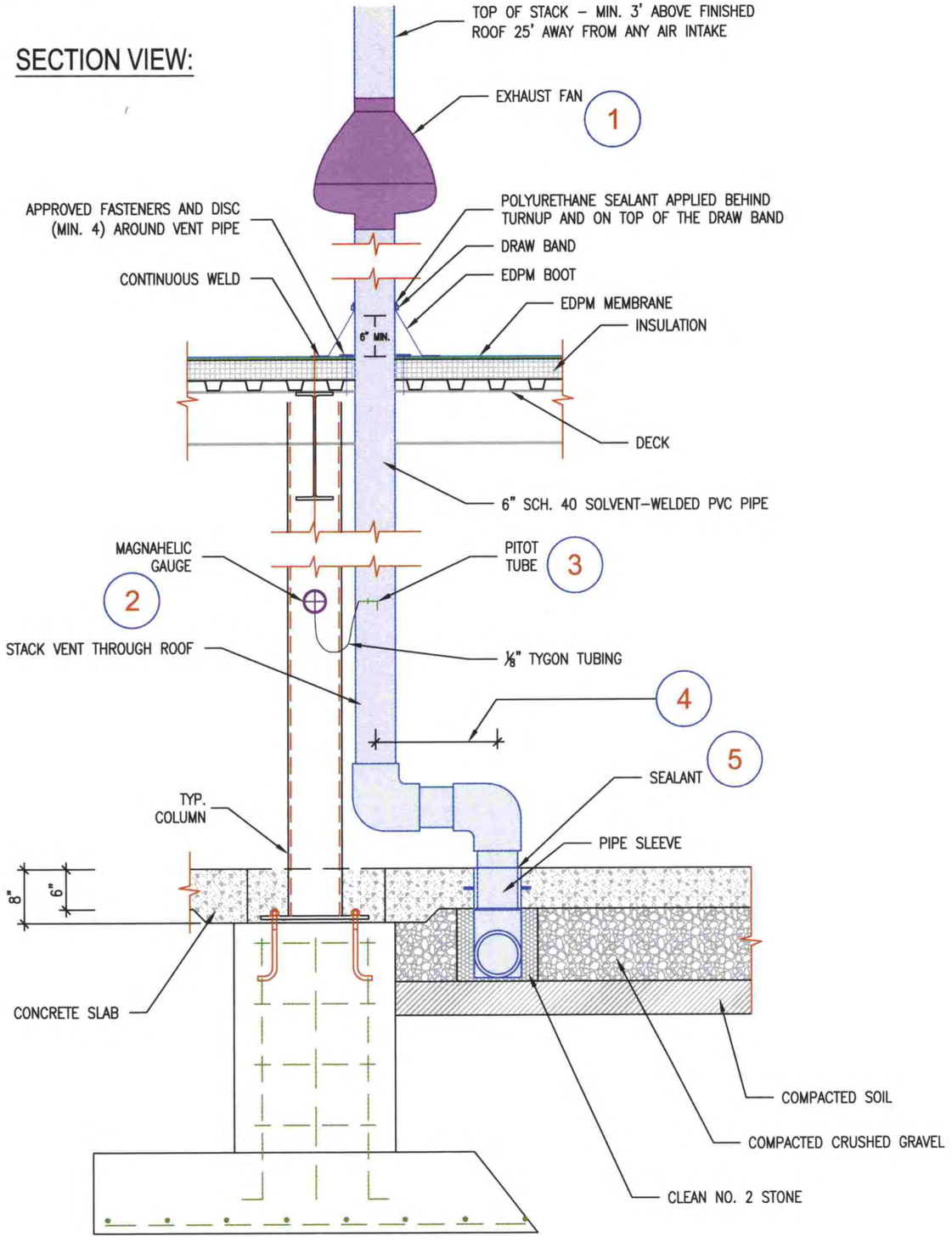
FINAL ENGINEERING REPORT
HYDRO-AIR COMPONENTS SITE
BUFFALO, NEW YORK

PREPARED FOR
HYDROAIR COMPONENTS, INC.

FIGURE 4-3

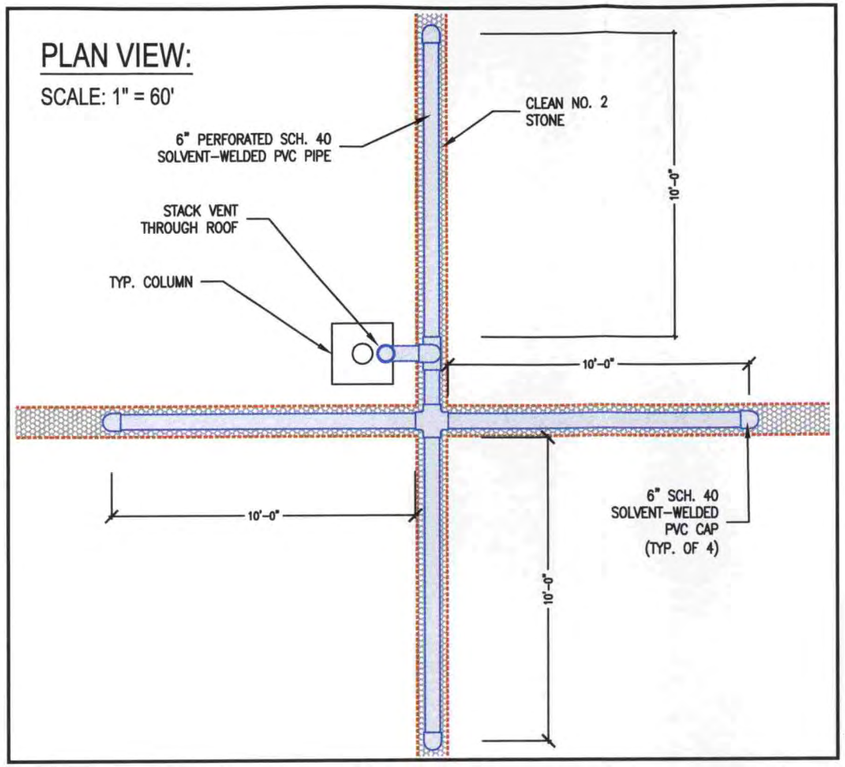
F:\TurnKey\Clients\Steelfields\Final Engineering Reports\Area 1\Figures\Figure 4-4; Active Subslab Depressurization System.dwg

SECTION VIEW:



PLAN VIEW:

SCALE: 1" = 60'



NOTES:

1. FANTECH MODEL FR 160. 115 VOLT 71 RATED WATTS CONTINUOUS DUTY.
2. DWYER MODEL 2002 – AV MAGNAHELIC GAUGE; DWYER MODEL A–368 SURFACE MOUNT BRACKET. MOUNT ON COLUMN AT 5 FEET ABOVE FINISHED FLOOR.
3. DWYER MODEL 166–6CF ⅛" NPT PITOT TUBE WITH COMPRESSION FITTINGS.
4. MAXIMUM OF 24" FROM CENTERLINE OF VERTICAL PVC TO CENTERLINE OF OUTER ELBOW.
5. POLYURETHANE SEALANT APPLIED IN ACCORANCE WITH MANUFACTURERS INSTRUCTIONS TO SEAL ALL GAPS. USE OF SILICONE SEALANTS IS NOT PERMITTED.

DATE: SEPTEMBER 2006
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ACTIVE SUBSLAB DEPRESSURIZATION SYSTEM

FINAL ENGINEERING REPORT

HYDRO-AIR COMPONENTS SITE
BUFFALO, NEW YORK

PREPARED FOR
HYDROAIR COMPONENTS, INC.

FIGURE 4-4

ACRE #	SIZE (ACRES)
1	0.75
2	0.99
3	1.21
4	1.12
5	0.79
6	1.23
7	1.01
8	1.39
9	1.31
10	0.73
11	0.95
12	0.92
13	1.29
14	1.07
15	1.38
16	1.38
17	0.98
AVERAGE	1.09

SAMPLED 08/12/04 (grey)

SAMPLED 07/14/04 (green)

SAMPLED 06/08/04 (tan)

SAMPLED 06/29/04 (mustard)

AREA III

AREA IV

ACRE-1 0.75 acres

ACRE-2 0.99 acres

ACRE-3 1.21 acres

ACRE-4 1.12 acres

ACRE-5 0.79 acres

ACRE-6 1.23 acres

ACRE-7 1.01 acres

ACRE-8 1.39 acres

ACRE-9 1.31 acres

ACRE-10 0.73 acres

ACRE-11 0.95 acres

ACRE-12 0.92 acres

ACRE-13 1.29 acres

ACRE-14 1.07 acres

ACRE-15 1.38 acres

ACRE-16 1.38 acres

ACRE-17 0.98 acres

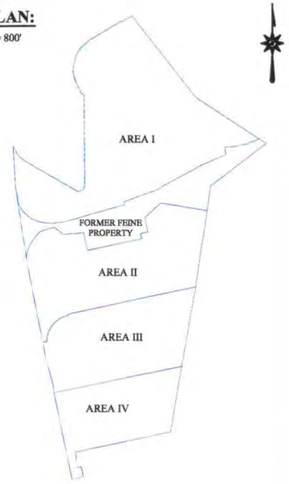
LEGEND:

- ACRES 1 - 4 SAMPLE LOCATIONS
- ACRES 5 - 6 SAMPLE LOCATIONS
- ACRES 7 - 9 SAMPLE LOCATIONS (VEGETATED SOUTH END)
- ACRES 10 - 13 SAMPLE LOCATIONS
- ACRES 14 - 17 SAMPLE LOCATIONS

160' 0' 160' 320'

SCALE: 1 INCH =160 FEET
SCALE IN FEET
(approximate)

SITE PLAN:
SCALE: 1" = 800'



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AREA IV - SURFACE SOIL/FILL VERIFICATION SAMPLE LOCATIONS

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STEELFIELDS AREA IV - FORMER DONNER-HANNA COKE YARD
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FIGURE 3-1

F:\Projects\0062-010-100\Final Engineering Reports\Area IV\Figures\FIGURE 3-1; VERIFICATION SAMPLE LOCATIONS.dwg
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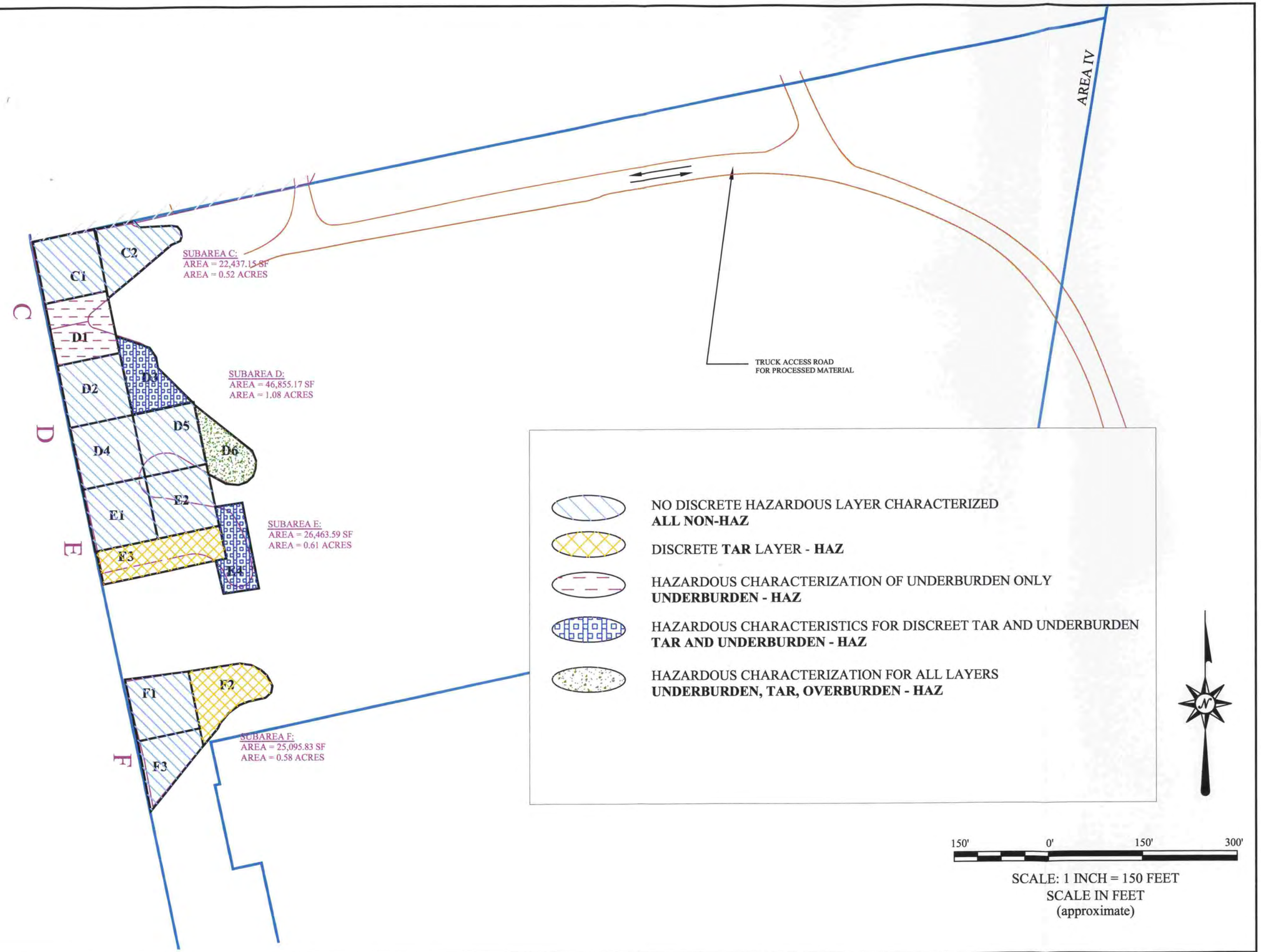
F:\TurnKey\Clients\Steelfields\Final Engineering Reports\Area IV\Figures\Figure 3-2; Tar Soil-Fill Preliminary Excavation Plan -TP Characterization.dwg



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TAR SOIL/FILL PRELIMINARY EXCAVATION LIMITS

FINAL ENGINEERING REPORT

FORMER STEELFIELDS AREA IV
BUFFALO, NEW YORK
PREPARED FOR
STEELFIELDS LLC./ HYDRO-AIR COMPONENTS, INC.

FIGURE 3-2

APPENDIX A

ENVIRONMENTAL EASEMENT