

Easement, h/w 734053, 2004-06-30.

deed restriction, ~~and~~ supporting
documentation, pdf

DECLARATION OF COVENANTS AND RESTRICTIONS

This Covenant is made as of the 30th day of June, 2004 by Syracuse China Company Inc., a Delaware corporation, with offices at 2900 Court Street, Syracuse, New York.

WITNESSETH:

WHEREAS, Syracuse China Company Inc., formerly known as LG Acquisition Corp., is the owner of certain property located in the Town of Salina, County of Onondaga, State of New York, having acquired said property from The Pfaltzgraff Co. by deed dated October 10, 1995, recorded in the Office of the Clerk of Onondaga County at Libre 4034 of Deeds, page 260, which deed conveyed to LG Acquisition Corp. two parcels of real estate described therein as PARCEL I and PARCEL II. A copy of said deed is attached hereto as Exhibit A.

WHEREAS, The Pfaltzgraff Co. (the "Respondent") and the New York State Department of Environmental Conservation (the "Department") entered into an Order on Consent, Index No. A-0346-9609 (the "Order on Consent"), attached hereto as Exhibit B relating to a portion of PARCEL II of the above referenced deed, which portion is referred as the Site in the Order on Consent attached as Exhibit B.

WHEREAS the Site has been located by a survey performed by Ryan Survey of Syracuse, New York and the legal description of the Site is set forth in Exhibit C attached hereto and shown on the Map of Survey prepared by Ryan Survey, dated 9-20-2001 attached hereto as Exhibit D.

WHEREAS, the Site has been listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State with a site number 7-34-053.

WHEREAS, as referenced in the Exhibit B Order on Consent, the Department set forth a remedy to eliminate or mitigate all significant threats to the environment presented by hazardous waste disposed at the Site in a Record of Decision, a copy of which is attached to the Exhibit B Order on Consent as an Appendix.

WHEREAS, the Order on Consent attached hereto as Exhibit B provides that Respondent shall use its best efforts to cause the owner to file a Declaration of Covenants and Restrictions to run with the land with the Onondaga County Clerk to give all parties who may acquire any interest in the Site notice of the Order on Consent attached as Exhibit B, and that shall limit the use of the Site consistent with the response program without the express written waiver of such prohibition by the Department, or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department.

WHEREAS, at the request of Respondent and the Department, Syracuse China Company Inc. hereby executes this Declaration of Covenants and Restrictions to be recorded with the Office of the Onondaga County Clerk providing for the items set forth herein.

NOW, THEREFORE, Syracuse China Company Inc., for itself, its successors and assigns, covenants that:

First, the Site subject to this Declaration of Covenants and Restrictions, is shown on Exhibit D, the survey map referenced above that is hereby attached hereto and made a part hereof, and consists of the metes and bounds description set forth on Exhibit C referenced above that is hereby attached hereto and made a part hereof.

Second, unless prior written permission, approval, consent or waiver of this prohibition by the Department, or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department is first obtained, no person shall engage in any activity on the Site, including excavation below one foot below the surface of the ground in the wetlands and excavation below two feet below the surface of the ground, in the area east of the landfill footprint*, that is inconsistent with, or that reasonably is anticipated to, prevent or interfere significantly with the effectiveness of, the response program at the Site referenced in the Exhibit B Order on Consent or that will, or is reasonably anticipated to, cause the response program referenced in the Exhibit Border on Consent to fail or be substantially ineffective and thereby expose the public health or environment to a significantly increased threat of harm or damage emanating at the Site.

*The one foot and two foot areas are generally identified on the attached drawing entitled "Site Plan Syracuse China Remedial Action" prepared for The Pfaltzgraff Co. by Remedial Engineering, P.C. and dated 09/22/03, which drawing is not a survey or an exact description of the Site or of any portion of the Site and is attached solely to assist in generally locating these areas.

Third, the owner of the Site shall not permit excavation at the Site in the area which constitutes the landfill footprint without first obtaining the written permission, approval, consent or waiver of this prohibition of the Department or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department.

Fourth, the owner of the Site shall not permit the Site from ever being used for purposes other than for commercial/industrial use excluding child day care, or medical treatment facilities, without the prior written permission, approval, consent or waiver of this prohibition by the Department or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department.

Fifth, the owner of the Site shall not permit the groundwater underlying the Site to be used at the Site or permit anyone to come on to the Site to remove the groundwater underlying the Site for use off the Site, without treatment rendering such water safe for drinking water or industrial purposes, as appropriate unless the user first obtains the written permission, approval, consent or waiver of this prohibition from the Department or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department.

Sixth, the owner of the Site shall permit the Respondent to continue in full force and effect any institutional and engineering controls the Department required Respondent to put into place and maintain unless the owner first receives permission to discontinue such controls granted by the Department, or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department.

Seventh, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Site and shall provide that the owner and its successors and assigns, consent to the enforcement by the Department, or if at such time the Department shall no longer exist, by any New York State department, bureau, or other entity replacing the Department of the prohibitions and restrictions that Paragraph XI of the Order contemplates to be recorded, and hereby covenants not to contest the authority of the Department or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department to seek enforcement.

Eighth, any deed of conveyance of the Site, or any portion thereof, shall recite that the said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, Syracuse China Company Inc. has executed this instrument by its duly authorized representative.

Syracuse China Company Inc.

By: Arthur H. Smith
Arthur H. Smith, Vice President

State of Ohio
County of Lucas) SS

On this 30th day of June, 2004 before me personally came Arthur H. Smith, to me known, who being duly sworn, did depose and say that he resides in Maumee, Lucas County Ohio, that he is a Vice President of Syracuse China Company, the corporation described in and which executed the foregoing instrument, and that he signed his name thereto by authority of the Board of Directors of said corporation.

Deborah Hyndman
Notary Public

DEBORAH HYNDMAN
Notary Public, State of Ohio
My Commission Expires 7-8-2006



July 16, 2004

James Skloda, Esq.
Hancock & Estabrook, LLP
1500 MONY Tower I
Syracuse, NY 13221-4976

Re: Syracuse China Landfill Declaration
of Covenants and Restrictions

Dear Mr. Skloda:

Per Mr. Smith's request and his call to you of today enclosed please find the package for filing. If this was filed in Ohio we would file in the easement records the Declaration of Covenants and Restrictions, the Site Plan Drawing dated 9-23-03 (color), and Exhibit C, the legal description. The other documents, and particularly the maps and appendices, would be filed in the miscellaneous records with some type of cross-reference to these documents.

Thank you for your attention to this matter. If you have any questions, please contact me.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Debbie Hyndman".

Debbie Hyndman
Paralegal

Enclosures

cc: John L. Greenthal, Esq.
Nixon Peabody LLP
Omni Plaza, Suite 900
30 South Pearl Street
Albany, NY 12207

Anthony B. Quartararo, Esq.
Assistant Counsel
NYS Dept. of Environmental Conservation
625 Broadway, 14th Floor
Albany, NY 12233-5500

Susan A. Kovach

Arthur H. Smith

INDEX OF DOCUMENTS

Declaration of Covenants and Restrictions, 3 pages

Site Plan, Syracuse China Remedial Action dated 9-22-03

Exhibit A Deed by Pfaltzgraff Co. Grantor to LG Acquisition Corp. Grantee

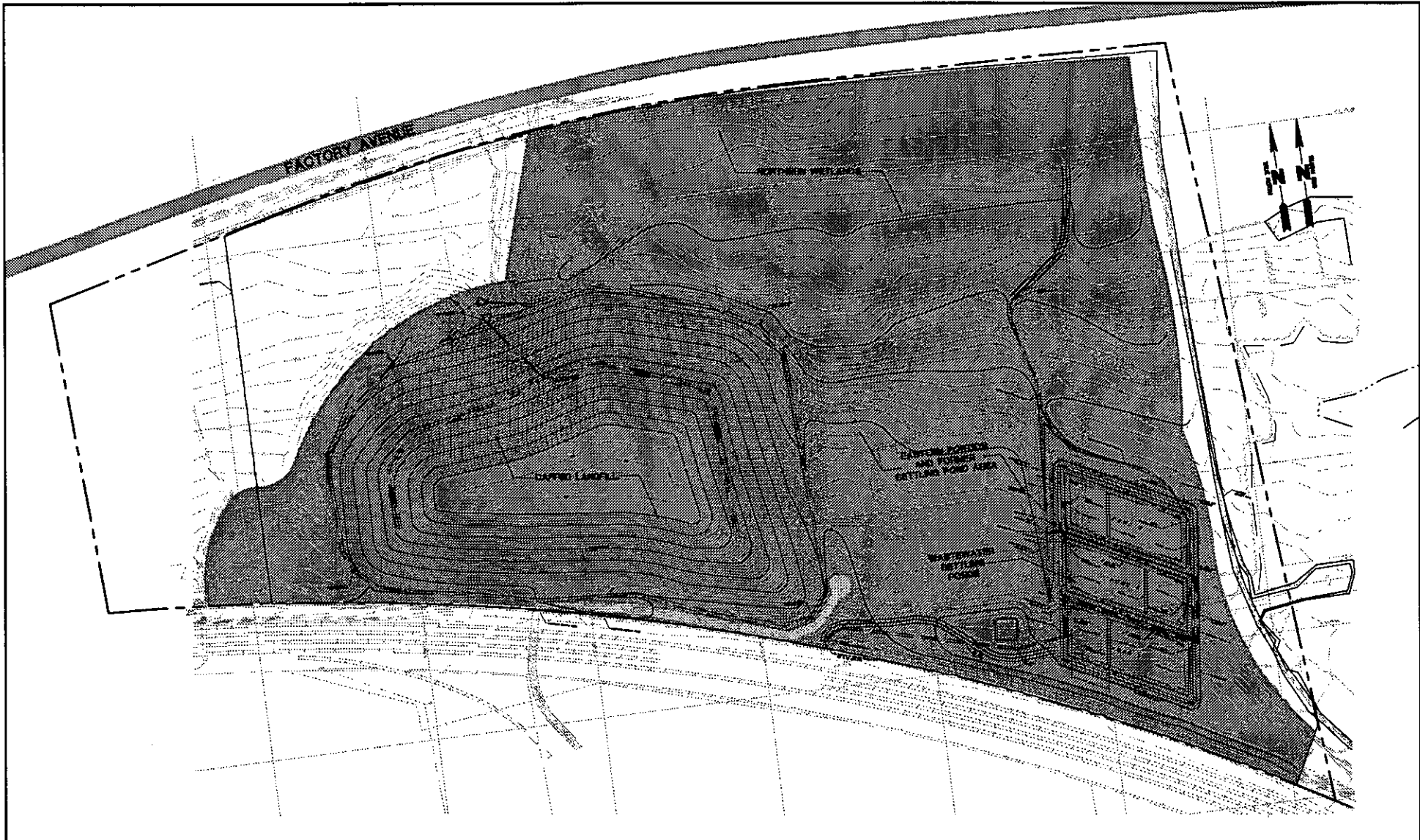
Exhibit B Order on Consent, Index A-0346-9609, The Pfaltzgraff Co Respondent

Exhibit C Legal description of the site

Exhibit D Legal Survey of the site

Appendices to Exhibit B:

Appendix A	Site Location Map
Appendix B	Order on Consent No. C7-5125-94-08
Appendix C	Record of Decision, Site No. 7-34-053, March 1996
Appendix D	Dept. approved remedial design; Letter of Remedial Engineering PC to Mr. Wayne D. Mizuerk of the NYS Dept. of Environmental Conservation dated 2-29-00; Specifications, Project Plans and Contract Documents dated 2-5-00 Volumes I & II, Site No. 7-34-053



LEGEND

---	EXISTING PROPERTY LINE	----	DESIGN DOWN CHUTE
---	APPROXIMATE LANDFILL LIMIT	----	FOUR
---	EXISTING EASEMENT	----	EXISTING MANHOLE RIM ELEVATION
-----454	DESIGN 1 FOOT CONTOUR	----	EXISTING UTILITY POLE WITH OVERHEAD WIRES
-----435	DESIGN 5 FOOT CONTOUR	----	EXISTING UNDERGROUND TELEPHONE CABLE MARKER
-----438	DESIGN SPOT ELEVATION	----	EXISTING GAS MARKER
-----408	PRE-EXISTING 1 FOOT CONTOUR	----	EXISTING POLYVINYL CHLORIDE CHLORIDE PIPE WITH DIAMETER
-----402	PRE-EXISTING 5 FOOT CONTOUR	----	EXISTING SURVEY MONUMENT SET 3-8-1980 CAPPED IRON ROD SET IN CONCRETE
-----	EXISTING RAILROAD TRACKS	----	EXISTING SANITARY SEWER MANHOLE
-----	EXISTING OVERHEAD ELECTRICAL TRANSMISSION WIRES	----	EXISTING PIPE INVERT ELEVATION
-----	EXISTING SUBSURFACE SANITARY SEWER WATERLINE	----	EXISTING CORRUGATED METAL PIPE WITH DIAMETER
-----	EXISTING APPROXIMATE LOCATION 24" WATERLINE	----	AREA TO BE RESTRICTED BELOW 2' BELOW GROUND SURFACE
-----	EXISTING GAS LINE LOCATION	----	AREA TO BE RESTRICTED BELOW 6' BELOW GROUND SURFACE
-----	EXISTING UNDERGROUND TELEPHONE LINE (FIBER OPTIC) LOCATION	----	

NOTES

- 1.) BASE MAP INFORMATION BASED ON PLAN ENTITLED: "MAP OF PARTIAL BOUNDARY & TOPOGRAPHIC SURVEY", PARCEL OF LAND, PART OF MILITARY LOT 16, TOWN OF SALINA, JANUARY 20, 1898, SCALE 1" = 50'. PROJECT 90006, PREPARED BY RYAN SURVEY, PORTER BUILDING, NORTHERN LIGHTS OFFICE PARK, SYRACUSE, NY 13204-3028.
- 2.) BASIS OF BEARINGS: TRUE NORTH, BASED ON CONTROL ESTABLISHED BY N.Y.S.D.O.T.
- 3.) NORTH & EAST COORDINATES AND BEARINGS IN PARENTHESIS () ARE REFERENCED TO THE CENTRAL ZONE OF THE NEW YORK STATE COORDINATE SYSTEM AS ESTABLISHED BY DIFFERENTIAL GPS METHODS.
- 4.) ELEVATION DATUM IS MEAN SEA LEVEL, BASED ON CONTROL ESTABLISHED BY U.S.G.S. (NOVD 29).
- 5.) PLAN BASED ON DESIGN DRAWINGS, AS-BUILT DRAWINGS NOT AVAILABLE, ACTUAL SITE FEATURES AND ELEVATIONS WILL VARY.

Title:			
SITE PLAN			
SYRACUSE CHINA REMEDIAL ACTION TOWN OF SALINA, ONONDAGA COUNTY, NEW YORK			
Prepared For:			
THE PFALTZGRAFF CO.			
REMEDIAL ENGINEERING, P.C. ENVIRONMENTAL ENGINEERS	Completed by: TS Prepared by: NM Project Mgr: MMH	Date: 09/22/03 Scale: AS SHOWN Office: NJ	FIGURE 1
	File No: 57701089	Project: 57701	

Exhibit A

DEED

\$ 15,500-

10471

P/L 28, (Mar)
T/O Salina

THE PFALTZGRAFF CO.,

GRANTOR

and

LG ACQUISITION CORP.,

GRANTEE

RECEIVED
\$ 15,500.
REAL ESTATE
OCT 17 1995
TRANSFER TAX
ONONDAGA
COUNTY
003068

BARGAIN AND SALE DEED
WITH COVENANT AGAINST GRANTOR'S ACTS

October 10, 1995

This instrument affects real and personal property situated, lying and being in the Town of Salina, State of New York, known as follows:

Section: 67
Volume:
Block: 01
Lot: 08.0, 09.0, 11.1 + 14.1.
TOWN OF SALINA

Oct 17 11 12 AM '95

RECORD AND RETURN TO:

Title No.: LTW 95-5046

Latham & Watkins
885 Third Avenue, Suite 1000
New York, New York 10022-4802
Attn: S.H. Spencer Compton, Esq.

Latham & Watkins File No.: 020742-0011

297

BARGAIN AND SALE DEED WITH COVENANT AGAINST GRANTOR'S ACTS

THIS BARGAIN AND SALE DEED WITH COVENANT AGAINST GRANTOR'S ACTS (the "Deed") is made as of October 10, 1995 (the "Effective Date"), between **THE PFALTZGRAFF CO.**, a Pennsylvania corporation, successor in interest to Ryacuss, Inc. and to Syracuse China Corporation, having an office at 140 East Market Street, York, Pennsylvania 17401 ("Grantor"), and **LG ACQUISITION CORP.**, a Delaware corporation, having an office at 420 Madison Avenue, Toledo, Ohio 43604 ("Grantee").

Grantor, in consideration of Ten Dollars and other good and valuable consideration paid by Grantee, does hereby grant and release to Grantee and Grantee's legal representatives, heirs, successors and assigns, forever:

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND situate, lying and being in the Town of Salina, County of Onondaga, State of New York, more particularly described in Exhibit A (the "Land"), which Land is commonly known as 2900 Court Street, Syracuse, New York;

TOGETHER WITH all buildings, parking structures, other structures, other improvements and fixtures erected, installed or located in, on or at the Land (collectively, the "Improvements");

TOGETHER WITH all of Grantor's right, title and interest, if any, in and to all easements, rights of way, and other rights appurtenant to the Land, and all of Grantor's right, title and interest, if any, in and to the land lying in the bed of any street or highway, opened or proposed, abutting, in front of or adjoining the Land, to the center line of such street or highway, and in and to any strips or gores abutting or adjacent to the Land;

TOGETHER WITH all of Grantor's right, title and interest, if any, in and to any award made or to be made in lieu thereof and in and to any unpaid award for damage to the Land by reason of change of grade or a closing of any such street or highway, together with all right, title and interest of, in and to any streets and roads abutting the Land;

TOGETHER WITH the appurtenances and all the estate and rights of Grantor in and to the Land and the Improvements (together, the "Premises");

TO HAVE AND TO HOLD the Premises, unto Grantee and Grantee's legal representatives, heirs, successors and assigns forever;

SUBJECT, HOWEVER, TO all those certain encumbrances described in Exhibit "B" (the "Permitted Encumbrances").

Grantor covenants that, except for the Permitted Encumbrances, Grantor has not done anything to encumber the Premises in any way whatsoever.

Grantor, in compliance with Section 13 of the New York Lien Law, covenants that Grantor will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will so apply the same before using any part of the total of the same for any other purpose.

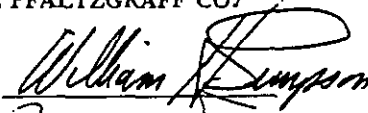
The Premises do not constitute all or substantially all of the assets of Grantor.

The words "Grantor" and "Grantee" shall be construed as if they read "Grantors" or "Grantees" (respectively) whenever the sense of this Deed so requires.

IN WITNESS WHEREOF, Grantor has caused this Deed to be signed by Grantor's duly authorized officer as of the Effective Date.

THE PFALTZGRAFF CO.

By:



Its:



Attachments:

Acknowledgment
Exhibit A = Legal Description
Exhibit B = Permitted Encumbrances

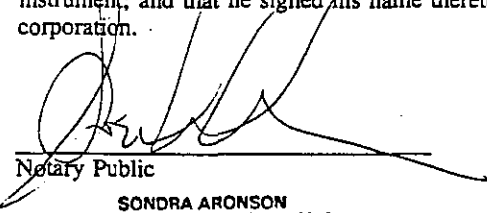
ACKNOWLEDGMENT

STATE OF NEW YORK)

) ss

COUNTY OF NEW YORK)

On the 10 day of Oct, 1995, before me personally came William H. Simpson, to me known, who, being by me duly sworn, did depose and say that he resides at 2532 Hempden Rd. York Pa; that he is the ~~Vice~~ President of THE PFALTZGRAFF CO., the corporation described in and which executed the above instrument; and that he signed his name thereto by authority of the board of directors of said corporation.



Notary Public

SONDRA ARONSON
Notary Public, State of New York
No. 30-4819171
Qualified in Nassau County
Commission Expires January 31, 1997

EXHIBIT A

PARCEL I

ALL that certain plot, piece or parcel of land, situate, lying and being in the Town of Salina, County of Onondaga and State of New York, bounded and described as follows:

28 (Man) BEGINNING at the point of intersection of the northerly side of Court Street and the division line between lands now or formerly of The Board of Education of Union Free School District and the premises herein described;

THENCE RUNNING from said point of beginning along last mentioned division line North 12 degrees 28 minutes 27 seconds East 181.74 feet and North 1 degree 04 minutes 08 seconds West 387.20 feet to a point;

THENCE RUNNING northerly from said point North 1 degree 11 minutes 01 seconds West 1004.76 feet to a point;

THENCE RUNNING westerly from said point South 88 degrees 48 minutes 49 seconds West 157.00 feet to a point on the division line between lands now or formerly of the Town of Salina and the premises herein described;

THENCE RUNNING along last mentioned division line North 1 degree 11 minutes 01 seconds West 543.86 feet and North 61 degrees 43 minutes 04 seconds West 157.65 feet to a point on the division line between lands now or formerly of Con-Rail (New York Central Railroad) and the premises herein described;

THENCE RUNNING along last mentioned division line along a curve to the right having a radius of 3770.32 feet a distance of 1502.06 feet to a point;

THENCE RUNNING still along the previously mentioned division line South 58 degrees 04 minutes 22 seconds East 1167.62 feet to a point on the division line between lands now or formerly of Syracuse Lighting Company, Inc. and the premises herein described;

THENCE RUNNING along last mentioned division line South 1 degree 20 minutes 03 seconds East 1047.43 feet and South 15 degrees 27 minutes 55 seconds West 415.41 feet to a point on the northerly
(Continued)

THENCE RUNNING along same the following three (3) courses and distances:

North 77 degrees 34 minutes 35 seconds West 3.97 feet;
North 77 degrees 14 minutes 00 seconds West 589.00 feet;
North 84 degrees 00 minutes 08 seconds West 857.10 feet to a point on the division line between lands now or formerly of Lyncourt Fire District and the premises herein described;

THENCE RUNNING along the last mentioned division line the following three (3) courses and distances:

North 1 degree 11 minutes 01 seconds West 165.77 feet;
South 88 degrees 48 minutes 59 seconds West 125.00 feet; and
South 1 degree 11 minutes 01 seconds East 165.38 feet to a point on the northerly side of Court Street;

THENCE RUNNING along same North 73 degrees 36 minutes 00 seconds West 109.00 feet to a point on the division line between lands now or formerly of Oliva Holding Company and the premises herein described;

THENCE RUNNING along last mentioned division line the following three (3) courses and distances:

North 24 degrees 26 minutes 36 seconds East 140.00 feet;
North 65 degrees 33 minutes 24 seconds West 200.00 feet; and
South 24 degrees 26 minutes 36 seconds West 140.00 feet to the northerly side of Court Street;

THENCE RUNNING along same North 65 degrees 33 minutes 24 seconds West 173.48 feet to the point or place of BEGINNING.

Less and excepting so much property conveyed by Syracuse China Corporation to the Lyncourt Fire District recorded in Liber 3712 cp 51, being more particularly bounded and described as follows:

ALL that tract or parcel of land, situate in the Town of Salina, County of Onondaga, and State of New York, being part of Subdivision No. 3 of Lot No. 28 in said Town, being part of Parcel II of lands conveyed by Syracuse China Corporation (formerly Onondaga Pottery Company) to Ryacuss, Inc. by deed dated September 30, 1971 and recorded in Onondaga County Clerk's Office October 1, 1971 in Book 2461 of Deeds at page 215 and being more particularly described as follows:

BEGINNING at a point in the north line of Court Street which point is also the southeast corner of lands conveyed to Oliva Holding Company, Inc. by deed dated March 18, 1975 and recorded in the Onondaga County Clerk's Office March 18, 1975 in Book 2550 of Deeds at page 764;

RUNNING THENCE north 24 degrees 26 minutes 36 seconds east 140.00

(Continued)

Legal Description (continued)

feet to a point in the northeast corner of land conveyed to Oliva Holding Company, Inc. by Book 2550 of Deeds page 764;

THENCE north 80 degrees 38 minutes 40 seconds east 43.80 feet to a point in the west line if extended northerly of lands conveyed to Lyncourt Fire District by deed dated March 5, 1970 and recorded in the Onondaga County Clerk's Office March 11, 1970 in Book 2423 of Deeds, page 985;

THENCE south 1 degree 11 minutes 01 seconds east, along the west line of Lyncourt Fire District 165.38 feet to the southwest corner of lands conveyed to Lyncourt Fire District by deed dated December 11, 1946 and recorded in the Onondaga County Clerk's Office March 18, 1947 in Book 1261 of Deeds page 608;

THENCE north 73 degrees 36 minutes 00 seconds west along the north line of Court Street 109.00 feet to the point of beginning.

ALL that tract or parcel of land, situate in the Town of Salina, County of Onondaga and State of New York, being part of Lot 28 in said Town and being more particularly bounded and described as follows:

BEGINNING at a point in the easterly line of lands conveyed to the Lyncourt Fire District by Deed as recorded in the Onondaga County Clerk's Office in Book of deeds 2296 at page 155 at its intersection with the northerly line of Map No. 19-R-1 Parcel 20 as acquired by the State of New York for highway purposes for the reconstruction of Court Street;

THENCE north 1 degree 11 minutes 01 seconds west along the easterly line of said lands of Lyncourt Fire District and its extension northerly, a distance of 165.77 feet to a point at the northeasterly corner of lands conveyed to the Lyncourt Fire District by Deed as recorded in the Onondaga County Clerk's Office in Book of Deeds 2423 at Page 985;

THENCE north 88 degrees 48 minutes 59 seconds east a distance of 21.00 feet to a point;

THENCE south 1 degree 11 minutes 01 seconds east a distance of 168.42 feet to a point in the northerly line of the aforementioned Parcel 20 a distance of 21.17 feet to the point and place of beginning.

PARCEL II

ALL that certain plot, piece or parcel of land, situate, lying and being in the Town of Salina, County of Onondaga and State of New York more particularly bounded and described as follows:

BEGINNING at the point of intersection of the southerly side of Factory Avenue and the division line between lands now or formerly of the Syracuse Lighting Company and the premises herein described;

(Continued)

Legal Description (continued)

THENCE RUNNING along last mentioned division line South 1 degree 20 minutes 03 seconds East 1545.16 feet to a point on the division line between lands now or formerly of Con-Rail (New York Central Railroad) and the premises herein described;

THENCE RUNNING along last mentioned division line North 58 degrees 04 minutes 22 seconds West 1012.99 feet to a point of curve;

THENCE RUNNING along a curve to the left having a radius of 3869.32 feet a distance of 2060.63 feet to a point on the division line between lands now or formerly of D.O.T. Realty, Inc. and the premises herein described;

THENCE RUNNING along last mentioned division line North 1 degree 11 minutes 01 seconds West 412.21 feet to the southerly side of Factory Avenue;

THENCE RUNNING along same North 77 degrees 44 minutes 59 seconds East 575.44 feet to a point of curve;

THENCE RUNNING along a curve to the right having a radius of 2890.28 feet a distance of 779.79 feet to a point;

THENCE RUNNING still along the southerly side of Factory Avenue South 86 degrees 47 minutes 31 seconds East 558.02 feet to a point of curve;

THENCE still along the southerly side of Factory Avenue along a curve to the right having a radius of 4448.35 feet a distance of 786.74 feet to a point;

THENCE RUNNING still along the southerly side of Factory Avenue South 76 degrees 39 minutes 31 seconds East 114.11 feet to the point or place of BEGINNING.

Less and excepting so much of the premises conveyed by Syracuse China Corporation formerly known as Rycuss, Inc. to DOT Realty Inc. as recorded in Liber 3676 cp 1, being more particularly bounded and described as follows:

ALL that tract or parcel of land, situate in the Town of Salina, County of Onondaga and State of New York, being part of Lot No. 19 in said Town, being part of Parcel I of lands conveyed by Syracuse China Corporation (formerly Onondaga Pottery Company) to Rycuss, Inc. by deed dated September 30, 1971 and recorded in Onondaga County Clerk's Office October 1, 1971 in Book 2461 of Deeds at page 215 and being more particularly described as follows:

BEGINNING at the intersection of the southerly boundary of Factory Avenue (C.R. No. 93) with the division line between lands conveyed by Edmund Schilling to DOT Realty, Inc. by deed dated December 6, 1978 and recorded in Onondaga County Clerk's Office

(Continued)

Legal Description (continued)

BOOK 4034 PAGE 0268

December 7, 1978 in Book 2684 of Deeds at page 46 on the west and said Parcel I of lands conveyed to Ryacuss, Inc. on the east;

RUNNING THENCE north 75 degrees 22 minutes 30 seconds east along said southerly boundary of Factory Avenue, a distance of 203.00 feet to a point therein;

THENCE south 03 degrees 33 minutes 30 seconds east through said Parcel I of lands conveyed to Ryacuss, Inc., a distance of 465.37 feet to the northerly boundary of lands conveyed to Consolidated Rail Corporation;

THENCE westerly along said northerly boundary of lands conveyed to Consolidated Rail Corporation, following a curve to the left, having a radius of 3869.33 feet, an arc distance of 199.75 feet to the aforementioned division line between lands conveyed to DOT Realty, Inc. on the west and Parcel I of lands conveyed to Ryacuss, Inc. on the east;

THENCE north 03 degrees 33 minutes 30 seconds west along said division line between lands conveyed to DOT Realty, Inc. on the west and Parcel I of lands conveyed to Ryacuss, Inc. on the east a distance of 412.21 feet to the point of beginning.

EXHIBIT B

PERMITTED EXCEPTIONS

Consent recorded in Liber 536 cp 464.

Covenants and Restrictions recorded in Liber 536 cp 433
with right of reversion therein.

Utility Company right of way recorded in Liber 557 cp 79
with right of reversion contained therein.

Utility Company right of way recorded in Liber 572 cp 106
with right of reversion contained therein.

Utility Company right of way recorded in Liber 607 cp 126
with right of reversion contained therein.

Sewer Easement to the County of Onondaga recorded in Liber
814 cp 76.

Sanitary Sewer Easement to the County of Onondaga recorded
in Liber 854 cp 43.

Right of Way Map recorded in Liber 1026 cp 368.

Utility Company Right of Way recorded in Liber 1026 cp
363.

Reservations and easement recitations, mining rights recorded in Liber 1454 cp 425.

Water Company right of way recorded in Liber 1900 cp 195.

Recitations and reservations recorded in Liber 2491 cp 232.

Access Easement recorded in Liber 2570 cp 274.

Drainage Easement recorded in Liber 2583 cp 620.

Utility Company right of way recorded in Liber 3541 cp 318.

Easements as shown on the Official Tax Map for the Town of Salina.

Deed, Recorded on the
17 day of Oct 1995
11:38 AM in Book 4034 Page 260
and examined.

James T. Hays

COUNTY CLERK
CRONOGA COUNTY CLERKS OFFICE

+

In the Matter of the
Development and Implementation
of a Remedial Program for an
Inactive Hazardous Waste Disposal
Site Under Article 27, Title 13
and Article 71, Title 27 of the
Environmental Conservation Law
of the State of New York by

Exhibit B

ORDER
ON
CONSENT

INDEX # A-0346-9609

THE PFALTZGRAFF CO.
Respondent

Site Code # 7-34-053

WHEREAS,

1. The New York State Department of Environmental Conservation (the "Department") is responsible for enforcement of Article 27, Title 13 of the Environmental Conservation Law of the State of New York ("ECL"), entitled "Inactive Hazardous Waste Disposal Sites." This Order is issued pursuant to the Department's authority under, inter alia, ECL Article 27, Title 13 and ECL 3-0301.
2. The Pfaltzgraff Co. ("Respondent"), is a corporation organized under the laws of the Commonwealth of Pennsylvania. Between 1989 and 1995, Respondent operated a china manufacturing facility at 2900 Court Street, City of Syracuse, Onondaga County, New York. On the northern portion of the facility is an area which was used as an industrial landfill from about 1940 until 1994 (the "Site"). A Site map is attached hereto as Appendix "A."
3. The Department alleges that the Site is an inactive hazardous waste disposal site, as that term is defined at ECL 27-1301.2. The Site has been listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Syracuse China with Site Number 7-34-053. The Department has classified the Site as a Classification "2" pursuant to ECL 27-1305.4.b.
4. A. Pursuant to ECL 27-1313.3.a, whenever the Commissioner of Environmental Conservation (the "Commissioner") "finds that hazardous wastes at an inactive hazardous waste disposal site constitute a significant threat to the environment, he may order the owner of such site and/or any person responsible for the disposal of hazardous wastes at such site (i) to develop an inactive hazardous waste disposal site remedial program, subject to the approval of the department, at such site, and (ii) to implement such program within reasonable time limits specified in the order."
 - B. Any person under order pursuant to ECL 27-1313.3.a has a duty imposed by ECL Article 27, Title 13 to carry out the remedial program committed to under order. ECL 71-2705 provides that any person who fails to perform any duty imposed by ECL Article 27, Title 13 shall be liable for civil, administrative and/or criminal sanctions.
 - C. The Department also has the power, inter alia, to provide for the prevention and abatement of all water, land, and air pollution. See, e.g., ECL 3-0301.1.i.

5. Respondent entered into a Remedial Investigation/Feasibility Study ("RI/FS") Order on Consent, Index No. A601408802, for this Site with the Department dated October 28, 1994. Prior to the issuance of the Record of Decision ("ROD") by the Department for this Site and subsequent to the completion of the RI/FS, Respondent entered into Order on Consent No. C7-5125-94-08, with the Department on October 5, 1995, thereby resolving Respondent's liability for penalties regarding past alleged violations of the ECL related to the handling and disposal of hazardous wastes at the Site. A copy of Order on Consent No. C7-5125-94-08 is attached hereto as Appendix "B." Subparagraph III.A. of this Order, inter alia, contemplates that the parties will enter into an RD/RA Order on Consent within two (2) years of October 6, 1995, the effective date of Order on Consent No. C7-5125-94-08.

6. Following a period of public comment, the Department selected a final remedial alternative for the Site in a ROD. The ROD, attached to this Order as Appendix "C," is incorporated as an enforceable part of this Order.

7. The Department and Respondent agree that the goals of this Order are for Respondent to (i) develop and implement, in accordance with the ROD, an inactive hazardous waste disposal site remedial program ("Remedial Program") for the Site that includes design, implementation, operation, maintenance and monitoring of the selected remedial alternative; and (ii) reimburse the State's administrative costs as provided in this Order.

8. Respondent, out of a desire to further the public interest in providing a remedy which will protect human health and the environment at and in the vicinity of the Site, has agreed, without admission or finding of liability, fault, wrongdoing, or violation of any law, regulation, permit, order or requirement of any kind whatsoever, to develop and implement the Remedial Program in accordance with the terms of this Order.

9. Respondent, having waived Respondent's right to a hearing herein as provided by law, and having consented to the issuance and entry of this Order, agrees to be bound by its terms. Respondent consents to and agrees not to contest the authority or jurisdiction of the Department to issue or enforce this Order, and agrees not to contest the validity of this Order or its terms.

NOW, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. Remedial Design

A. Respondent has prepared and submitted to the Department a remedial design to implement the remedial alternative for the Site selected by the Department in the ROD (the "Remedial Design"). The Remedial Design includes a health and safety plan, and requires the preparation of other health and safety plans, for the protection of persons at and in the vicinity of the Site during construction and after completion of construction. The plan included in the Remedial Design has been, and all other health and safety plans required in the Remedial Design will be, prepared in accordance with 29 CFR 1910 by a certified health and safety professional. The Remedial Design also includes a scope of work for operation and maintenance and a contingency plan to be implemented if any element of the Remedial Design fails to achieve any of its objectives or otherwise fails to protect human health or the environment. The Remedial Design has been prepared by and has the signature and seal of a professional engineer licensed to practice engineering in the State of New York, who certifies that the Remedial Design was

prepared in accordance with this Order. The Remedial Program, including the Remedial Design, is hereby approved concurrently with the execution of this Order by the Commissioner or his designee. The Department-approved Remedial Design is attached to this Order as Appendix "D" and incorporated as an enforceable part of this Order.

B. Respondent shall implement the Remedial Design in accordance with the Department-approved Remedial Design.

II. Remedial Construction

A. By no later than June 1, 2000, Respondent shall commence implementation of the Department-approved Remedial Design ("Remedial Construction"). Respondent may retain its own consultant and/or contractors to implement the Remedial Design. Respondent and/or its consultant may retain other consultants and/or contractors and laboratories to assist the implementation.

B. 1. During implementation of all construction activities identified in the Remedial Design, Respondent or its consultant shall have on-Site a full-time representative who is qualified to supervise the work done.

2. Before its acceptance and approval of the engineer's certification that construction was completed in accordance with the approved Remedial Design, the Department may require Respondent to modify the Remedial Design and Remedial Construction if the Department determines that such modification is necessary due to:

a. environmental conditions on-Site or off-Site which are related to the disposal of hazardous wastes at the Site and were unknown to the Department at the time of its approval of the Remedial Design, or

b. information received, in whole or in part, after the Department's approval of the Remedial Design,

which unknown environmental conditions or which information (i) are related to the disposal of hazardous wastes, or commingled with such wastes, at the Site as set forth in the ROD, (ii) for which Respondent is liable under Article 27, Title 13, of the ECL or the Comprehensive Environmental Response, Compensation and Liability Act, and (iii) indicate that the Remedial Program is not protective of human health or the environment. The Department shall notify Respondent of such environmental conditions or information and its basis for determining that the Remedial Program is not protective of human health and the environment.

Notwithstanding anything to the contrary, and solely for the purposes of this Order and any investigation, remediation or other activity whatsoever to be conducted pursuant to this Order, the term "off-Site" is not intended to include, and does not include, Onondaga Lake, its tributaries, including but not limited to Ley Creek, the upland sites which have contributed or are contributing hazardous substances to the Lake, or any other properties now or hereafter designated as or determined to be sub-sites of Onondaga Lake, and, therefore, Respondent may not be required to investigate, remediate or address in any way any such areas under this Order.

C. Within 60 days after completion of the construction activities identified in the Department-approved Remedial Design, Respondent shall submit to the Department a detailed post-remedial operation and maintenance plan ("O&M Plan"); "as-built" drawings and a final engineering report (each including all changes made to the Remedial Design during construction); and a certification that the Remedial Design was implemented and that all construction activities were completed in accordance with the Department-approved Remedial Design and were personally witnessed by him or her or by a person under his or her direct supervision. The O&M Plan, "as built" drawings, final engineering report, and certification must be prepared, signed, and sealed by a professional engineer licensed to practice engineering in the State of New York.

D. Upon the Department's approval of the O&M Plan, Respondent shall implement the O&M Plan in accordance with the requirements of the Department-approved O&M Plan.

E. Within 90 days after receipt of the "as-built" drawings, final engineering report, and certification, the Department shall notify Respondent in writing whether the Department approves the final engineering report, which report shall be approved if the Department is satisfied that all construction activities have been completed in compliance with the Department-approved Remedial Design.

F. If the Department determines that any element of the Department-approved Remedial Program fails to achieve its objectives or otherwise fails to protect human health or the environment, Respondent shall take whatever action the Department determines necessary to achieve those objectives or to ensure that the Remedial Program otherwise protects human health and the environment. If the Department determines that an element of the Department-approved Remedial Program fails to achieve its objectives or otherwise fails to protect human health or the environment, Respondent may invoke the dispute resolution provisions of Paragraph V of this Order to demonstrate that such element of the Department-approved Remedial Program achieves its objectives or otherwise protects human health or the environment.

III. Progress Reports

Respondent shall submit to the parties identified in Subparagraph XII.B in the numbers specified therein copies of written progress reports that:

A. describe the actions which have been taken toward achieving compliance with this Order since the previous report;

B. include all results of sampling and tests and all other data received or generated by Respondent or Respondent's contractors or agents since the previous report, including quality assurance/quality control information, whether conducted pursuant to this Order or conducted independently by Respondent;

C. identify all work plans, reports, and other deliverables required by this Order that were completed and submitted since the previous report;

D. describe all actions, including, but not limited to, data collection and implementation of the Remedial Design, that are scheduled for the next reporting period and provide other information relating to the progress at the Site;

E. include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of Respondent's obligations under the Order, and efforts made to mitigate those delays or anticipated delays;

F. include any modifications to the Remedial Design that Respondent has proposed to the Department or that the Department has approved; and

G. describe all activities undertaken in support of the citizen participation plan which is included in the Department-approved Remedial Design during the previous reporting period and those to be undertaken in the next reporting period.

During the time that actual construction activities are taking place, progress reports shall be submitted on a monthly basis. At all other times, progress reports shall be submitted on a quarterly basis. Respondent shall submit these progress reports to the Department by the tenth day after the end of every month or the tenth day after the end of every third month, as the case may be, following the effective date of the Order.

Respondent also shall allow the Department to attend, and shall provide the Department at least seven days advance notice of, any of the following: prebid meetings, job progress meetings, substantial completion meeting and inspection, and final inspection and meeting; provided, however, that nothing in this Order shall afford the Department the right to attend or to have notice of any strategy meetings, any meetings arranged by legal counsel, or any meetings at which privileged mental impressions, conclusions, opinions or legal theories are anticipated to be discussed.

IV. Review of Submittals

A. 1. The Department shall review each of the submittals Respondent makes pursuant to this Order, including, but not limited to, submittals made pursuant to Paragraph II, to determine whether it was prepared, and whether the work done to generate the data and other information in the submittal was done, in accordance with this Order and generally accepted technical and scientific principles. Based on such review, the Department shall notify Respondent in writing of its approval or disapproval of the submittal, except for the progress reports. All Department-approved submittals shall be incorporated into and become an enforceable part of this Order.

2. a. If the Department disapproves a submittal, it shall so notify Respondent in writing and shall specify the reasons for its disapproval. Within 30 days after receiving written notice that Respondent's submittal has been disapproved, Respondent shall make a revised submittal to the Department that addresses and resolves all of the Department's stated reasons for disapproving the first submittal.

b. After receipt of the revised submittal, the Department shall notify Respondent in writing of its approval or disapproval. If the Department disapproves the revised

submittal, Respondent may notify the Department within 10 days of receipt of notification of disapproval from the Department that it will further revise the submittal, and Respondent may submit one further revised submittal within 21 days of receipt of notification of disapproval from the Department. If the Department disapproves the revised submittal and no further revised submittal is made, or if the Department disapproves the further revised submittal once made, Respondent shall be in violation of this Order and the Department may take any action or pursue whatever rights it has pursuant to any provision of statutory or common law, subject to the dispute resolution terms of this Order. If the Department approves the revised submittal or the further revised submittal, it shall be incorporated into and become an enforceable part of this Order.

B. Respondent shall modify and/or amplify and expand a submittal upon the Department's direction to do so if the Department determines, as a result of reviewing data generated by an activity required under this Order or as a result of reviewing any other data or facts, that further work is necessary in order to protect human health or the environment ; provided, however, that the dispute resolution terms of this Order shall be applicable to this Subparagraph IV.B.

V. Dispute Resolution

A. Respondent's failure to comply with any term of this Order constitutes a violation of this Order and the ECL, (1) subject to Respondent's right to contest, defend against, dispute or disprove any such claim, assertion or allegation and to Respondent's rights under Subparagraph IX.C of this Order, (2) subject to the provisions of Subparagraph V.B with respect to disputes arising over (a) whether an element of the Department-approved Remedial Program achieves its objectives or otherwise protects human health or the environment pursuant to Subparagraph II.F of this Order, and (b) the approvability by the Department of a submittal of Respondent pursuant to Paragraph IV of this Order, and (3) subject to the provisions of Subparagraph V.C with respect to disputes arising over the reimbursement by Respondent of State costs pursuant to Paragraph VIII of this Order. Nothing in this Order shall be construed to allow the consideration or resolution of any dispute regarding the ROD or any of its provisions.

B. 1. If the Department (a) determines that an element of the Department-approved Remedial Program fails to achieve its objectives or otherwise fails to protect human health or the environment, or (b) disapproves a submittal of Respondent pursuant to this Order or any revised submittal made pursuant to Subparagraph IV.A.2, Respondent shall be in violation of this Order, subject to the terms of Subparagraph V.A above, unless, within 10 business days of receipt of the Department's notice of disapproval, Respondent serves on the Department a request for an appointment of an Administrative Law Judge ("ALJ"), and a written statement of the issues in dispute, the relevant facts upon which the dispute is based, and factual data, analysis or opinion supporting its position, and all supporting documentation on which Respondent relies (hereinafter called the "Statement of Position"). The Department shall serve its Statement of Position, including supporting documentation, no later than ten (10) business days after receipt of Respondent's Statement of Position. Respondent shall have five (5) business days after receipt of the Department's Statement of Position within which to serve upon the Department a reply to the Department's Statement of Position, and in the event Respondent serves such a reply, the Department shall have five (5) business days after receipt of Respondent's reply to the

Department's Statement of Position within which to serve upon Respondent the Department's reply to Respondent's reply to the Department's Statement of Position. In the event that the periods for exchange of Statements of Position and replies may cause a delay in the work being performed under this Order, the time periods for exchange of Statements of Position may be shortened upon and in accordance with notice by the Department as agreed to by Respondent.

2. The Department shall maintain an administrative record of any dispute under this Paragraph. The record shall include the Statement of Position of each party served pursuant to the preceding Subparagraph, and any relevant information. The record shall be available for review of all parties and the public.

3. Upon review of the administrative record as developed pursuant to this Paragraph, the ALJ shall issue a final decision and order resolving the dispute. Respondent shall comply with the ALJ's final decision and order resolving the dispute.

4. After review of Respondent's action taken pursuant to the ALJ's decision and order resolving the dispute, the Department shall notify Respondent in writing of its approval or disapproval of such action taken, which approval or disapproval shall be based upon the final decision and order of the ALJ resolving the dispute. If the action taken by Respondent is not in compliance with the final decision and order of the ALJ resolving the dispute, Respondent shall be in violation of this Order and the ECL. In review by the ALJ of any dispute pursued under this Paragraph, Respondent shall have the burden of proving that the Department's position should not prevail.

5. The invocation of the procedures stated in this Subparagraph V.B shall not extend, postpone, or modify Respondent's obligations under this Order with respect to any disputed items, unless and until the Department agrees or the ALJ or a court determines otherwise. The invocation of the procedures stated in this Subparagraph V.B shall constitute an election of remedies by Respondent, and such election of this remedy shall constitute a waiver of any and all other remedies which may otherwise be available to Respondent regarding the issue in dispute. Notwithstanding the foregoing, Respondent's rights granted pursuant to Article 78 of the Civil Practice Law and Rules ("CPLR") are unaffected by the provisions of this Subparagraph V.B, provided that the Article 78 proceeding is commenced within 30 days.

C. 1. The dispute resolution procedure of this Subparagraph, which pertains to Paragraph VIII (Payment of State Costs), applies to payment of State costs solely on the following grounds: (1) the cost documentation contains clerical errors; or (2) the costs are not related to the Department's activities concerning the Site; or (3) the costs are not reasonably related to the project.

2. If within 30 days after receipt of an itemized invoice from the Department for reimbursement of State costs as called for in Paragraph VIII (Payment of State Costs) of this Order, Respondent fails to pay the sum indicated in said itemized invoice solely for any or all of the reasons enumerated in Subparagraph V.C.1 of this Order, Respondent shall be in violation of this Order, subject to the terms of Subparagraph V.A of this Order, unless, within 30 days following Respondent's receipt of said itemized invoice from the Department, Respondent requests to meet with the Director of the Division of Environmental Remediation (the "Director") in order to discuss Respondent's basis for its refusal to pay said itemized invoice, and

the Respondent is available to meet immediately thereafter. At this meeting, Respondent shall be given an opportunity to present its objections to the payment of said itemized invoice, and the Director shall have the authority to modify and/or withdraw said itemized invoice. If Respondent subsequently fails to pay said itemized invoice in the amount and within the time period for payment determined by the Director, then Respondent shall be in violation of this Order and the ECL, and the Department may take any action or pursue whatever rights it has pursuant to any provisions of statutory or common law.

3. The invocation of the formal dispute resolution procedures under this Subparagraph V.C shall not of itself extend, postpone or affect in any way any of Respondent's obligations under this Order. The invocation of the procedures stated in this Subparagraph V.C shall constitute an election of remedies by Respondent, and such election of this remedy shall constitute a waiver of any and all other remedies which may otherwise be available to Respondent regarding the issue in dispute. Notwithstanding the foregoing, Respondent's rights granted pursuant to Article 78 of the CPLR are unaffected by the provisions of this Subparagraph V.C, provided that the Article 78 proceeding is commenced within 30 days.

VI. Compliance

A. Respondent's failure to comply with any term of this Order constitutes a violation of this Order and the ECL, subject to Respondent's right to contest, defend against, dispute or disprove any such claim, assertion or allegation and to Respondent's rights under Paragraph V and Subparagraph IX.C of this Order. The Department's assertion of any such violation on the part of Respondent shall not prejudice Respondent's right to contest any allegation by the Department that Respondent has violated or defaulted or failed to perform under this Order. In any administrative adjudicatory proceeding commenced by the Department, the Department shall provide Respondent with written notice of any alleged violation of this Order and/or the ECL and with an opportunity for a hearing thereon.

B. Respondent shall not suffer any penalty under this Order or the ECL or be subject to any proceeding or action if it cannot comply with any requirement hereof because of an act of God, war, riot, or an unforeseeable disaster arising exclusively from natural causes which the exercise of ordinary human prudence could not have prevented, or other events beyond Respondent's control. Respondent shall, within five business days of when it obtains knowledge of any such condition, notify the Department in writing. Respondent shall include in such notice the measures taken and to be taken by Respondent to prevent or minimize any delays and shall request an appropriate extension or modification of this Order. Failure to give such notice within such five business day period constitutes a waiver of any claim that a delay is not subject to penalties. Respondent shall have the burden of proving that an event is a defense to compliance with this Order pursuant to this Subparagraph VI.B.

VII. Entry upon Site

Upon reasonable notice under the circumstances presented, Respondent hereby consents to the entry upon the Site or areas in the vicinity of the Site which may be under the control of Respondent by any duly designated employee, consultant, contractor, or agent of the Department or any State agency for purposes of inspection, sampling, and testing and to ensure Respondent's

compliance with this Order. Representatives of the Department or other State agency shall abide by the health and safety rules in effect for work performed at the Site. During construction performed pursuant to the Remedial Design, Respondent shall upon request provide the Department with suitable office space at the Site, including access to a desk, telephone and facsimile machine, and shall permit the Department full access to all records relating to matters addressed by this Order and job meetings, subject to the provisions of Paragraph III of this Order. Respondent shall not be required under this Order to submit any portions of records and/or information that would disclose privileged mental impressions, conclusions, opinions, or legal theories, as provided for by applicable New York law.

VIII. Payment of State Costs

A. Within 30 days after receipt of an itemized invoice from the Department, unless Respondent invokes with regard to the amounts claimed by the Department the provisions of Subparagraph V.C (Dispute Resolution) of this Order, Respondent shall pay to the Department a sum of money which shall represent reimbursement for the State's expenses including, but not limited to, direct labor, fringe benefits, indirect costs, travel, analytical costs, and contractor costs incurred by the State of New York for work related to the Site to the effective date of this Order, as well as for reviewing and revising submittals made pursuant to this Order, overseeing activities conducted pursuant to this Order, collecting and analyzing samples, and administrative costs associated with this Order. Such payment shall be made by certified check payable to the Department of Environmental Conservation and shall be sent to:

Bureau of Program Management
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010.

Personal service costs shall be documented by reports of Direct Personal Service, which shall identify the employee name, title, biweekly salary, and time spent (in hours) on the project during the billing period, as identified by an assigned time and activity code. Approved agency fringe benefit and indirect cost rates shall be applied. Non-personal service costs shall be summarized by category of expense (e.g., supplies, materials, travel, contractual) and shall be documented by expenditure reports.

B. Reimbursement by Respondent of past State costs incurred by the New York State Departments of Environmental Conservation and Health up to and including the effective date of this Order, as defined in Subparagraph XV.N of the Order, is capped at Sixty-Three Thousand (\$63,000.00) Dollars. Reimbursement by Respondent of future State costs incurred by the New York State Departments of Environmental Conservation and Health after the effective date of this Order, as defined in Subparagraph XV.N of the Order, is capped at One Hundred Thousand (\$100,000.00) Dollars during the implementation of the Remedial Program, provided that implementation of the Department – approved Remedial Design:

1. Commences by no later than June 1, 2000;
2. Is conducted for a period no longer than eight months, which need not be consecutive; and
3. Is completed by no later than April 30, 2001.

In the event that Respondent fails to fulfill one or more of the three conditions set forth in the preceding sentence, then the cap for reimbursement by Respondent as provided in the preceding sentence shall be One Hundred Fifty Thousand (\$150,000.00) Dollars.

Reimbursement by Respondent of future State costs incurred by the New York State Departments of Environmental Conservation and Health after the effective date of this Order, as defined in Subparagraph XV. N of the Order, and during the operation and maintenance (O&M) of the selected remedial alternative is capped at Five Thousand (\$5,000.00) Dollars per calendar year. The Department may aggregate its billing of these future State costs for more than one year.

C. As provided for in Subparagraph V.C.1 of this Order, Respondent can seek dispute resolution for reimbursement of State costs solely on the following grounds: (1) the cost documentation contains clerical errors; or (2) the costs are not related to the Department's activities concerning the Site; or (3) the costs are not reasonably related to the project. The dispute resolution procedure covering reimbursement by Respondent of State costs is contained in Subparagraph V.C.2 of this Order.

D. Respondent shall not be subject to the special assessments set forth in ECL Section 27-0923 for activities conducted pursuant to this Order.

IX. Reservation of Rights

A. Except as otherwise provided in this Order, nothing contained in this Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's rights (including, but not limited to, nor exemplified by, the right to seek to recover natural resource damages) with respect to any party, including Respondent.

B. Nothing contained in this Order shall be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers.

C. Notwithstanding anything to the contrary, Respondent reserves any rights it may have to contest, defend against, dispute or disprove any actions, proceedings, allegations, assertions, determinations, or orders of the Department, including, but not limited to, any such rights: relative to the Department's disapproval, if any, of the final engineering report submitted pursuant to Subparagraph II.C of this Order, relative to the Department's determination, if any, pursuant to Subparagraph II.B.2, Subparagraph II.F or Paragraph XIV of this Order, or relative to any issue involving Respondent's failure to comply with any term of this Order (including Respondent's non-compliance with the activities and submittals required by this Order); provided, however, that Respondent shall not have the right to contest the authority or jurisdiction of the Department to enter into or enforce this Order or to challenge the validity of this Order or its terms. Respondent reserves its right to notice, to be heard, to appeal, and to any

other due process in any action or proceeding by the Department, including any action or proceeding pursuant to or to enforce this Order. The existence of this Order or the fact that Respondent participated in activities pursuant to this Order shall not constitute, be construed as, nor be considered an admission of liability, fault, wrongdoing, or violation of any law, regulation, permit, order or requirement by Respondent, and shall not give rise to any presumption of law or finding of fact or create any rights which shall inure to the benefit of any third party.

X. Indemnification

A. Respondent shall indemnify and hold the Department, the State of New York, and their representatives and employees harmless for all claims, suits, actions, damages, and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of this Order by Respondent and/or any of Respondent's directors, officers, employees, servants, agents, successors, and assigns; provided, however, that Respondent shall not be required to indemnify the Department, the State of New York, and their representatives and employees regarding any liability arising from unlawful, grossly negligent, reckless or intentionally tortious acts or omissions of the Department, the State of New York, or their representatives or employees.

B. Respondent expressly reserves any and all rights of contribution and indemnity it has against any and all potentially responsible parties and against other persons not signatories to this Order for costs Respondent has incurred, and will incur in the future, to conduct work relating in any way whatsoever to the Site, including, but not limited to, work contemplated by this Order.

XI. Declaration of Covenants and Restrictions

A. Within 60 days after the effective date of this Order, Respondent shall use its best efforts to cause the owner of the Site to file a Declaration of Covenants and Restrictions to run with the land with the Onondaga County Clerk to give all parties who may acquire any interest in the Site notice of this Order and that shall limit the use of the Site consistent with the response program without the express written waiver of such prohibition by the Department, or if at such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department. Such instrument will also include a provision that the current owner, on behalf of itself and its successors and assigns, hereby consents to the Department's authority and jurisdiction to pursue enforcement, or if at any such time the Department shall no longer exist, any New York State department, bureau, or other entity replacing the Department, of the prohibitions and restrictions that this Paragraph XI requires to be recorded. Respondent shall provide the Department with a copy of such instrument certified by the Onondaga County Clerk to be a true and faithful copy of the instrument as recorded in the Office of the Onondaga County Clerk.

B. If Respondent has used its best efforts to cause the owner of the Site to file a Declaration of Covenants and Restrictions but has failed, Respondent shall submit a letter to the Department setting forth that fact and providing a statement of the efforts that Respondent has made.

XII. Communications

A. All written communications required by this Order shall be transmitted by United States Postal Service, by private courier service, or hand delivered as follows:

1. Communication from Respondent shall be sent to:

George Harris, P.E.
Section Chief - Bureau of Construction Services
Western Field Services Section
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

with copies to:

G. Anders Carlson, Ph.D.
Director, Bureau of Environmental Exposure Investigation
New York State Department of Health
2 University Place
Albany, New York 12203

Dale A. Desnoyers, Esq.
Bureau of State Superfund and Voluntary Cleanup
NYS Department of Environmental Conservation
Division of Environmental Enforcement
50 Wolf Road
Rm. 410A
Albany, NY 12233

Henri Hamel
Syracuse Field Unit
New York State Department of Health
217 Salina Street
Syracuse, New York 13202-3592

Charles Branagh, P.E.
Regional Engineer
New York State Department of Environmental Conservation
Region 7 Office
615 Erie Boulevard West
Syracuse, New York 13204-2400

2. Communication to be made from the Department to Respondent shall be sent to:

W. Edwin Jackson, Esq.
Assistant General Counsel
The Pfaltzgraff Company
140 East Market Street
York, Pennsylvania 17401

John L. Greenthal, Esq.
Nixon Peabody LLP
One KeyCorp Plaza
Albany, New York 12207-3497

B. Copies of work plans and reports shall be submitted as follows:

Four copies (one unbound) to:

George Harris, P.E.
Section Chief - Bureau of Construction Services
Western Field Services Section
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

Two copies to:

G. Anders Carlson, Ph.D.
Director, Bureau of Environmental Exposure Investigation
New York State Department of Health
2 University Place
Albany, New York 12203

One copy each to:

Henri Hamel
Syracuse Field Unit
New York State Department of Health
217 Salina Street
Syracuse, New York 13202-3592

Charles Branagh, P.E.
Regional Engineer
New York State Department of Environmental Conservation
Region 7 Office
615 Erie Boulevard West
Syracuse, New York 13204-2400

Dale A. Desnoyers, Esq.
Bureau of State Superfund and Voluntary Cleanup
NYS Department of Environmental Conservation
Division of Environmental Enforcement
50 Wolf Road
Rm. 410A
Albany, NY 12233

C. 1. Within 30 days of the Department's approval of any report submitted pursuant to this Order, Respondent shall submit to Michael J. O'Toole, Jr., Director, Division of Environmental Remediation, New York State Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12233-7010, a computer readable magnetic media copy of the approved report in American Standard Code for Information Interchange (ASCII) format.

2. Within 30 days after its approval of the drawings and submittals described in Subparagraph II.E of this Order, Respondent shall submit one microfilm copy (16 millimeter roll film M type cartridge) of such Department-approved drawings and submittals, as well as all other Department-approved submittals. Respondent shall submit same to George Harris, P.E.

D. The Department and Respondent reserve the right to designate additional or different addressees for communication or written notice to the other.

XIII. Termination of Order

Respondent's obligations under this Order, other than Respondent's obligation to implement the O&M Plan under Subparagraph II.D of this Order, Respondent's obligation to pay the Department under Paragraph VIII of this Order (Payment of State Costs), Reservation of Rights under Paragraph IX of this Order, the Department's right to enforce the obligations under Paragraph VI (Compliance), Paragraph X (Indemnification), and Subparagraphs XV.F and K of this Order, shall terminate when:

(i) The Department has notified Respondent that all construction activities have been completed in compliance with the Department-approved Remedial Design pursuant to Subparagraph II.E of this Order; and

(ii) Respondent has complied with Paragraph XI of this Order either by causing the owner of the Site to file a Declaration of Covenants and Restrictions or by submitting a letter to the Department as provided for in Subparagraph XI.B.

XIV. Release

If, after review, the Department accepts and approves the engineer's certification that all construction activities were completed in accordance with the Department-approved Remedial Design, then, unless a contingency plan is required pursuant to Subparagraph I.A (Remedial Design), and except for the provisions of Paragraph X (Indemnification) of this Order, and except for the future O&M of the Site, reimbursement of Department expenditures at the Site, and any Natural Resource Damage claims, such acceptance shall constitute a release for each and every claim, demand, remedy or action whatsoever against Respondent, its directors, officers,

employees, agents, servants, successors and assigns, which the Department has or may have pursuant to Article 27, Title 13 of the ECL or pursuant to any other provision of statutory law or common law involving or relating to investigative or remedial activities relative to or arising from the disposal of hazardous wastes at the Site; provided, however, that the Department specifically reserves all of its rights concerning, and any such release and satisfaction shall not extend to, any investigation or remediation the Department determines necessary due to:

1. environmental conditions on-Site or off-Site which are related to the disposal of hazardous wastes at the Site and were unknown to the Department at the time of its approval of the Remedial Design; or

2. information received, in whole or in part, after the Department's approval of the Remedial Design,

which unknown environmental conditions or which information (i) are related to the disposal of hazardous wastes, or commingled with such wastes, at the Site as set forth in the ROD, (ii) for which Respondent is liable under Article 27, Title 13, of the ECL or the Comprehensive Environmental Response, Compensation and Liability Act, and (iii) indicate that the Remedial Program is not protective of human health or the environment. The Department shall notify Respondent of such environmental conditions or information and its basis for determining that the Remedial Program is not protective of human health and the environment.

Notwithstanding anything to the contrary and solely for the purposes of this Order and any investigation, remediation or other activity whatsoever to be conducted pursuant to this Order, the term "off-Site" is not intended to include, and does not include, Onondaga Lake, its tributaries, including but not limited to Ley Creek, the upland sites which have contributed or are contributing hazardous substances to the Lake, or any other properties now or hereafter designated as or determined to be sub-sites of Onondaga Lake, and, therefore, Respondent may not be required to investigate, remediate or address in any way any such areas under this Order.

This release shall inure only to the benefit of Respondent, its directors, officers, employees, agents, and servants and to the benefit of those successors and assigns of Respondent that are not responsible under law for the implementation of a remedial program at the Site.

Nothing herein shall be construed as barring, diminishing, adjudicating or in any way affecting any legal or equitable rights or claims, actions, suits, causes of action or demands whatsoever that the Department may have against anyone other than Respondent, its directors, officers, employees, agents, and servants and those successors and assigns of Respondent that are not responsible under law for the implementation of a remedial program at the Site.

XV. Miscellaneous

A. Notwithstanding anything to the contrary, and solely for the purposes of this Order and any investigation, remediation or other activity whatsoever to be conducted pursuant to this Order, the term "off-Site" is not intended to include, and does not include, Onondaga Lake, its tributaries, including but not limited to Ley Creek, the upland sites which have contributed or are contributing hazardous substances to the Lake, or any other properties now or hereafter designated as or determined to be sub-sites of Onondaga Lake, and, therefore,

Respondent may not be required to investigate, remediate or address in any way any such areas under this Order.

B. Except where Respondent uses its own staff as may be qualified and are not prohibited by law from doing so to perform the technical, engineering, and analytical obligations required by this Order, Respondent shall retain professional consultants, contractors, laboratories, quality assurance/quality control personnel, and third party data validators acceptable to the Department to perform the technical, engineering, and analytical obligations required by this Order. The experience, capabilities, and qualifications of the firms or individuals selected by Respondent shall be submitted to the Department within 15 days after the effective date of this Order. The Department's approval of these firms or individuals shall be obtained before the start of any activities for which Respondent and such firms or individuals will be responsible. The responsibility for the performance of the professionals retained by Respondent shall rest solely with Respondent.

C. The Department shall have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled by Respondent, and the Department also shall have the right to take its own samples. Respondent shall make available to the Department the results of all sampling and/or tests or other data generated by Respondent with respect to implementation of this Order and shall submit these results in the progress reports required by this Order. Respondent, at its sole cost and expense, shall have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled by the Department. If the Department or Respondent obtains split samples, duplicate samples, and/or samples of its own, and submits such samples for analysis, the Department and Respondent shall promptly provide each other with copies of the laboratory analysis reports for such samples after quality assurance/quality control procedures have been completed.

D. Respondent shall notify the Department at least 10 working days in advance of any field activities to be conducted pursuant to this Order unless the Department's Project Manager provides otherwise. The Department shall provide reasonable advance notice to Respondent of any field activities to be conducted by the Department, including, but not limited to, sampling.

E. Respondent shall use best efforts to obtain all permits, easements, rights-of-way, rights-of-entry, approvals, or authorizations necessary to perform Respondent's obligations under this Order. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration for obtaining same. If any access required to perform this Order is not obtained despite best efforts within 45 days of the effective date of this Order, or within 45 days of the date the Department notifies Respondent in writing that additional access beyond that previously secured is necessary, Respondent shall promptly notify the Department, and shall include in that notification a summary of the steps Respondent has taken to attempt to obtain access. The Department may, as it deems appropriate, assist Respondent in obtaining access. Respondent shall reimburse the Department, in accordance with the procedures in Paragraph VIII (Payment of State Costs), for all costs incurred by the Department in obtaining access, including, but not limited to, attorneys fees.

F. Respondent and Respondent's officers, directors, agents, servants, employees, successors, and assigns shall be bound by this Order. Any change in ownership or corporate

status of Respondent including, but not limited to, any transfer of assets or real or personal property shall in no way alter Respondent's responsibilities under this Order. Respondent's officers, directors, employees, servants, and agents shall be obliged to comply with the relevant provisions of this Order in the performance of their designated duties on behalf of Respondent.

G. Respondent shall provide a copy of this Order to each contractor hired to perform work required by this Order and to each person representing Respondent with respect to the Site and shall condition all contracts entered into in order to carry out the obligations identified in this Order upon performance in conformity with the terms of this Order. Respondent or Respondent's contractors shall provide written notice of this Order to all subcontractors hired to perform any portion of the work required by this Order. Respondent shall nonetheless be responsible for ensuring that Respondent's contractors and subcontractors perform the work in satisfaction of the requirements of this Order.

H. All references to "professional engineer" in this Order are to an individual registered as a professional engineer in accordance with Article 145 of the New York State Education Law. If such individual is a member of a firm, that firm must be authorized to offer professional engineering services in the State of New York in accordance with Article 145 of the New York State Education Law.

I. All references to "days" in this Order are to calendar days unless otherwise specified.

J. The paragraph headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Order.

K. 1. The terms of this Order constitute the complete and entire Order concerning the Site. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department regarding any report, proposal, plan, specification, schedule, or any other submittal shall be construed as relieving Respondent of Respondent's obligation to obtain such formal approvals as may be required by this Order.

2. If Respondent desires that any provision of this Order be changed, Respondent shall make timely written application, signed by Respondent, to the Commissioner setting forth reasonable grounds for the relief sought. Copies of such written application shall be delivered or mailed to:

Dale A. Desnoyers, Esq.
Bureau of State Superfund and Voluntary Cleanup
NYS Department of Environmental Conservation
Division of Environmental Enforcement
50 Wolf Road
Rm. 410A
Albany, NY 12233

George Harris, P.E.
Section Chief - Bureau of Construction Services
Western Field Services Section
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

Nothing in this Subparagraph XV.K.2 shall preclude the Department's Project Manager or Section Chief of the Bureau of Construction Services from authorizing field change(s) in which case such field change(s) shall be deemed a Department-approved modification.

L. The provisions of this Order do not constitute and shall not be deemed a waiver of any right Respondent otherwise may have to seek and obtain contribution and/or indemnification from other potentially responsible parties or their insurers, or Respondent's insurers, for payments made previously or in the future for response costs. To the extent authorized under 42 USC 9613 and any other applicable law, Respondent shall not be liable for any claim, now or in the future, in the nature of contribution, indemnity or indemnification, however characterized, by potentially responsible parties concerning the Site. In any future action brought by Respondent against a potentially responsible party under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, the provisions of 42 USC 9613(f)(3) shall apply. Respondent specifically reserves all rights that it may have to assert claims against any of its insurers and/or potentially responsible parties with respect to the matters addressed in this Order, including, without limitation, claims for breach of contract, cost recovery, contribution, tortious conduct and indemnity.

M. This Order was negotiated, mutually drafted, and executed by the Department and Respondent in good faith to avoid expensive and protracted litigation, and represents a settlement of an allegation which has been vigorously contested, denied and disputed as to validity and amount. Any payment made by Respondent pursuant to Paragraph VIII (Payment of State Costs) hereof is not and does not constitute a fine or penalty, restitution or monetary sanction of any kind.

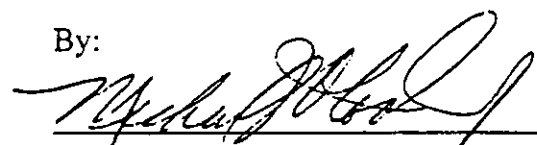
N. The effective date of this Order shall be the date this Order is received by Respondent after it is signed by the Commissioner or his designee.

DATED:

3/30/2000

JOHN P. CAHILL
Commissioner
New York State Department
of Environmental Conservation

By:


Michael J. O'Toole, Jr.

CONSENT BY RESPONDENT

The Pfaltzgraff Co.

Respondent hereby consents to the issuing and entering of this Order, waives Respondent's right to a hearing herein as provided by law, and agrees to be bound by this Order.

By: William H. Simpson

Title: President

Date: March 24, 2000

COMMONWEALTH OF Pennsylvania
COUNTY OF York) s.s.:

On this 24th day of March, ²⁰⁰⁰1999, before me personally came William H. Simpson to me known, who being duly sworn, did depose and say that he/she resides in York, Pennsylvania; that he/she is the President of The Pfaltzgraff Co., the corporation described in and which executed the foregoing instrument; that he/she knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation and that he/she signed his/her name thereto by like order.

Sheila R. Painter
Notary Public



APPENDIX A

Site Location Map

EXHIBIT C
LEGAL DESCRIPTION

All that tract or parcel of land, situate in the Town of Salina, County of Onondaga and State of New York, being part of Military Lot 19 in said Town and being more particularly bounded and described as follows:

Beginning at the intersection of a 36 inch culvert with the division line between the lands now or formerly of Consolidated Rail Corporation on the south and the lands now or formerly of Ryacuss, Inc. as described in Book 2461 of Deeds at Page 215 on the north, said point being easterly, along said division line, a distance of approximately 139.5 feet, from the southwest corner of the said lands of Ryacuss, Inc.; thence through the said lands of Ryacuss, Inc., the following thirteen (13) courses: 1) North 02 deg. 12 min. 47 sec. West, a distance of 77.98 feet to a point; thence 2) North 29 deg. 28 min. 09 sec. East, a distance of 73.62 feet to a point; thence 3) North 59 deg. 54 min. 25 sec. East, a distance of 39.29 feet to a point; thence 4) North 88 deg. 25 min. 06 sec. East a distance of 141.24 feet to a point; thence 5) North 04 deg. 44 min. 42 sec. East, a distance of 29.96 feet to a point; thence 6) North 35 deg. 33 min. 11 sec. East, a distance of 84.17 feet to a point; thence 7) North 52 deg. 29 min. 12 sec. East, a distance of 87.08 feet to a point; thence 8) North 62 deg. 52 min. 40 sec. East, a distance of 67.98 feet to a point; thence 9) North 56 deg. 59 min. 53 sec. East, a distance of 39.24 feet to a point; thence 10) South 85 deg. 18 min. 30 sec. East a distance of 70.70 feet to a point; thence 11) North 73 deg. 31 min. 40 sec. East, a distance of 19.92 feet to a point; thence 12) North 08 deg. 10 min. 04 sec. East, a distance of 109.73 feet to a point; and 13) North 15 deg. 11 min. 46 sec, East, a distance of 164.55 feet to its intersection with the southerly highway boundary of Factory Avenue; thence along said southerly highway boundary the following two (2) courses; 1) easterly, along the arc of a curve to the right having a radius of 2,890.28 feet and length of 395.70 feet to a point of tangency; and 2) South 89 deg. 02 min. 13 sec, East, a distance of 483.78 feet to a point; thence through the aforementioned lands of Ryacuss, Inc. the following nineteen (19) courses; 1) South 03 deg. 12 min. 08 sec. East, a distance of 507.11 feet to a point; thence 2) South 06 deg. 17 min. 29 sec. West, a distance of 82.70 feet to a point; thence 3) South 16 deg. 01 min. 11 sec. East, a distance of 100.41 feet to a point; thence 4) South 00 deg. 28 min. 06 sec. West, a distance of 89.66 feet to a point; thence 5) South 11 deg. 14 min. 38 sec. East, a distance of 81.60 feet to a point; thence 6) South 21 deg. 18 min. 30 sec. East, a distance of 93.30 feet to a point; thence 7) South 30 deg. 28 min. 31 sec. East, a distance of 107.58 feet to a point; thence 8) South 30 deg. 14 min. 48 sec. East, a distance of 15.71 feet to a point; thence 9) South 22 deg. 15 min 12 sec. West, a distance of 51.29 feet to a point; thence 10) North 65 deg. 38 min. 10 sec. West, a distance of 139.47 feet to a point; thence 11) North 65 deg. 59 min. 19 sec. West, a distance of 112.51 feet to a point; thence 12) North 62 deg. 05 min. 45 sec. West a distance fo 105.78 feet to a point; thence 13) North 64 deg. 58 min. 55 sec. West a distance of 130.10 feet to a point; thence 14) North 70 deg.

15 min. 33 sec. West, a distance of 174.01 feet to a point; thence 15) North 81 deg. 14 min. 44 sec. West, a distance of 96.06 feet to a point; thence 16) North 66 deg. 45 min. 31 sec. West, a distance of 97.78 feet to a point; thence 17) North 77 deg. 58 min. 24 sec. West, a distance of 120.47 feet to a point; thence 18) North 75 deg. 20 min. 36 sec. West, a distance of 117.62 feet to a point; and 19) North 83 deg. 35 min. 39 sec. West, a distance of 130.48 feet to its intersection with the aforementioned division line between the said lands of Conrail on the south and the said lands of Ryacuss, Inc. on the north; thence westerly along said division line, along the arc of a curve to the left having a radius of 3,869.32 feet and a length of 441.17 feet to the point of beginning. Containing 22.42 acres of land more or less.

COUNTY OF ONONDAGA, R.O.
BOOK 813/PAGE 488

COUNTY ROAD No. 93

AVENUE

FACTORY

AREA OUTSIDE CONSENT ORDER
TO TIE LINE = 8.228± Acres

AREA WITHIN CONSENT ORDER = 22.417± Acres

D.O.T. REALTY, INC., R.O.
BOOK 2884/PAGE 46 BOOK 3878/PAGE 2

RYACUSS, INC., R.O.
BOOK 2461/PAGE 215
NOW OR FORMERLY
30.645± ACRES
(to TIE LINE)

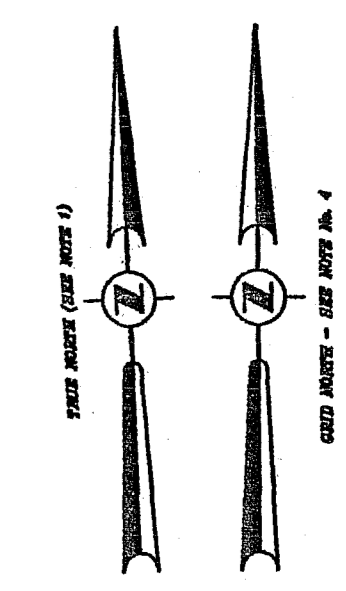
RYACUSS, INC., R.O.
BOOK 2461/PAGE 215

TOWN OF SALINA, R.O.
BOOK 2461/PAGE 212

RYACUSS, INC., R.O.
BOOK 2461/PAGE 215

- NOTES & REFERENCES:**
1. BASIS OF BEARINGS: TRUE NORTH, BASED ON CONTROL ESTABLISHED BY N.Y.S.D.O.T.
 2. NORTH & EAST COORDINATES AND BEARINGS IN PARENTHESES () ARE REFERENCED TO THE CENTRAL ZONE OF THE NEW YORK STATE COORDINATE SYSTEM AS ESTABLISHED BY DIFFERENTIAL GPS METHODS.
 3. ELEVATION DATUM IS MEAN SEA LEVEL, BASED ON CONTROL ESTABLISHED BY U.S.G.S. (NGVD 29)
 4. CONTOUR INTERVAL = 1 FT.
 5. WETLAND BOUNDARIES LOCATED AS FLAGGED BY TERRESTRIAL ENVIRONMENTAL SPECIALISTS, INC. (DEC. 1990).
 6. WETLAND AREAS ARE NOT SHOWN DUE TO LACK OF WETLAND DELINEATION.
 7. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS AND THEREFORE THEIR LOCATIONS AND TYPE OF USE MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN.
 8. 25' O.C.W.A. WATER LINE EASEMENT 1900/195 DOES NOT AFFECT THE PARCEL SHOWN HEREON.

- LEGEND**
- ||||| RAILROAD TRACKS
 - UTILITY POLE WITH OVERHEAD WIRES
 - + UT UNDERGROUND TELEPHONE CABLE MARKER
 - o GAS MARKER
 - MON MONUMENT SET 3-8-1990 (CAPPED IRON ROD SET IN CONCRETE)
 - WETLAND BOUNDARY (SEE NOTE 4)



505/348

505/347

505/345

MAP OF SURVEY PARCEL OF LAND PART OF MILITARY LOT 19 TOWN OF SALINA ONONDAGA COUNTY NEW YORK	
RYAN SURVEY Surveyors - Planners - Consultants	
P.O. Box 3225 Syracuse, NY 13220-3225 Ph: (315) 455-0968 Fax: (315) 455-0615	Sheet 1 of 1 Project No. 50008
REVISIONS	Date: 8-20-2001 Scale: 1" = 50'

This drawing shall not be used for any other purpose than that for which it was prepared. It is the responsibility of the user to verify the accuracy of the information shown hereon. The user shall not be held liable for any errors or omissions in this drawing.

APPENDIX B

Order on Consent No. C7-5125-94-08

STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the Alleged Violations of
the Environmental Conservation Law and
Title 6 of the Official Compilation of
Codes, Rules and Regulations of the
State of New York by:

**ORDER ON
CONSENT**
Case No.
C7-5125-94-08

THE PFALTZGRAFF CO., d/b/a
SYRACUSE CHINA MANUFACTURING COMPANY

Respondent

ORDER ON CONSENT

WHEREAS:

1. The New York State Department of Environmental Conservation (the "Department") is responsible for enforcement of the Environmental Conservation Law ("ECL") and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York ("6 NYCRR") and any Orders issued thereunder.

2. The Pfaltzgraff Co., d/b/a Syracuse China Manufacturing Company, (the "Respondent") is a corporation authorized to do business in the State of New York. Respondent operates a china-manufacturing facility located at 2900 Court Street, Syracuse, New York (the "facility").

3. The Department has alleged that Respondent has violated provisions of the ECL and 6 NYCRR, including, but not limited to, program areas involving water, air, solid waste, hazardous waste, and wetlands. These allegations are based on disclosures by Respondent and by inspections conducted by the Department. These allegations are based upon information reflected in correspondence, reports and other communications between the Department and

Respondent, and in the inspection notes and the reports of the Department. Based on this information, the Department alleges that Respondent has violated a number of statutory, regulatory, and permitting provisions, including, but not limited to, the following:

A. The facility has a site which has been used as an industrial landfill since approximately 1940, over half of which period the public had open access to the landfill. The Department alleges that Respondent has placed material in this landfill, including bisque, gypsum molds, broken china, cement and construction debris. The Department alleges that Respondent failed to obtain a permit in violation of ECL §27-0707.

B. The Department alleges that EP toxicity testing of landfill materials, including sludge dredged from its SPDES-permitted wastewater treatment lagoons and sludge resulting from annual cleaning of Respondent's glazing area, has revealed occasional exceedances of lead levels and that Respondent did not obtain a hazardous waste disposal permit pursuant to 6 NYCRR Part 373, in violation of ECL §27-0913.

C. The Department alleges that the encroachment by Respondent's landfill has resulted in the filling in of 1.3 acres of a regulated freshwater wetland located on its property, without Respondent's obtaining a permit pursuant to 6 NYCRR Part 663.4, in violation of ECL §24-0701.

D. The Department alleges that Respondent stored waste powdered frit containing greater than 5 ppm of lead resulting from

a failure of its dust collection system. The Department alleges that Respondent stored this material in drums for over two years without obtaining a permit pursuant to 6 NYCRR Part 373 and without complying with the hazardous waste storage requirements set forth in 6 NYCRR Parts 372 and 373, in violation of ECL §27-0907.

E. The Department alleges that wastewater with greater than 5 ppm of lead was treated and stored in the above-mentioned wastewater treatment lagoons located at the facility and that Respondent did not obtain a hazardous waste treatment and storage permit pursuant to 6 NYCRR Part 373, in violation of ECL §27-0913.

F. The Department alleges that wastewater was discharged that was not permitted by the provisions of the SPDES permit issued to the facility, in violation of ECL §17-0807(4).

G. The Department alleges that Respondent operated air contamination sources without having obtained permits to construct or certificates to operate such air contamination sources, in violation of 6 NYCRR Part 201.2.

4. Respondent neither admits nor denies any liability, fault, wrongdoing, or violation of any law, regulation, permit, order or requirement of any kind whatsoever. Respondent, as a responsible corporate citizen with a desire to further the public interest, has nonetheless agreed to undertake the terms and conditions contained in Paragraphs I and II hereof. As evidence of Respondent's good faith and commitment to continued compliance with environmental requirements, Respondent is voluntarily undertaking a closure of the room in which the drums referenced in Paragraph 3 (D) hereof were stored.

5. A portion of Respondent's landfill site has been designated by the Department as an Inactive Hazardous Waste Disposal Site under ECL Article 27, Title 13, with a Class 2 classification. The Department and Respondent have entered into an Order on Consent, the primary goal of which is the implementation of the workplan for a Remedial Investigation and Feasibility Study ("Work Plan for the RI/FS") for the Site.

6. The parties contemplate that, upon completion of the work in the Work Plan for the RI/FS, Respondent will negotiate for a consent order with the Department for the development and implementation of a Remedial Design and Remedial Action ("RD/RA"). It is the understanding of the parties that such negotiation will, among other things, address, directly or indirectly, any environmental impacts of the violations alleged in this Order relating to the wetland, solid waste disposal, as well as hazardous waste.

7. Respondent waives its right to a hearing or to otherwise contest the Department's aforementioned allegations at this time, and consents to the performance of the Environmental Benefit Project and to the issuance of this Order and agrees to be bound by its terms. Respondent, however, reserves its future right to a hearing and any other process to which it may be entitled by law with respect to such allegations, any other allegation the Department might hereafter make and any other proceeding or action the Department or the State of New York might undertake.

NOW, THEREFORE, HAVING BEEN DULY ADVISED, IT IS ORDERED THAT:

I. A. Respondent shall pay a penalty of \$30,000.00 (Thirty Thousand Dollars) for the violations alleged in this Order. The penalty shall be paid by certified check payable to the Department of Environmental Conservation and shall be due no later than November 15, 1995. The check shall be sent to the attention of Ilse Gruber, Associate Attorney, Division of Environmental Enforcement, N.Y.S.D.E.C., 50 Wolf Road, Albany, N.Y. 12233-5500.

B. With regard to any penalty due pursuant to this Order which is not paid by the specified due date, Respondent shall be liable for and shall pay interest from the due date at the rate specified by the New York Civil Practice Law and Rules for interest on a judgment.

C. In the event that Respondent fails to pay any penalty due pursuant to this Order by the date due, this Order, together with a notice of noncompliance specifying the amount may be filed and enforced by the Department as a civil judgment for the total penalty amount set forth in the notice of noncompliance, in the State of New York and in any other jurisdiction in which Respondent may reside, do business or own any assets, without the need for any further proceedings, whatsoever.

D. In addition to the penalty imposed pursuant to Subparagraph A hereof, Respondent shall, no later than November 1, 1996, participate in funding an Environmental Benefit Project ("EPB"), in accordance with the Department's Environmental Benefit Project Policy, issued August 3, 1995, at a cost to Respondent of \$20,000.00 (Twenty Thousand Dollars). The EPB shall consist of a

wetland project in Onondaga County, at a location other than the facility, to be selected by the Department and agreed to by Respondent.

II. A. Respondent, its directors, officers, employees, servants, agents, successors, and assigns (in this Paragraph II, collectively, "Respondent") ceased disposing of solid waste on its landfill as of December 31, 1994, and shall not resume such disposal unless Respondent receives a permit or other authorization therefor from the Department.

B. Respondent has been and is in compliance with the terms of the SPDES permit issued to the facility pursuant to ECL § 17-0803, and Respondent shall continue to comply with the terms thereof.

C. To the extent Respondent operates any unauthorized air contamination sources for which Respondent has not submitted to the Department applications for permits to construct and/or certificates to operate, Respondent shall expeditiously make application therefor.

III. A. Solely in the event that (1) the negotiation referred to in Paragraph 6 hereof does not result, within two (2) years from the effective date of this Order, in an RD/RA consent order which addresses, directly or indirectly, the landfill, including solid and hazardous waste, and the wetland or (2) an RD/RA consent order results from the negotiation referred to in Paragraph 6, but Respondent fails to comply with those provisions in such consent order which relate to or affect the RD/RA activities at the landfill, including solid and hazardous waste,

and the wetland, then, in either such event the Department shall have the right to take whatever action it deems necessary to require Respondent to address the violations alleged in this Order relative to the landfill, including solid and hazardous waste, and the wetland that are not being addressed in Respondent's RD/RA activities; provided, however, that the Department shall provide Respondent with notice of at least sixty (60) days before initiating any action relative to any of the issues covered in this Subparagraph.

B. Except as provided in Paragraph IV, this Order shall be in full satisfaction and settlement of all claims and liabilities that have been or might have been asserted against Respondent, its directors, officers, employees, servants, agents, successors, and assigns (in this Paragraph III, collectively, "Respondent") based upon the matters described in Paragraph 3 of this Order. The Department hereby releases Respondent from any and all such claims and liabilities. The Department further agrees that it shall not institute or initiate any action or proceeding for penalties or other relief based upon any matters described in Paragraph 3 of this Order. Compliance with this Order shall not be a defense to a proceeding commenced by the Department asserting violations unrelated to the matters described in Paragraph 3.

C. Nothing contained in this Order shall be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers.

D. This Order does not release Respondent from any obligation to obtain permits as required by the ECL or the rules

and regulations promulgated thereunder, and the Department reserves the right, to the extent provided for by law, to initiate any action or proceeding for penalties or other relief to enforce such obligations. However, no penalty shall be assessed for any period of non-compliance occurring prior to the effective date of this Order.

IV. Except as otherwise provided in this Order, nothing contained in this Order shall be construed as barring, diminishing, adjudicating or in any way affecting any of the Department's rights, including, but not limited to, the following:

1. Any legal or equitable rights or claims, actions, proceedings, suits, causes of action or demands whatsoever that the Department may have against anyone other than Respondent, its officers, directors, agents, servants, employees, successors and assigns;
2. The Department's right, to the extent provided for by law, to enforce this Order against Respondent, its officers, directors, agents, servants, employees, successors or assigns, in the event that Respondent shall fail to fulfill any of the terms or provisions hereof.
3. The Department's right, to the extent provided for by law, to institute or initiate any action or proceeding for penalties or other relief for any violation of the ECL or the rules and regulations promulgated thereunder that is committed or

continued after the effective date of this Order. However, in the event of a continuing violation, no penalty shall be assessed for any period of non-compliance occurring prior to the effective date of this Order.

V. Respondent shall not suffer any penalty under this Order or the ECL or be subject to any proceeding or action if it cannot comply with any requirement hereof because of an act of God, war, riot, or condition or event beyond the control of Respondent or its agents. Respondent shall, within five business days of when it obtains knowledge of any such condition or circumstance, notify the Department in writing. Respondent shall include in such notice the measures taken and to be taken by Respondent to prevent or minimize any delays and shall request an appropriate extension or modification of this Order. Failure to give such notice within such five business day period constitutes a waiver of Respondent's defense in a proceeding seeking the imposition of penalties that a delay is not subject to penalties. Respondent shall have the burden of proving that an event is a defense to compliance with this Order pursuant to this Paragraph.

VI. This Order does not release Respondent from any obligations it may have under any other Orders or permits it has entered into with, or received from, the Department.

VII. Notwithstanding anything to the contrary in this Order, Respondent shall have, in addition to those rights set forth in this Order, any other rights to which Respondent may be entitled under law.

VII. This Order shall be deemed to bind the Department, Respondent and its parent corporation, and their respective officers, directors, agents, servants, employees, successors and assigns.

IX. The effective date of this Order is October 6, 1995.

Dated: *October 11*, 1995
Albany, New York

**NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION**

J. L. Spielmann

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of the foregoing Order, waives its rights to a hearing herein as provided by law, and agrees to be bound by the provisions, terms and conditions contained herein.

THE PFALTZGRAFF CO., d/b/a
SYRACUSE CHINA MANUFACTURING COMPANY

By: William H. Simpson

Title: PRESIDENT

Date: OCTOBER 5, 1995

COMMONWEALTH OF PENNSYLVANIA)
)
COUNTY OF YORK)

On this 5th day of October, 1995, before me came William H. Simpson to me known, who, being by me duly sworn, did depose and say that he resides in York, PA; that he is the PRESIDENT of PFALTZGRAFF CO., the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Sheila R. Painter
NOTARY PUBLIC

NOTARIAL SEAL
SHEILA R. PAINTER, Notary Public
City of York, York County
My Commission Expires Feb. 10, 1997

APPENDIX C

Record of Decision

DECLARATION STATEMENT - RECORD OF DECISION

Syracuse China Inactive Hazardous Waste Site Town of Salina, Onondaga County, New York Site No. 7-34-053

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Syracuse China Inactive Hazardous Waste Disposal Site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Syracuse China Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Syracuse China Site and the criteria identified for evaluation of alternatives the NYSDEC has selected capping of the landfill consistent with the requirements of 6 NYCCR Part 360, a groundwater interception system to lower the groundwater table to prevent leaching from the fill, and the excavation and consolidation into the capped landfill of; fill from the eastern landfill area, sludges from the treatment ponds, and the contaminated wetland sediments. The components of the remedy are as follows:

- A remedial design program to provide the details necessary for the construction and monitoring of the remedial program. This will include additional sampling and wetland environmental testing as necessary to better delineate the areas of concern, in the wetlands and the extent of the groundwater.
- Excavation and consolidation of the contaminated settling pond sludges and fill materials, located beyond the cap boundary in the eastern portion of the landfill, into the area to be capped.

- Excavation and consolidation under the cap of approximately 1.3 acres of the landfill to restore the Class 2 wetland to original area prior to encroachment by the landfill.
- Excavation and consolidation under the cap, of the contaminated wetland sediments in an approximately ten acre area. This area and the depth of contamination will be further defined during the predesign phase of the project. Remediated wetland areas will be revegetated to control erosion.
- Installation of an upgradient groundwater interception system, which will be designed to intercept groundwater passing through the fill and lower the water table below the fill, or other appropriate system to prevent leaching of lead from the fill material into the groundwater.
- Capping of the landfill consistent with the applicable requirements of 6NYCRR Part 360, which will include but not be limited to: 1) installation of a 40 mil. Geomembrane liner cap; 2) 24 inches of barrier protection; 3) six inches of top soil; 4) installation of surface drainage, and; 5) performance of explosive gas and hydrogen sulfide generation surveys, and if necessary, design of a landfill gas collection system based on these results. The cap will be designed so that no additional encroachment on the wetland will result.
- Reconstruction of the settling ponds, as necessary to maintain the current wastewater discharge. State Pollution Discharge Elimination System (SPDES) permit compliance must be maintained during remediation.
- Since the remedy will result in untreated hazardous waste remaining on the site, a long-term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance for the site.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent containment to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

Date

3/26/96

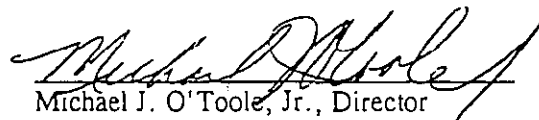

 Michael J. O'Toole, Jr., Director
 Division of Hazardous Waste Remediation

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SECTION 1: SITE LOCATION AND DESCRIPTION

The Syracuse China facility is located in an urban setting in the Town of Salina, Onondaga County, New York (Figure 1). The landfill, where a waste with hazardous waste characteristics was disposed, is located to the north of the manufacturing facility on Syracuse China Property. The landfill occupies an area of approximately 13 acres and is bounded by Conrail tracks on the south side, a NYSDEC regulated wetland (SYE 6), Factory Ave and Ley Creek on the north side and undeveloped Syracuse China property to the east and west. The Syracuse China Site is near the General Motors Corporation (GM) plant Site No. 7-34-057 and the Ley Creek PCB Dredgings Site No. 7-34-044 inactive hazardous waste sites.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

The Syracuse China Site is defined as the industrial landfill, the settling ponds and the adjacent wetlands (See figure 2). The site has been used as an industrial landfill by Syracuse China since approximately 1940 and had open public access until the access roads to the property were fenced sometime in the late 1960's or early 1970's. Syracuse China was purchased by the Pfaltzgraff Company in 1989 who subsequently sold to Syracuse China to the Libbey, Inc. In 1995.

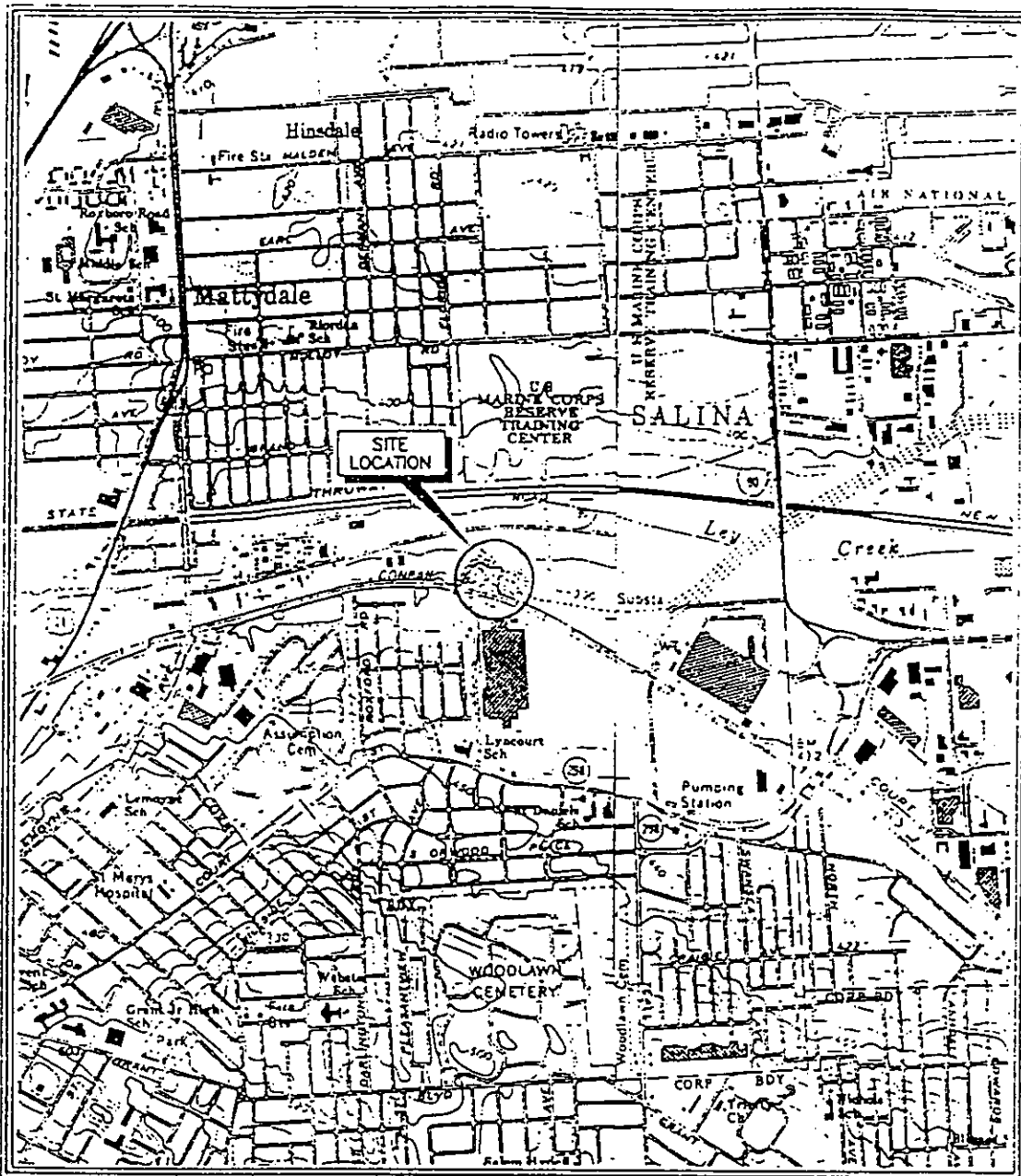
The landfill can be divided into two separate areas. The western half of the landfill is the oldest section and contains broken china, gypsum molds, facility wastewater sludge, refractory materials and other miscellaneous china manufacturing wastes. The eastern half contains solid waste piles, the settling ponds, various low lying areas of china manufacturing waste and some dried sludges from the settling ponds.

Current site topography is dominated by the two sections. The western half is much larger and higher than the eastern half of the landfill. The area of lower elevation of the eastern portion of the landfill is the location of the two primary and two secondary settling ponds which are part of the wastewater treatment settling pond system, operated by Syracuse China under a State Pollution Discharge Elimination System (SPDES) permit. The outfall of the settling ponds, which is the sampling point for the SPDES permit, discharges to the wetland.

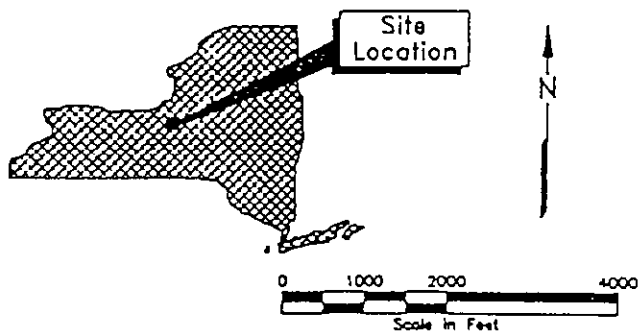
2.2: Remedial History

April 1990: Syracuse China agreed to conduct a groundwater quality study around the landfill in response to revised 6 NYCCR Part 360 regulations. A report, entitled "Preliminary Hydrogeologic Assessment Report" was prepared which detailed the results of investigations conducted to characterize the surface water and groundwater quality in the vicinity of the landfill, and also included sampling of wastewater sludges disposed adjacent to the settling ponds. The major problem identified was in the sludge samples, which were found to be characteristic hazardous wastes due to the failure for lead in the Extraction Procedure (EP) toxicity test. Some surface water samples also indicated the presence of lead above the calculated surface water standard.

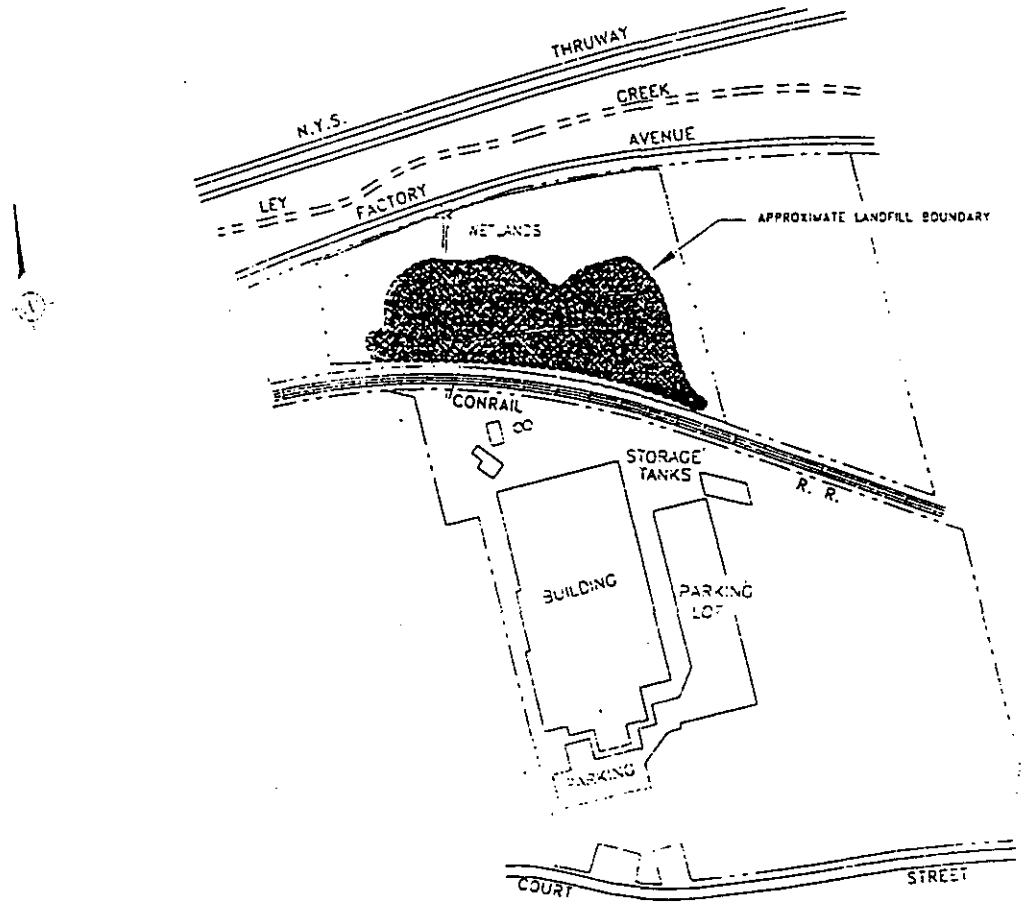
March 1991: The Syracuse China Site was listed as a class 2 inactive hazardous waste site due to the presence of lead as a characteristic hazardous waste and the threat posed to the wetlands system. The lead was a constituent of the china glazing process wastes. Changes to the filtering process have since removed the lead and other inorganics from the wastewater stream.





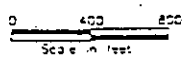
Reference: U.S. Geological Survey, 7.5 Minute Quadrangle, Syracuse East(1977),Syracuse West(1978), New York




SYRACUSE CHINA LOCATION		
DIVISION OF HAZARDOUS WASTE REMEDIATION		
REVISED:	03/15/76	
DATE:		
DRAWN BY: STEVEN M. SCHARF, P.E.		FIGURE 1



LEGEND	
	SYRACUSE CHINA PROPERTY LINE
	APPROXIMATE LIMITS OF FILL



SYRACUSE CHINA LOCATION		
DIVISION OF HAZARDOUS WASTE REMEDIATION		
REVISED DATE: 5/15/96		FIGURE 2
DRAWN BY: STEVEN M. SCHARF, P.E.		
		NYSDEC SITE ID No. 7-34-053

October 1994: Syracuse China signed a consent order, Index No. A601408802, to develop and implement a Remedial Investigation/Feasibility Study (RI/FS) pursuant to Article 27, Title 13.

October 1995: Consent Order Index No C7-5125-94-08, was signed. This order resolved Syracuse China's alleged liability for penalties for alleged past violations of the air, water, wetlands, and hazardous and solid waste programs. The order refers to the Title 13 process for remediation of the landfill and wetlands.

SECTION 3: CURRENT STATUS

In response to a determination that the presence of hazardous waste at the Site presents a significant potential threat to human health and/or the environment, the Syracuse China Corporation has recently completed a Remedial Investigation/Feasibility Study (RI/FS).

3.1: *Summary of the Remedial Investigation*

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted in 2 phases. The first phase was conducted between November 1994 and May 1995; the second phase during August, 1995. A report entitled Remedial Investigation Report, December 1995 has been prepared describing the field activities and findings of the RI in detail.

The two phases of the RI included the following activities:

- Magnetometer survey to determine whether buried drums exist in the landfill.
- Installation of soil borings and monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.
- Excavation of test pits in the landfill to investigate anomalies identified in the magnetometer survey.
- Surface water and sediment samples in the adjacent regulated wetland.
- Wetlands cover type delineation and ecological assessment.

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to environmental Standards, Criteria, and Guidance (SCGs). Groundwater, drinking water and surface water SCGs identified for the Syracuse China site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. NYSDEC TAGM 4046 soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used as SCGs for soil. The NYSDEC Technical Guidance for Screening Contaminated Sediments is used for surface water sediments.

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure routes, certain areas and media of the site require remediation. These are summarized below. More complete information can be found in the RI Report.

Chemical concentrations are reported in parts per billion (ppb) or parts per million (ppm). For comparison purposes, SCGs are given for each medium.

3.1.1 Nature of Contamination:

As described in the RI Report, many soil, groundwater, surface water and sediment samples were collected at the Site to characterize the nature and extent of contamination. The RI included sampling for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides and poly-chlorinated biphenyls (PCBs), cyanide based compounds and inorganics (metals). The primary contaminant of concern (COC) is lead, which is present at characteristic hazardous waste levels, and to a lesser extent the metals, iron, cadmium, mercury, arsenic, zinc, copper, chromium, silver and manganese. Lead is the COC which will define the areas requiring remediation for the landfill, settling pond sludges, and wetland sediments and surface water. No significant concentrations of VOCs, SVOCs or PCBs were noted in the RI.

3.1.2 Extent of Contamination

Table 1 summarizes the extent of contamination for the contaminants of concern in the landfill, groundwater, wetland, sediment and surface water and compares the data with the proposed remedial action levels (SCGs) for the Site. The following are the media which were investigated and a summary of the findings of the investigation.

Landfill Waste

Soil borings were drilled into the landfill to characterize the fill material. From these borings twelve samples were analyzed for Extraction Procedure (E.P.) toxicity with nine of twelve reported concentrations ranging from 4.1 to 27 ppm for lead, with an average concentration of 17 ppm. The level of lead defining a sample as characteristic hazardous waste is 5 ppm.

Additional soil borings in the western half of the landfill revealed the fill thickness to range from 16-28 feet. Soil borings in the vicinity of the settling ponds on the eastern portion of the landfill indicated four feet of fill material.

The waste materials are generally both buried and exposed to the surface. In addition to representing potential health and environmental exposure, the need for solid waste corrective actions to address alleged violations was identified by the October 1995 Consent Decree.

Soils

Soil borings were also drilled into the landfill berms and for monitoring wells in areas outside the landfill. Soil samples were taken from each soil boring and analyzed for volatiles, semivolatiles, pesticides/polychlorinated biphenyls (PCBs) and cyanide compounds. No significant levels of these compounds were detected. The soils were also analyzed for metals including iron, barium, copper, lead, magnesium, nickel, cadmium, chromium, silver, zinc, mercury and arsenic. Lead levels in soil ranged from 6.8 to 426 ppm at varying depths. The soil samples revealed that only a few iron and zinc results exceeded the NYSDEC TAGM Cleanup Criteria for soils.

Sediments

The sediments in the wetlands adjacent to the settling ponds, which discharged to the wetlands, were found to be highly contaminated with lead. This was expected since the pond sludges contain lead at a level that makes the pond sludge a characteristic hazardous waste due to failure of the EP toxicity test. Lead concentrations in the wetland ranged from 51.9 to 6010 ppm, with an average concentration in 15 samples of 3381 ppm. Other metals were also present in some of the sediment samples and while they appear less frequently and at lower concentrations than lead, are present at elevated levels with respect to the sediment screening guidance. These other metals, mercury, zinc, silver, nickel, antimony, arsenic, copper, iron, manganese and chromium were identified coincident with the elevated lead, therefore lead will be considered the indicator of impacted sediments.

Groundwater

The analytical results for groundwater indicated low levels of several VOCs in the groundwater, and all but one were below the NYSDEC groundwater standard. One compound, xylene, was detected at 9 ppb which was only slightly above the groundwater standard of 5 ppb. No pesticides, PCBs or cyanide compounds were detected in groundwater samples. This was not the case for lead, iron, magnesium, manganese, sodium, zinc, arsenic, copper and vanadium. Overall, the results show that groundwater is increasing in lead concentrations as it passes beneath and through the landfill material, with concentrations ranging from nondetect to 292 ppb. The groundwater standard for lead is 25 ppb.

Groundwater in Onondaga County is typically hard water which exhibits naturally occurring high concentrations of iron, manganese, sodium and magnesium due to the geologic composition of the shale bedrock and glacial overburden material. The concentrations of these metals reported in the groundwater at this site are within the expected background ranges for Onondaga County, and are not considered to be attributable to the landfill.

Surface Water

The sample analytical results for metals identified lead and zinc above the NYSDEC surface water quality standards. The surface water standard for lead was calculated to be 6.4 ppb based on a combined water calcium and magnesium hardness of 200 ppm. The highest concentration of lead detected was 103 ppb detected near the SPDES outfall, with lead ranging from 22 to 103 ppb in the remaining samples. The low levels of VOCs found in the surface water, such as bromodichloromethane, are laboratory contaminants and not attributable to the site.

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 7.0 entitled "Risk Assessment" of the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Off-site exposure is expected to be low under current or future conditions. Lead was detected in surface water in the wetland area. Surface water from the wetland ultimately discharges to Ley Creek; however, minimal sediment transports from the wetland to Ley Creek is expected.

The wetland area and Ley creek are not expected to be routinely used for recreation or fishing. Although Ley Creek is a Class B stream, the fish and wildlife impact analysis report indicated this area did not support a substantial fish population and the area has limited access by the general public. Nevertheless, individuals fishing, wading or swimming in Ley Creek or the wetland area, could be exposed to lead.

Current and future exposures to on-site workers and off-site residents are not expected to pose an unacceptable risk based on the limited exposure potential and extent of release. Concentrations of VOCs detected in groundwater, surface water and sediment were below New York State standards and guidance values.

Lead and zinc were identified as contaminants of concern (COC) in samples collected from the wetland area adjacent to the site. Under current site conditions, on-site exposure is limited. Workers collecting samples from the settling pond outfall could potentially come in contact with landfill soil, surface water, sediment and soils. The limited exposures reasonably expected to occur under these conditions do not likely pose an unacceptable risk. Residents living near the site may use Ley Creek for fishing and swimming; however, the available data indicate that these activities are unlikely. Nevertheless, the USEPA Integrated Exposure Uptake BioKinetic (IEUBK) model was used to assess potential exposure to lead via fish ingestion. The results of the model indicated that lead in fish posed little risk to local populations even at relatively high dietary levels (5 to 10 percent of total meat diet).

3.3 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The Fish and Wildlife Impact Assessment included in the RI presents a more detailed discussion of the potential impacts from the site to fish and wildlife resources.

The pathways for environmental exposure have been identified as the wetland sediments and surface water. The site sediments exceed the NYSDEC Sediment criteria for two categories the lowest observable effect level (LEL) and the severe effect level (SEL) for lead, in most samples. Lead, cadmium, mercury, chromium, arsenic, iron, silver, copper and zinc exceeded the LEL in some or most of the wetland sediments adjacent to the landfill. The inorganics, arsenic and copper exceeded the severe effect level for some of the sediment samples taken at the site.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NYSDEC and the Syracuse China Manufacturing Company entered into a Consent Order on October 20, 1994. The Order obligates Syracuse China (the Potentially Responsible Party) to implement a Remedial Investigation/ Feasibility Study for the site. Upon issuance of the Record of Decision (ROD) the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

The following is the chronological enforcement history of this site.

Orders on Consent

<u>Date</u>	<u>Index</u>	<u>Subject</u>
10/20/94	A6-0140-88-02	Implementation of a Remedial Investigation/Feasibility Study (RI/FS)
10/11/95	C7-5125-94-08	Alleged violations of Environmental Conservation Law and Title 6

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- Reduce, control, or eliminate to the extent practicable any significant threat to the environment resulting from the contamination present within the soils/waste on site and/or potential generation of leachate within the fill mass.
- Eliminate the threat to the environment posed by the contaminated sediments within the adjacent wetland.
- Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils, sediments and wastewater sludges on site.
- Eliminate the potential for direct human or animal contact with the solid wastes, contaminated soils, sediments and wastewater sludges on site.
- Mitigate the potential impacts of contaminated groundwater to the environment.
- Prevent, to the extent possible, migration of contaminants in the landfill to groundwater.
- Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC), to the extent practicable.

Table 1
Nature and Extent of Contamination

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE	FREQUENCY of EXCEEDING SCGs	SCG
Groundwater	Inorganics	Lead	ND - 292 ppb	9 of 21	25 ppb
		Copper	ND - 356	3 of 16	200
		Cadmium	ND - 3	0 of 16	10
		Chromium	ND - 132	7 of 16	50
		Silver	ND - 2.5	0 of 16	50
		Arsenic	ND - 49	7 of 16	25
		Zinc	ND - 461	3 of 16	300
		Mercury	ND - 20	1 of 16	2
Surface Water	Inorganics	Lead	20 - 315 ppb	14 of 14	6.4 ^a ppb
		Copper	ND - 16	0 of 14	21.3 ^a
		Cadmium	ND	0 of 14	2.0 ^a
		Chromium	ND - 4.3	0 of 14	11 ^a
		Silver	ND - 2.7	3 of 14	0.1 ^a
		Arsenic	ND - 1	0 of 14	190 ^a
		Zinc	13 - 70	0 of 14	148 ^a
		Mercury	ND - 16	1 of 14	0.2 ^a
Soils	Inorganics	Lead	2.3 - 426 ppm	0 of 9	500 ppm
		Copper	ND - 16.9	0 of 9	25
		Cadmium	ND	0 of 9	10
		Chromium	3.3 - 11.1	0 of 9	50
		Silver	ND	0 of 9	SB
		Arsenic	1 - 5.9	0 of 9	7.5
		Zinc	14.7 - 36.7	8 of 9	20
		Mercury	ND	0 of 9	.1

^a Based on hardness of water
SB - Soil background

**Table 1 (cont.)
Nature and Extent of Contamination**

MEDIA	CLASS	CONTAMINANT OF CONCERN	CONCENTRATION RANGE	FREQUENCY of EXCEEDING SCG	SCG (ppb)
Landfill Waste ^b	Inorganics	Lead	ND - 27 ppm	9 of 12	5 ppm
Sediments	Inorganics	Lead	51.9 - 6010 ppm	15 of 14 ^d	31\110 ^c
		Copper	3.4 - 154	1 of 14 ^d	16\110 ^c
		Cadmium	ND - 3.7	0 of 14 ^d	0.6\9 ^c
		Chromium	3.2 - 32.1	0 of 14 ^d	26\110 ^c
		Silver	ND - 31.8	5 of 14 ^d	1.0\2.2 ^{cb}
		Arsenic	ND - 64.1	3 of 14 ^d	6\33 ^c
		Zinc	57 - 796	1 of 14 ^d	120/270 ^c
		Mercury	ND - 1.1	0 of 14 ^d	15\1.3 ^b

^bSampling for this medium reflects E.P. Toxicity results and the SCG reflects the characteristic hazardous waste level.

^cLowest Observable Effect Level\Severe Effect Level from the Technical Guidance for Screening Contaminated Sediments

^dThese exceedences reflect SEL levels

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Syracuse China Site were identified, screened and evaluated in a Feasibility Study. This evaluation is presented in the report entitled "Focused Feasibility Study, Syracuse China Landfill."

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

6.1: Description of Alternatives

The potential remedies are intended to address the contaminated soils, sediments, surface water and groundwater at the site. This Site was determined to represent a typical industrial landfill, therefore the presumptive remedy approach was considered appropriate for the FS. This determination is reflected in the alternatives presented below.

Alternative 1: No Action

Present Worth:	\$ 316,430
Capital Cost:	\$ 000
Annual O&M:	\$ 25,500
Time to Implement	None

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Limited Action.

Present Worth:	\$ 385,225
Capital Cost:	\$ 75,000
Annual O&M:	\$ 25,000
Time to Implement	3 months

This alternative would provide limited action at the site involving institutional controls to restrict human exposure to the contaminants of concern. This alternative would restrict access to the public and any activities at the site, other than environmental monitoring. The access would be restricted by extending the present site fence all the way around the landfill area. Wildlife exposure to contaminants would not be addressed by this alternative.

Alternative 3A: Excavation, Relocation Covering with Soil Cap and Leaving Wetland Soil for Natural Attenuation

Present Worth:	\$ 1,171,634.
Capital Cost:	\$ 849,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

This alternative would involve excavating and relocating sludge from the settling ponds and fill from the eastern portion of the landfill to the area to be capped, with dewatering of the sludge as necessary. Approximately 1.3 acres of the wetland area, shown on Figure 3, would be included in the material excavated in order to restore this area to the wetland elevations prior to landfilling. The contaminated wetlands sediments would be left in place.

The western landfill area and relocated material would be capped. The cap would not be fully consistent with Part 360, and would in general consist of gas collection as appropriate, a 24 inch thick soil cover and a 6 inch topsoil layer. All surface runoff from the site would be directed towards the adjacent wetlands. Long term operation, maintenance and monitoring would be implemented to insure the effectiveness of the remedy.

Alternative 3B: Excavation, Relocation, Covering with Geomembrane Cap, and Leaving Wetland Soil for Natural Attenuation

Present Worth:	\$ 1,479,634
Capital Cost:	\$ 1,157,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

The components of alternative 3B would be the same as those for alternative 3A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 4A: Excavation, On-Site Treatment, Relocation and Covering with a Soil Cap

Present Worth:	\$ 2,453,634
Capital Cost:	\$ 2,131,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

This alternative, in addition to the excavation and relocation under the cap of the same material described in Alternative 3A, would also include the area of wetland sediments identified in Figure 3. The wetland would be allowed to revegetate naturally, subject to the need to stabilize the soils through revegetation. In addition to dewatering of these materials as necessary for landfilling, this alternative would also include treatment of the excavated sludges using stabilization and/or solidification. The landfill cap would also be the same as alternative 3A. All surface runoff would be directed towards the adjacent wetlands. Long term operation, maintenance and monitoring would be implemented to insure the effectiveness of the remedy.

Alternative 4B: Excavation, On-Site Treatment, Relocation and Covering with a Geomembrane Cap

Present Worth:	\$ 2,762,634
Capital Cost:	\$ 2,244,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

The components of alternative 4B would be the same as those of 4A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 5A: Excavation, Relocation and Covering with a Soil Cap

Present Worth:	\$ 1,241,634
Capital Cost:	\$ 919,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

Alternative 5A would be the same as Alternative 4A except that the excavated sludges and wetland sediments would be placed on the landfill without any treatment except for dewatering. Capping would prevent exposure to and leaching of the metals which are the contaminants of concern in the sludge and wetland sediments.

Alternative 5B: Excavation, Relocation and Covering with a Geomembrane Cap

Present Worth:	\$ 1,549,634
Capital Cost:	\$,227,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

The components of alternative 5B would be the same as those of 5A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 6A: Installation of an Interceptor Trench, Excavation, On-Site Treatment, Relocation and Covering with a Soil Cap

Present Worth:	\$ 2,558,634
Capital Cost:	\$ 2,236,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

Alternative 6A would be the same as Alternative 4A, with the addition of an upgradient groundwater interceptor trench designed to intercept groundwater flow from the south into the landfill and depress the groundwater level below the fill. All surface runoff and the discharge from the collection trench would be directed to the adjacent wetland. The approximate extent of the interception trench is shown on Figure 4.

Alternative 6B: Installation of an Interceptor Trench, Excavation, On-Site Treatment, Relocation and Covering with a Geomembrane Cap

Present Worth:	\$ 2,867,634
Capital Cost:	\$ 2,545,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

The components of alternative 6B would be the same as those of 6A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

Alternative 7A: Installation of an Interceptor Trench, Excavation, Relocation and Covering with a Soil Cap

Present Worth:	\$ 1,346,634
Capital Cost:	\$ 1,024,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

The components of Alternative 7A would be similar to Alternative 6A with the exception of the treatment of the excavated sludges prior to placement under the landfill cap. No treatment of this material would be required for Alternative 7A, as discussed in Alternative 5A.

Alternative 7B: Installation of an Interceptor trench, Excavation, Relocation and Covering with a Geomembrane Cap

Present Worth:	\$ 1,654,634
Capital Cost:	\$ 1,332,000
Annual O&M:	\$ 26,000
Time to Implement	6 months - 1 year

The components of alternative 7B would be the same as alternative 7A, except that a geomembrane would be added as the low permeability barrier layer, of the cap, which would be designed in accordance with the applicable requirements of 6 NYCCR Part 360.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. The most significant SCGs for this site would be 6 NYCRR Part 360 (Solid Waste Management Facilities), 6 NYCRR Parts 700-705 (Groundwater Standards) and the NYSDEC DFW sediment criteria. Alternatives 1, 2, and 3A and 3B would not meet SCGs for either some or all of these SCG's. Alternatives 3B, 4B, 5B, 6B and 7B would meet the requirement for landfill closure set forth in Part 360, however, the A series of these alternatives would not unless a variance to the low permeability barrier requirement were to be granted.
2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Alternative 1 would not provide any additional protection to human health, however no existing and only potential future exposures have been identified. The remaining alternatives would be protective of human health. Alternative 1 and 2 would also not address the alleged violation of ECL Title 6, Article 24 resulting from the filling of the wetland.

Alternatives 1, 2, 3A and 3B would also not address the contaminated sediments in the adjacent wetland and therefore would not be as protective of the environment as would those alternatives that remove the sediments. Alternatives 4A, 4B, 5 A and 5B while addressing the sediments, would not prevent continued contamination of the groundwater from contact with the landfill waste. Alternatives

6A, 6B, 7A and 7B would protect groundwater as well, although by stabilizing the consolidated waste some increased assurance would be gained by Alternatives 6A/B, which would be the most protective of the environment.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 1 and 2 would have no short term impacts since no intrusive work would be required. Alternatives 3A/B, 4A/B, 5A/B, 6A/B and 7A/B would all have similar short term impacts associated with the excavation of fill material and the treatment pond sludges which would require adequate health and safety measures to insure protection of the community, the workers and the environment from any particulates or other releases generated during the excavation. All of these alternatives, with the exception of 3A/B, would also present short term impacts during excavation of the contaminated wetland sediments, however this is negligible in terms of the benefit derived. Alternatives 4A/B and 5A/B would not include upgradient groundwater interception, which would lessen the short term impacts of the remedies since they would not include trenching adjacent to the Conrail Tracks. Short term impacts would also be greater, due to worker and public exposure potentials, as a result to the additional handling required to provide treatment for Alternatives 4A/B and 6A/B.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

Alternatives 1 and 2 would have no long-term effectiveness nor permanence since no substantive remediation would occur. Each of the other alternatives 3A/B, 4A/B, 5A/B, 6A/B and 7A/B would result in wastes and or treated residual remaining on site, however the magnitude of the impact from the remaining wastes would be minimized by consolidation of fill and contaminated materials, and proper closure of the landfill. The B series of these alternatives would include an impermeable geomembrane and would thus have greater effectiveness in minimizing leachate generation and groundwater protection. Alternatives 4A/B and 5A/B would not include groundwater interception and therefore would also have lower long term effectiveness and permanence with respect to continued contaminant loading to the groundwater and wetland. Alternatives 6B and 7B would not include treatment of lead contaminated sludge, as would 6A and 7A, and so would be somewhat less effective. However, once the site is capped and the groundwater is lowered, so that there is no longer contact with the fill material and the resultant leaching, further degradation of downgradient groundwater would not be expected. All four alternatives, 4B, 5B, 6B and 7B, would have a higher degree of permanence with respect to the landfill closure, as compared to the A series due to the geomembrane included in the cap. Each of the 4-7 alternatives would result in significant long term benefit to the environment since they would remove the contaminated sediments from the wetland.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternatives 1 and 2 would not reduce toxicity, mobility or volume (TMV) of contaminants in the landfill or the wetland. All of the capping and consolidation alternatives would reduce the mobility of the contaminants from the landfill, with the B series to a greater degree due to the impermeable membrane. Alternatives 3A/B would not address the TMV of the wetland sediments, however the remaining alternatives would all remove the sediments resulting in a reduction in TMV relative to the wetland. A reduction in toxicity in terms of exposure and mobility of the contaminants of concern in the consolidated sludge and fill materials would be realized for Alternatives 3-7 since they would be placed under a low permeability cover in each alternative. Alternatives 4B and 6B, both of which would include stabilization of sludge materials before placement under the cap, would also reduce the mobility of the lead in the sludge. Alternatives 4A/B and 5A/B would not include groundwater interception, therefore would not reduce the TMV of inorganic contamination in the groundwater, to as high a degree as Alternatives 6A/B and 7A/B would.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Alternative 1 would require no implementation and Alternative 2 would only require a limited amount of fencing. Alternatives 3 A/B, 4A/B, 5A/B, 6A/B and 7A/B would all be readily implementable requiring no unique construction techniques for the consolidation and capping aspects of the work. Alternatives 6A/B and 7A/B would be somewhat more difficult to implement since they would include the groundwater interceptor trench and Alternatives 3A/B also would not require the excavation of the wetlands which would make implementation easier than 4-7 as well. Alternatives 4A/B and 6A/B would also be slightly more difficult to implement with respect to the stabilization required for the settling pond materials. None of the alternatives would face any significant administrative requirements which would limit their implementability.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The Responsiveness Summary included as Appendix A presents the public comments received and the Department's response to the concerns raised. The public comments received were supportive of the selected remedy, primarily seeking greater detail on the actual implementation of the remedy. A comment regarding possible alternative means of addressing the groundwater resulted in a modification of the description of the groundwater interception system to allow evaluation of alternative means of preventing or controlling lead contamination of the groundwater.

Table 2
Remedial Alternative Costs

REMEDIAL ALTERNATIVES	CAPITAL COST	ANNUAL O&M	PRESENT WORTH
Alternative 1: No Action	\$0	\$25,500	\$316,430
Alternative 2: Limited Action	\$75,000	\$25,000	\$385,225
Alternative 3A: Excavation, Relocation, Covering with a Soil Cap and Leaving Wetland Sediment for Natural Attenuation	\$849,000	\$25,000	\$1,171,634
Alternative 3B: Excavation, Relocation, Covering with a Geomembrane Cap and Leaving Wetland Sediments For Natural Attenuation	\$1,157,000	\$26,000	\$1,479,634
Alternative 4A: Excavation, On-site Treatment, Relocation and Covering with a Soil Cap	\$2,131,000	\$26,000	\$2,453,634
Alternative 4B: Excavation, On-site Treatment, Relocation and Covering with a Geomembrane Cap	\$2,440,000	\$26,000	\$2,762,634
Alternative 5A: Excavation, Relocation and Covering with a Soil Cap	\$919,000	\$26,000	\$1,241,634
Alternative 5B: Excavation, Relocation and Covering with a Geomembrane Cap	\$1,227,000	\$26,000	\$1,549,634
Alternative 6A: Installation of an Interceptor Trench, Excavation, On-Site Treatment, Relocation and Covering with a Soil Cap	\$2,236,000	\$26,000	\$2,558,634
Alternative 6B: Installation of an Interceptor Trench, Excavation, On-Site Treatment Relocation and Covering with a Geomembrane Cap	\$2,545,000	\$26,000	\$2,867,634
Alternative 7A: Installation of an Interceptor Trench, Excavation, Relocation and Covering with a Soil Cap	\$1,024,000	\$26,000	\$1,346,634
Alternative 7B: Installation of an Interceptor Trench, Excavation, Relocation and Covering with a Geomembrane Cap	\$1,332,000	\$26,000	\$1,654,634

SECTION 7: SUMMARY OF THE PREFERRED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 6, the NYSDEC has selected Alternative 7B: Installation of an Interceptor Trench, Excavation, Relocation, and Covering with a Geomembrane Cap, as the remedy for this site.

This selection is based upon the analysis of the eleven remedial alternatives for the Syracuse China Site. Alternative 7B will provide the best balance of the evaluation criteria and will satisfy NYSDEC Standards, Criteria and Guidance, of particular importance, closure of the landfill consistent with 6 NYCRR Part 360.

Alternative 7B will be protective of human health and the environment by ensuring that the current impacts to groundwater and wetlands sediments and surface water will be addressed.

This alternative will have a high degree of short term effectiveness, and will provide high long term effectiveness and implementable at a moderate cost, compared to 6B, while addressing the groundwater contact with the fill material. Even though this alternative will not directly reduce the toxicity and volume of contaminated materials, it will reduce their mobility in the general environment and will also reduce the toxicity and volume of lead in the groundwater and the wetlands and will address the risks associated with the site.

The estimated present worth cost to implement the remedy is \$1,654,634. The cost to construct the remedy is estimated to be \$1,332,000 and the estimated average annual operation and maintenance cost for 30 years will be \$26,000.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and to provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.
2. Excavation and consolidation of the contaminated settling pond sludges onto the western portion of the landfill in the area to be capped.
3. Excavation and consolidation under the cap of approximately 1.3 acres of the landfill to restore the Class 2 wetland to the original area prior to encroachment by landfilling. This will resolve alleged existing Article 24 violations. The approximate area which will be excavated is shown on Figure 3.
4. Excavation and consolidation under the cap of additional landfill materials from the eastern portion of the landfill which may be beyond the cap limits.
5. Excavation and consolidation under the cap, of the contaminated wetland sediments in the approximately ten acre area shown on Figure 3. This area and the depth of contamination will be further defined during the pre-design phase of the project. This definition will be based upon consideration of, but not limited, to: data generated from the evaluation of topographic elevations and a delineation of the wetlands; additional analytical testing in the wetland to confirm the areal and vertical limits of contamination; a sampling program to establish prerelease levels or background, particularly with regard to the depth of contamination; toxicity testing; plant uptake studies and/or a

refinement of the ecological risk assessment included in the Feasibility Study. In areas where contaminated sediments exceed the estimated 1-2 foot depth, covering of the lead contaminated sediments with sufficient clean soil to mitigate exposure could be considered instead of excavation.

Restoration of the wetland will be subject to the need to stabilize the soils. The wetland will be allowed to revegetate naturally with only initial reseeded, or other appropriate revegetation implemented to control erosion. The swale north of Factory Avenue will be sampled during predesign but is expected to be covered and/or lined as part of the Ley Creek PCB Dredgings Site Remedial Program. If this should not be addressed by the Ley Creek project it will be addressed, if needed, as separate action. All wetlands work will require approval from the U.S. Army Corps of Engineers and comply with NYSDEC Article 24 requirements.

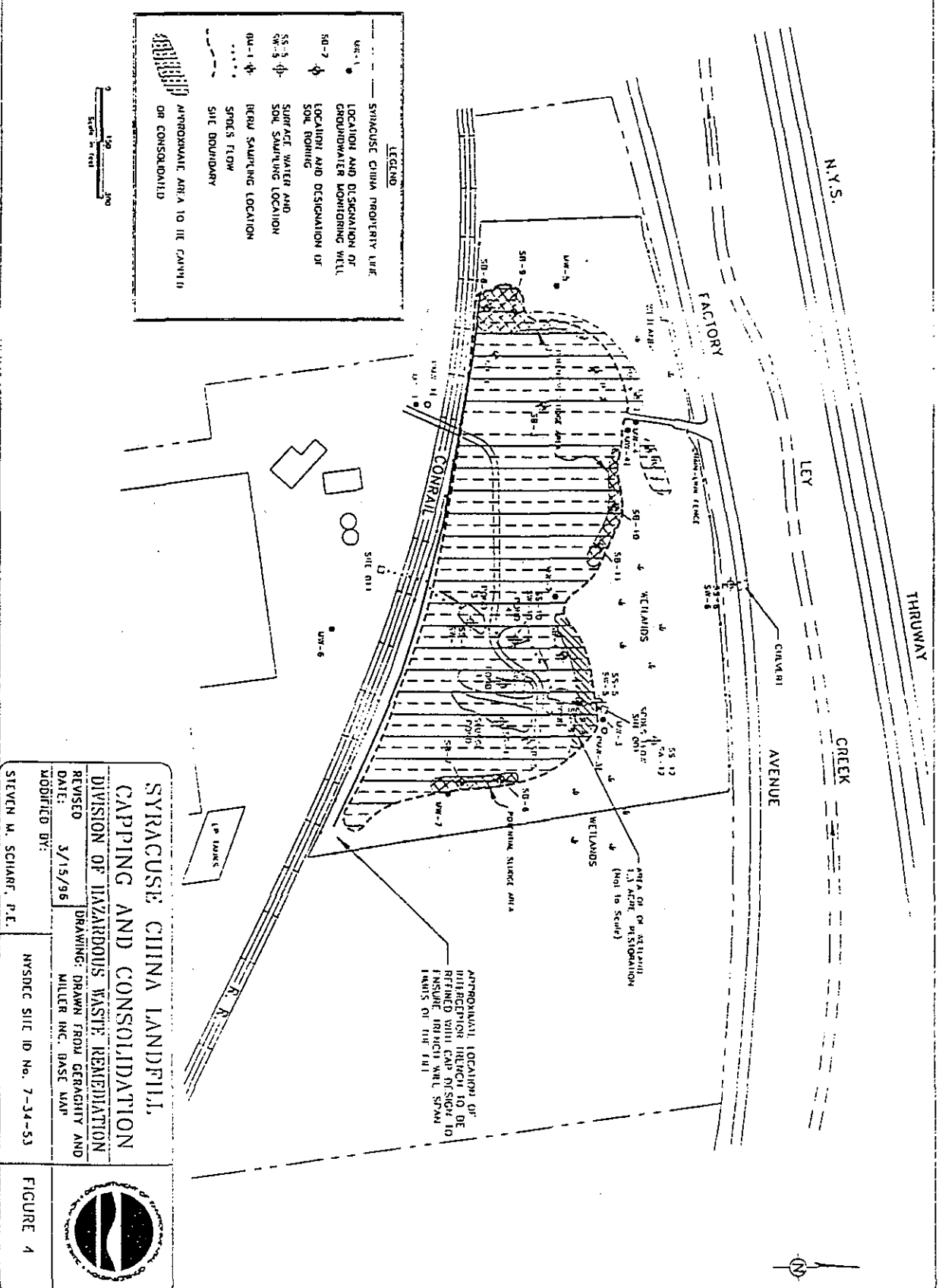
6. Dewatering of the sludge and wetland sediments, as required to comply with the USEPA SW-840 Method 9045, Paint Filter Liquid Test, or the regulatory requirements for placement of material in the landfill in effect at the time of the implementation of the remedy.
7. Installation of an upgradient groundwater interception system, which will be designed to intercept groundwater passing through the fill and lower the water table below the fill, to prevent leaching of lead into the groundwater. Discharge from the trench will be directed to the wetland. The approximate location of this trench is shown on Figure 4. Alternative means to prevent the leaching of lead into the groundwater from that identified above, such as removal of fill from areas below the water table or a leachate collection system, may be evaluated during the design phase in place of the groundwater interception system.
8. Capping of the landfill consistent with the applicable requirements of 6 NYCRR Part 360, which will include but not be limited to: (1) installation of a 40 mil geomembrane cap; (2) installation of surface drainage; (3) minimum slopes of 4 percent and maximum of 33 percent slopes; (4) performance of an explosive gas survey and hydrogen sulfide generation survey and if necessary design of a landfill gas collection system based upon these results; (5) long term maintenance and monitoring. The cap will be designed so that no encroachment on the wetland area will result.
9. Reconstruction of the settling ponds, as necessary to maintain the current wastewater discharge. SPDES permit compliance will be maintained during the remediation.
10. Since the remedy will result in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. This program will allow the effectiveness of the selected remedy to be monitored and will be a component of the operation and maintenance for the site.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- A repository for documents pertaining to the site was established.

- A site mailing list was established which included nearby property owners, local political officials local media and other interested parties.
- A Fact Sheet was prepared and sent to citizens in February 1996 announcing the availability of the Remedial Investigation Report and the Proposed Remedial Action Plan at document repositories. A public meeting being held to discuss those documents was also announced.
- A public meeting was held on February 28, 1996 in Syracuse to discuss the results of the Remedial Investigation/Feasibility Study and the proposed action to be taken as outlined in the PRAP.
- In March 1996 a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.



SYRACUSE CHINA LANDFILL
CAPPING AND CONSOLIDATION
 DIVISION OF HAZARDOUS WASTE REMEDIATION
 DATE: 3/15/96
 DRAWING: DRAWN FROM GERICHTY AND MILLER INC. BASE MAP
 MODIFIED BY:
 STEVEN M. SCHARF, P.E.
 NYSDEC SITE ID No. 7-34-53



FIGURE 4

Appendix A

RESPONSIVENESS SUMMARY

Syracuse China Site
Proposed Remedial Action Plan
Town of Salina (T), Onondaga County
Site No. 7-34-053

The Proposed Remedial Action Plan (PRAP) for the Syracuse China Site was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 20, 1996. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and sediment at the Syracuse China Site. The preferred remedy is capping of the landfill consistent with the requirements of 6 NYCCR Part 360, installation of an upgradient groundwater interception trench and the excavation and consolidation of fill comprising the eastern portion of the landfill, contaminated treatment pond sludges and contaminated sediments from the adjacent wetland, under the cap.

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on February 28, 1996 which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. Written comments were received from the Syracuse China Corporation.

The public comment period for the PRAP closed on March 22, 1996.

This Responsiveness Summary responds to all questions and comments raised at the February 28, 1996 public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC responses:

COMMENT 1: Does any runoff from the site go north of Factory Avenue?

RESPONSE 1: Drainage from the site is to the wetlands adjacent to the landfill and the water from the wetland does flow to the north through a culvert beneath Factory Avenue, eventually discharging into Ley Creek. However, a sediment sample from the vicinity of the culvert is below the level of the

NYSDEC's Division of Fish and Wildlife (DFW) Severe Effect Limit (SEL) but is above the lowest effect level (LEL) for lead, indicating that the contamination does not appear to have migrated beyond this point. It appears that the wetland has acted as a further settling pond, settling out any lead from the discharge to the wetland before it passed on to the north. This will be confirmed by further testing during the predesign phase.

COMMENT 2: How deep did the contamination go?

RESPONSE 2: As part of the RI, sampling was conducted in the top foot of the wetland sediments. Based upon the depositional nature of the source of contamination it is not expected to extend significantly below the top foot, except possibly in the immediate area of the SPDES outfall. For estimating purposes one foot was assumed, however, further testing during the design will confirm the depth to be remediated.

COMMENT 3: Are there any health impacts to the residential areas west of the site and south of Factory Avenue and the railroad tracks?

RESPONSE 3: The site in its present state does not pose an existing health threat, only a potential health threat would exist if land use changed which increased contact with the sediments, sludges from the settling ponds and/or some of the landfill materials. The contaminants at the site are heavy metals, primarily lead, which have limited potential for migration to off site areas. There have been no volatile organic chemicals of concern identified at this site, which could volatilize or otherwise impact off site areas. During remedial construction, community air monitoring will be conducted to assure that remedial construction does not create unacceptable conditions, related to dust which could carry particulates from the site. Controls will be implemented as necessary during any fill relocation to control the generation of dust.

COMMENT 4: What about years ago when we were going through the landfill? I was a firefighter and we would come back from fighting a fire there covered with white dust.

RESPONSE 4: The materials in the Syracuse China Landfill are for the most part not combustible municipal waste, but rather inert clays, broken china and china production residuals. Thus any material which may have burned would not likely have been related to the industrial waste in the landfill. Lead is not

absorbed through the skin, so contact with landfill materials should not have resulted in an increased exposure. While inhalation was a possibility, effectively, it is not likely that a fire would have involved the lead present in the fill materials.

COMMENT 5: What about the right-of-way of the high tension lines? Previously an old tower collapsed and required replacement, how will the presence of these affect landfill work?

RESPONSE 5: The remedial work at the site should not interfere with the overhead power lines, but they will have to be taken into account when operating heavy equipment and working around the stanchions. The remedial design will identify the need to relocate any fill present in the vicinity of the power line towers and any other special construction requirements necessary to install the cap or maintain the right-of-way (easement). These considerations will be addressed with the utility.

COMMENT 6: Will the road across the railroad tracks still exist?

RESPONSE 6: The existing road or an alternative access point to the landfill area will be required to mow the grass on the cap, monitor wells and provide other needed maintenance for the settling ponds or the cap.

COMMENT 7: Niagara Mohawk had to close their railroad crossing, will Syracuse China have to as well?

RESPONSE 7: This is an issue which will be addressed by Syracuse China with the railroad during the design phase. All involved parties will be asked to review the remedial design, as it relates to them, and any concerns raised will be addressed at that time.

COMMENT 8: What is going to happen to the contaminated groundwater?

RESPONSE 8: The groundwater interception trench will be designed to lower the groundwater to prevent contact with the fill. The landfill cap will reduce infiltration and thus reduce the potential for migration of leachate to the groundwater. Combined these measures are expected to reduce inorganic contamination to levels that represent background conditions in the area.

The existing groundwater in the vicinity of the landfill which exhibits some elevated levels of lead will be allowed to attenuate over time now that the source of contamination from the landfill is being addressed.

COMMENT 9: Is there anyone the groundwater can effect? What are the environmental impacts?

RESPONSE 9: There have been no users of the groundwater identified in the vicinity of the landfill and no elevated levels of lead have been identified in the Ley Creek surface water.

COMMENT 10: What is happening to the rest of the wetlands besides the 1.3 acres to be restored?

RESPONSE 10: Based upon the current delineation, approximately six acres of the wetland surrounding the landfill (as shown on Figure 3 of the ROD) will be excavated to address lead contaminated sediments. There will be additional testing of wetlands during remedial design, to better define the area and the depth to be excavated. Lead contamination is expected to be found in the top foot of the wetland sediments on average .

COMMENT 11: One foot does not seem very deep for 40 years of settling?

RESPONSE 11: The source of lead was the discharge from the plant to the settling ponds which were intended to settle out the material before discharge. Lead is present at high levels in the sludge from these ponds and some portion of this was discharged and has settled out in the wetland. The lead that carried through the settling ponds was most likely present in the fine particulates that would not have settled out until last and would not have represented a high volume of material. Soil samples did not show evidence of a deep layer of these fine particles, which would have tended to coat the natural sediments limiting downward leaching or migration. However, analytical testing during design and confirmatory sampling during construction will substantiate the depth to be removed or covered by the remedy.

COMMENT 12: How many acres is the landfill?

- RESPONSE 12:** The landfill area, as shown on Figure 3 of the ROD, is approximately 13 acres.
- COMMENT 13:** What is the next step?
- RESPONSE 13:** The NYSDEC has evaluated the comments received and prepared this responsiveness summary. The Proposed Remedial Action Plan (PRAP) has been finalized into the Record of Decision (ROD). Once the Rod is issued the NYSDEC will begin negotiations with Syracuse China to implement the selected remedy.
- COMMENT 14:** So is Alternative 7B all ready selected?
- RESPONSE 14:** The PRAP identifies Alternative 7B as the NYSDEC and NYSDOH preferred alternative and it was also recommended by Syracuse Chin in the Feasibility Study. This alternative was proposed based upon the detailed analysis of all the alternatives summarized in the PRAP. Unless public comment results in a reevaluation of the alternatives evaluated by the PRAP, the proposed remedy will be selected by the ROD.
- COMMENT 15:** Who will pay for the remedy?
- RESPONSE 15:** It is anticipated that Syracuse China will pay for the remedy. After the ROD is signed, the NYSDEC will look to negotiate a consent order with Syracuse China to perform the remedial work.
- COMMENT 16:** What municipal wastes are in the landfill?
- RESPONSE 16:** The landfill has been there a long time and before 1969 there were no gates and allegedly some people dumped their trash. However, this landfill was primarily operated as an industrial and not a sanitary landfill, although some plant trash undoubtedly ended up there also, so municipal waste should represent a relatively small percentage of the volume in the landfill. Twelve test pits were dug based on the magnetometer survey across major areas of the landfill looking for buried drums. Metal debris was found along with massive amounts of scrap or broken china and broken molds. Most of the waste material encountered during the RI appeared inert and was obviously the byproducts of china manufacturing, which supports that

municipal waste does in fact represent only a small fraction of the landfill volume.

COMMENT 17: Does Syracuse China use this landfill?

RESPONSE 17: No, not since 1994.

COMMENT 18: What does Syracuse China do with the waste now?

RESPONSE 18: Approximately 90 percent of the manufacturing waste streams are reported to be recycled. The rest goes to a permitted commercial or municipal landfill.

COMMENT 19: Huge piles of waste china are present behind Sehr Park and kids sometimes play in it.

RESPONSE 19: The area in question is not part of the park. The "piles of china" are part of an earthen berm, which includes a significant amount of broken china. It is located on Syracuse China property and is not part of the landfill project or included in the hazardous waste site. However, this comment is being brought to the attention of Syracuse China by this responsiveness summary.

COMMENT 20: Is there any danger in the berms?

RESPONSE 20: Not due to concerns relative to hazardous waste, but possibly the broken china could represent a physical hazard. The lead in the landfill and wetlands is a result of the settling pond wastes. Lead in china has been studied and is not reported to leach.

COMMENT 21: The Little League fields are located on Syracuse China property and there are areas where china scraps are coming through the ground.

RESPONSE 21: This comment has also been brought to the attention of Syracuse China.

COMMENT 22: Then the major concern here is the wetlands?

RESPONSE 22: Yes, the wetlands contamination represented a significant environmental concern as did the presence of the hazardous waste in the landfill. Syracuse China would have been required to close the landfill regardless of the presence of hazardous waste due to NYSDEC Solid Waste Regulations, 6 NYCCR Part 360.

COMMENT 23: Are there other contaminants than lead?

RESPONSE 23: Yes, but lead is considered the indicator. Generally, whenever inorganic contamination was found lead was always the highest in concentration, although other heavy metals such as, arsenic, cadmium, chromium, copper, mercury, silver and zinc, were also identified at levels of concern.

COMMENT 24: What is the timetable for completing the work at this site?

RESPONSE 24: The timing of the project is dependent on the progress of consent order negotiations. Syracuse China has been cooperative to date and the State has no reason to believe this cooperation will not continue. We hope to proceed quickly with a consent order and assuming negotiations can proceed in parallel with the design construction could start in 1997. Construction will take about one year to complete. If negotiations are protracted or the design start is delayed until a consent order is executed, construction start could be delayed until 1998.

COMMENT 25: When does the design phase start?

RESPONSE 25: The actual start of the engineering design may have to wait for the completion of consent order, which typically can take from six to nine months. However, the design could proceed simultaneous with the negotiation of the Consent Order if Syracuse China agrees, once the ROD is signed.

COMMENT 26: Are there any concerns with children playing in Sehr Park?

RESPONSE 26: No, the landfill is not located immediately adjacent to the park and no evidence of migration of contaminants from the landfill to the park was identified during the RI. Syracuse China will perform operation and maintenance activities to insure the integrity of the remedy.

The following comments were included in a letter dated March 15, 1996 received from Mr. Robert S. McEwan, Jr. of Nixon, Hargraves, Devans and Doyle on behalf of the Pfaltzgraff and Syracuse China Companies:

COMMENT 27: The PRAP refers to the wetland soils as "sediments". The soils located in the wetland located at the site are not sediments. The term "sediment" is defined generally as a solid material which settles to the bottom (or other surface) of a body of water. In contrast, the solid material within which most of wetland vegetation grows is commonly referred to as "soil." This usage is carried over into the federal and New York regulatory programs designed to protect wetlands. Neither definition contains the term "sediment." This is not to say that there cannot be sediment within a wetland. Where a wetland contains an open water body, then sediment is typically found at the bottom of that open water body. In the wetland at the site, only one small area is classified as "open water." None of the samples collected within the wetland were collected in this open water area. In our discussions with NYSDEC, and as reflected in the RI/FS reports, the samples collected in the wetlands are appropriately referred to as "soil" samples, whereas samples collected in the settling ponds are appropriately referred to as "sediment" samples.

RESPONSE 27: As discussed in the response to comment 11 above, the contamination in the wetland appears to be the result of deposition of the sediments which carried over from the treatment settling ponds. Therefore the use of the term sediment is accurate and appropriate in this instance since the areas in question are routinely inundated. The RI also characterized these samples as sediments and for each sampling location in the wetland also included a surface water sample. In general the NYSDEC considers the Sediment Guidance Criteria to be applicable when evaluating contaminant levels in wetlands regardless of whether the material in question can be defined as sediment or soil. The Criteria are considered applicable for screening and evaluating the potential for exposure or impact to wetland flora and fauna from contaminants present in the stratum in question, whether that stratum be termed soil or sediment.

COMMENT 28: Applicability of NYSDEC Sediment Screening Guidance: As we have advocated to NYSDEC, the use of the Guidance as a Standard, Criteria or Guidance ("SCG") for the site is not proper. As discussed above, the samples collected in the wetland at the site are "soil" not "sediment" samples as those terms are used in both common and regulatory usage. By listing

the Guidance as an SCG for the site in the PRAP, the Severe Effect Level ("SEL") for lead, which is 110 ppm, may be viewed as the appropriate cleanup level. The lead SEL contained in the Guidance has no relevance to the lead levels found in the wetland soils at the site. Therefore, the lead SEL should not be considered as a target cleanup goal for the site and the Guidance should not be considered to be an SCG. Even if significant portions of the wetlands were underlain with sediments, the 110 ppm screening level in the Guidance would not be an appropriate cleanup number for the wetlands at the site. As the Guidance provides,

[r]isk assessment, risk management, and the results of further biological and chemical tests and analyses are vital tools for managing sediment contamination. To view sediment criteria in a one-dimensional, go/no go context is to miss potential opportunities for resource utilization through appropriately identified and managed risk.

Thus, even if true sediments existed in sufficient quantities in the wetlands at the site, the SEL included in the Guidance should characterize only as a level "to be considered" (TBC"). As a TBC document The Guidance can be used as it was designed; a screening tool against which sediment data may be compared to determine if a more detailed evaluation should be done. However, because the site wetlands contain soils, not sediments, the use of the NYSDEC Guidance, even for comparison (such as in Table 1 of the PRAP) is inappropriate.

RESPONSE 28: The Sediment Screening Guidance was used, as stated in this comment and as in its' title, as a guide for screening data gathered in the wetland to determine the potential for environmental impacts related to the contaminants of concern for the site. Given the high levels of lead present in the wetland the environmental impact is readily apparent whether the impacted media is in fact sediment or soil. The soil /sediment issue is also addressed in response to comment 27.

COMMENT 29: The FS examined other possible benchmarks against which the wetland soil data could be meaningfully compared. One such benchmark reviewed was the allowable lead levels in land application of sludge under federal regulation. While this regulatory level is not directly comparable to

conditions at the site, the EPA evaluation used to derive these limits is comparable and worthy of consideration.

RESPONSE 29: The NYSDEC DFW agrees that this data is not directly applicable to this Site and questioned the comparability of the findings regarding sewage sludge spreading on a farm field to the impacts in a wetland. Based upon the data presented to date, DFW does not consider these to be comparable situations, therefore the referenced guidance was not considered as applicable to a determination of acceptable lead levels in a wetland. The ROD provides for the evaluation of additional data to be generated during design, as well as the refinement of the ecological risk assessment performed for the site, which may include further evaluation of the referenced "benchmark".

COMMENT 30: As stated in the PRAP, the remedial goal for the wetland is to "[e]liminate the threat to the environment posed by the contaminated sediments within the adjacent wetland." (PRAP at 8). The FS recommends achieving this goal through reducing levels of lead and other heavy metals in wetland soils to levels which are protective of wildlife which may live or feed within the wetland. The fifth element of the preferred remedy selected in the PRAP is meant to address this goal and objective. The PRAP provides that a more precise delineation will have to be done to determine the area and depth of contamination within the six acre wetland depicted in Figure 3 of the PRAP. (PRAP at 16). The delineation described in the PRAP may provide the desired results if background soil lead levels are taken into account during the delineation process. Because background soils lead levels can be as high as 200-500 ppm in urban or suburban areas and/or near highways, we believe that lead background levels may be a significant factor in determining (1) the area within the wetland and (2) depth of wetland soil that will be subject to remediation.

RESPONSE 30: The use of background sample results was contemplated by the NYSDEC as one of the several types of data to be evaluated in the delineation of the wetland area for remediation detailed in Section 8 of the PRAP. As requested, the description of the evaluation process has been modified in Section 7 of the ROD, to specifically provide for sampling to assess predisposal conditions, or background, in evaluating the area and depth of the excavation of contaminated sediments in the wetland.

COMMENT 31: The preferred remedy provides for the installation of an interceptor trench "...designed to intercept groundwater passing through the fill and lower the water table below the fill, to prevent leaching of lead into the groundwater." (PRAP at 17). Based on the information submitted with the RI/FS, the extent that groundwater is in contact with the fill material, if any, has not been determined adequately. Although the cross-section drawings in the RI depict the base of the fill material in contact with the top of the water table, in some locations (RI, Figure 4) this depiction is based on available, but limited, data. These limited data have been interpolated to provide a presentation of hydrogeologic conditions at the landfill and do not reflect precise groundwater conditions at all locations in the landfill. In fact, soil borings and test pits excavated through the base of the fill material in several locations did not indicate the presence of groundwater in contact with the fill material. Additional data should be collected as part of the pre-design phase of the remediation to further define whether the fill material is in contact with the groundwater. Until this information is developed, it is premature to recommend that there is a need for the proposed groundwater interceptor trench as part of the preferred remedy.

RESPONSE 31: The Groundwater Interceptor Trench as included in the proposed remedy in the PRAP is the same as that proposed by the PRP in their feasibility study. While the NYSDEC agrees that the available data is somewhat limited, the presence of some portion of the landfill below the groundwater table is well established. Since other technologies or strategies exist for achieving the end result of the interceptor trench, such as relocation of the fill in areas below the groundwater table or collection of any leachate generated, the ROD has been modified to allow a further evaluation of data to best determine the means of achieving the required prohibition of the leaching of lead from the landfill into the groundwater. As proposed, the interceptor trench is still significantly less costly than other means of addressing the leaching of contaminants to the groundwater such as the solidification/stabilization treatment evaluated in alternatives 4 A/B and 6A/B.

COMMENT 32: In addition the findings in the PRAP regarding elevated lead levels in groundwater are based upon unfiltered sampling results. These results appear to form the basis for the conclusion that the interceptor trench is necessary. The PRAP reports only the total (unfiltered) metal groundwater analyses. The groundwater sampling results reported in the PRAP are not representative of dissolved concentrations of metals in groundwater at the site. In addition to the unfiltered groundwater sampling results referenced

in the PRAP, the RI/FS also provided filtered groundwater sampling results.

RESPONSE 32: The NYSDEC Division of Hazardous Waste Remediation has a long standing policy of requiring and accepting only unfiltered groundwater analytical results for Remedial Investigations, unless prior approval is granted by the NYSDEC based upon a determination that "samples of unacceptably high turbidity are unavoidable". This is as stated in DHWR TAGM #4015, " Policy Regarding Alteration of Groundwater Samples Collected for Metals Analysis", dated September 30, 1988. The TAGM also discusses the rationale for this decision, as well as, both State and Federal guidance supporting the policy. This issue was raised during the course of the RI, at which time the TAGM provisions was reviewed relative to the site groundwater condition and NYSDEC did not agree that sample turbidity warranted the use of unfiltered data, although filtered samples were also collected. While turbidity was greater than the 50 NTUs cited in the TAGM, no correlation between high NTU levels and elevated lead was apparent. Turbidity was fairly consistent in all wells, upgradient as well as downgradient and those with elevated lead levels versus those below standards.

COMMENT 33: The PRAP, at page 6, incorrectly sets forth that "the soil samples revealed that only a few iron, zinc and chromium results exceeded the NYSDEC TAGM cleanup criteria." The concentrations of metals detected are within the range of the recommended soil cleanup objectives and/or eastern United States background concentration for metals as established in TAGM 4046.

RESPONSE 33: While the concentrations did exceed the NYSDEC TAGM clean up criteria, it is recognized that they were also within background levels for the eastern United States as stated in the comment. Since this exceedence in soil was only noted in the PRAP and did not result in a recommendation for further action, a revision of this language in the ROD is not considered necessary in this case. Table 1 has however been revised as noted in this comment.

COMMENT 34: As indicated in the FS, the sludge and wetland soils will be dewatered, in accordance with the EPA SW-846 Method 9095, Paint Filter Liquids Test. The PRAP, at page 16, references a regulatory standard for dewatering material but none is specified. The regulatory standard referenced in the FS should be specified in the PRAP.

RESPONSE 34: The "paint filter test" cited in this comment is the regulatory standard referenced in the PRAP. For completeness the ROD has been modified to specify this standard, or another regulatory test which may be applicable at the time of the implementation of the remedy.

COMMENT 35: Page 5 of the PRAP provides that a wetlands delineation was done as a part of the RI. Please note that a wetland delineation was done in 1991 along the northern border of the landfill site (in connection with fencing a portion of the wetland). No delineation report was ever produced. No additional delineation was done as a part of the RI.

RESPONSE 35: The ROD has been modified to reflect this misstatement.

COMMENT 36: Page 16 of the PRAP indicates that 1.3 acres of the landfilled area encroached into a Class 1 wetland. The wetland classification is incorrect. As indicated on Page 6 of the TES Report, the wetland at the site is a Class 2 wetland (SYE-6). After reviewing the PRAP, TES confirmed the proper classification of the wetland at the site by contracting Jean Cotterill, Cortland field office, NYSDEC.

RESPONSE 36: NYSDEC recognized this error and has revised the ROD accordingly.

COMMENT 37: A number of the headings appearing on Table 1 of the PRAP do not apply to the category for E. P. Toxicity. (PRAP at 9) E.P. Toxicity is not "Media", the results of an E.P. Toxicity analysis do not apply to the SEL established in the Guidance, and there is no SEL established for E.P. Toxicity results.

In addition, Table 1 of the PRAP needs to be corrected: The frequency of lead samples exceeding the SCGs should be 0 out of 9; chromium 1 out of 9. The zinc concentration range should be 14.7 - 36.7.

RESPONSE 37: Table 1 in the ROD has been revised to incorporate several of the changes identified above and others, particularly the revised SCG for chromium in soil of 50 ppm, noticed by NYSDEC.

COMMENT 38: At Page 6, the PRAP states that there are "...solid waste corrective actions spelled out in the October 1995 Consent Decree." There are no

solid waste corrective actions contained in the October 1995 Consent Order and the reference to corrective action requirements should be removed.

RESPONSE 38: The Order recognizes the need for corrective actions to address the proper closure of the landfill, relative to alleged violations of the requirements of Environmental Conservation Law Section 27-0707. Specifically, paragraph 6 of this Order states that; "The parties contemplate that, upon completion of the work in the Work Plan for the RI/FS, Respondent will negotiate for a consent order with the Department for the development and implementation of a Remedial Design and Remedial Action ("RD/RA"). It is the understanding of the parties that such negotiation will, among other things, address, directly or indirectly, any environmental impacts of the violation alleged by this Order relating to the wetland, **solid waste disposal**. (emphasis added), as well as hazardous waste." Further the Order states that the Department reserves the right to require the Respondent to address the violation alleged in the Order independently if not included in the RD/RA activities related to the hazardous waste remedy. The language in the ROD has been modified to reflect the fact that the Order, while not specifically identifying required corrective actions, does call for appropriate actions either under the hazardous waste site remedial program or a separate action if necessary. This ROD will address the necessary closure actions to satisfy the requirements of the solid waste regulations.

ADMINISTRATIVE RECORD SYRACUSE CHINA SITE

The following documents comprise the administrative record for the Syracuse China Site, Remedial Investigation/Feasibility Study (RI/FS).

Preliminary Hydrogeologic Assessment, Syracuse China Corporation. Prepared by O'Brien and Gere Engineers, Inc., April, 1991.

RI/FS Workplan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc, November, 1993.

Quality Assurance Project Plan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc., November, 1993.

Health and Safety Plan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc., November, 1993.

Field Sampling Plan, Syracuse China Landfill, Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc, July, 1993.

Order on Consent, Index No. A601408802. In the Matter of the Development and Implementation of a Remedial Investigation/Feasibility Study for an Inactive Hazardous Waste Disposal Site, Under article 27, Title 13, and Article 71, Title 27 of the Environmental Conservation Law of the State of New York By: Syracuse China Manufacturing Company, Respondent, October 20, 1994.

Report on Geophysical Survey, Syracuse China Landfill, prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc., January, 1995.

Revised Scope of Work, Focused Feasibility Study, Syracuse China Landfill, Syracuse china Manufacturing Company, Prepared by Geraghty and Miller, Inc. April 13, 1995.

Report on Exploratory Test Pits, Syracuse China Landfill, prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller, Inc., July, 1995.

Order on Consent, Case No. C7-5125-94-08. In the matter of Alleged Violations of the Environmental Conservation Law and Title 6 of the Official Compilation of Codes Rules and Regulations of the State of New York by: the Pfaltzgraff co., D/b/a Syracuse China Manufacturing Company Respondent. October 5, 1995.

Correspondence from Elizabeth Ford of Nixon, Hargrave, Devans & Doyle LLP to Steven M. Scharf, P.E. (NYSDEC), December 21, 1995. Re: Syracuse China- Ecological Risk-Based Lead Target Soil Cleanup Number.

Remedial Investigation Report, Syracuse China Landfill, Prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller, Inc., December, 1995,

NYSDEC Memorandum: January 17, 1996 - From Richard Koeppicus (DFW) to Steven Scharf (DHWR), Re: Response to December 21, 1995 Nixon, Hargrave Devans & Doyle LLP Letter.

Correspondence from Elizabeth Ford of Nixon, Hargrave, Devans & Doyle LLP to Steven M. Scharf, P.E. (NYSDEC) February 15, 1996. Re: NHDD Response to January 17, 1996 Richard Koeppicus Memorandum.

Focused Feasibility Study, Syracuse China Landfill, prepared for the Syracuse China Manufacturing Company. Prepared by Geraghty and Miller Inc. February, 1996

Correspondence from Robert S. McEwan, Jr. of Nixon, Hargrave, Devans & Doyle LLP, To Steven M. Scharf, P.E. (NYSDEC). Re: Comments on the RI, FS and Proposed Remedial Action Plan, Syracuse China Site. March 15, 1996.

APPENDIX D

Department-Approved Remedial Design

REMEDIAL ENGINEERING, P.C.
ENVIRONMENTAL ENGINEERS

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February 29, 2000

Mr. Wayne D. Mizerak
Project Manager
Bureau Of Western Remedial Action
Division of Environmental Remediation
New York State Department of Environmental Conservation
Room 348
50 Wolf Road
Albany, New York 12233-7010

Re: Syracuse China Site. Town of Salina
Onondaga County, Site Number 7-34-053
Response to January 13, 2000 Remedial Design Comment Letter

Dear Mr. Mizerak:

Remedial Engineering, P.C., (Remedial Engineering) has prepared this correspondence on behalf of The Pfaltzgraff Co. (Pfaltzgraff) to respond to the New York State Department of Environmental Conservation (NYSDEC) January 13, 2000 letter providing comments on your review of the Specifications, Project Plans and Contract Documents and Drawings dated December 1, 1999. For ease of your review, the NYSDEC comments (*in italics*) and Remedial Engineering's responses are presented below.

Major Comment 1A

Water management at this site is crucial at all stages of the construction. Two primary approaches to water management are being implemented: one is preventive and the other remedial. The scope and details of each need to be better clarified in the specifications.

Preventive: These are the steps that need to be taken by the contractor to prevent contamination of clean areas and the re-contamination of remediated areas at the site.

- A. *As much as is possible water drainage on and through the site must be re-routed away from construction areas. The primary concern here is the discharge of the treated process water to the wetland. During the remediation of the wetland, the process water will need to be piped through the wetland and discharged at a point on the other side of the wetland. Also in the areas where soils are being removed, water that comes in contact with contaminated soils will need to be collected and treated to insure that re-contamination in remediated areas does not occur through*

sedimentation. During the excavation of wetland soils, the excavation must be performed in a localized de-watered condition. The remediated area must be isolated from all unremediated areas, before water is allowed to accumulate. If a remediated area has come in contact with contaminated water, de-watering accompanied with further excavation of a thin layer will be necessary. Confirmation sampling in that area may also be necessary. Final depths of excavation in the wetland will need to be confirmed, through surveying, before de-watering efforts can cease and backfilling can occur.

The means whereby the contractor intends to achieve the above must be submitted to the Department for approval before excavation in the wetlands can commence. The agreement that confirmation sampling in the wetland areas will not be required is based on insuring that recontamination does not occur during the remedial action. The contractor must be fully aware that failure to implement the remedial actions in a manner that insures that there is no change in the currently defined distribution of contamination will cause NYSDEC to require confirmation sampling to those areas where proper care in implementing the remedy was not maintained. This requirement must be clearly identified in the specification provided for the contractor.

Remedial: These are the steps which the contractor must take to: (1) treat and collect all construction water (i.e. de-watering runoff, etc.) generated during the remediation of the wetland, landfill consolidation, and former treatment pond areas and (2) remediate any areas re-contaminated or newly contaminated by construction activities.

Response

Specification Section 01562, 1.01(B) has been changed so water generated from construction does not run off into the wetland and states "The Contractor shall minimize the generation of construction-related Site water, and shall manage this water at no additional cost to the Owner. All construction-related site water shall be collected and stored in a minimum of one 20,000-gallon storage tank as specified in Section 01520 throughout the duration of the project. This water shall be treated using bag filters and other methods approved by the Engineer to meet the discharge criteria in the NYSDEC memorandum attached at the end of these Specifications, and sampled in accordance with the Sampling and Analysis Plan (SAP). Construction-related Site water shall not be discharged until initial samples indicate that the construction-related Site water meets the limits of the State Pollutant Discharge Elimination System (SPDES) permit in accordance with the SAP. Construction-related Site water shall be diverted around the northern wetland and discharged to the culvert which flows under Factory Avenue north of the wetland. Construction-related Site water will not be allowed to be discharged along with stormwater or effluent from facility wastewater operations through the ponds at any time, unless otherwise directed in writing by the Engineer."

Section 02200, 3.03(E) has been changed to address potential runoff to and from the wetlands excavation areas and states "Excavation of wetland soils shall be performed in a localized de-watered condition which isolates the excavation from unremediated areas. Any water generated during wetland remediation activities shall be handled and treated in accordance with Section 01562."

Section 01562, 1.01(F) and Section 02200, 1.01(H) have both been added to address potential re-contamination of soils due to improper management of construction-related Site water and both state "Soils which become re-contaminated due to the improper management of Site water will be excavated to limits determined by the Engineer and placed in the landfill at no cost to the Owner. The excavated area shall be restored to proper grade to the satisfaction of the Engineer at no cost to the Owner".

Final depths of excavation will be confirmed through surveying as detailed in Section 02200, 3.03(C) which states "Excavation of the soil from the northern wetland shall be to the minimum depths shown on the Drawings with a tolerance of +2 inches. The vertical limits of excavation shall be confirmed by installing grade stakes in a 100-foot grid pattern in the wetlands. The upper limit of excavation shall be at the bottom of the surface vegetation and shall be surveyed. The lower limit of the excavation shall also be surveyed at each stake location. The vertical limits of excavation will be coordinated with the NYSDEC. Surveying shall be performed in accordance with Section 01050."

As discussed previously with NYSDEC, confirmation samples will not be collected as the potential for re-contamination has been addressed through requirements for the Contractor to excavate re-contaminated areas in Section 01562, 1.01(G) and 02200, 1.01(H).

Major Comment 1B-1

Once the construction water has been collected, it will need to be treated. These details are being left to the contractor. The following must be included in the specifications:

- 1. The contractor must be fully aware of the discharge limits on the construction water which must be met before the water can be discharged. The point of discharge of the construction water is subject to the same constraints mentioned above concerning the discharge of treated process water from the active facility.*

Response

The current SPDES permit is included at the end of the Specifications for the Contractor's reference and the SPDES permit is also referenced in Section 01562 of the Specifications.

Major Comment 1B-2

Before any construction can begin:

- a. A work plan must be submitted for review and approval by the Department.*

- b. *The accepted plan must be in place. It must be demonstrated that it will perform as required. We suggest that the effluent is pumped into a frac tank until three successive samples from three successive days prove that the effluent meets the discharge criteria. After this point, sampling can be relaxed (weekly) and water can be discharged directly into the receiving body.*
- c. *Proper oversight is needed to insure that the treatment system performs properly and that the conditions specified in the design as necessary for proper performance of the system are maintained.*

Response

- a. Refer to Major Comment 11 for a list of submittals required from the Contractor.
- b. Section 01562, 1.01(B) specifies minimum storage volumes and treatment for construction-related Site water. Refer to Major Comment 1A. Section 01562, 1.01(B) includes a sentence that precludes the discharge of construction-related site water until the Contractor can show that the water meets the criteria of the SPDES permit. Refer to Major Comment 1A for wording of Section 01562, 1.01(B). Table 1 of the SAP has also been changed to reflect three additional samples to prove that the effluent meets the SPDES criteria. The revised Table 1 of the SAP is attached.
- c. Remedial Engineering acknowledges the NYSDEC's comment concerning oversight of the treatment system.

Major Comment 1B-3

Refer to recommended comment #6 for further discussion of this issue.

Response

Remedial Engineering refers NYSDEC to Major Comment 6 for further response.

Major Comment 2

Management of the potential for disturbing the top 18 inches of wetland soils before they are excavated must proceed with the same care as indicated above for the management of water at the site. In this area too, the contractor must be fully aware that failure to implement the remedial actions in a manner that insures that there is no change in the currently defined distribution of contamination will cause NYSDEC to require confirmation sampling to those areas where proper care in implementing the remedy was not maintained.

To be sure that this is specified adequately in the contract specification, a statement requiring confirmation sampling needs to be added to Section 2200 3.03D. This addition must be included when this section is added to the clearing and grubbing Section (02110) as noted below.

Response

As indicated in the Response to Major Comment 1A, the Contractor is now required in the Specifications to route construction-related water around the wetland, to isolate the Work areas (via silt fence or other means) and to excavate any areas suspected of being re-contaminated by Site water to the Engineer's satisfaction. As discussed previously with NYSDEC, no confirmation sampling will be included as the Specifications adequately address the actions to be taken if an area is re-contaminated due to improper handling of construction-related water.

Major Comment 2 (continued)

Since the same potential for disrupting the current contaminant distribution is present during the clearing and grubbing of the wetland, Section 2200, 3.03(B) & (D) and all accompanying modifications must be added to Section 2110, 3.01(C).

Response

The wording from Specification Section 02200, 3.03(B) and (D) was also included in Section 02110, 3.01(C) and (D).

Major Comment 3

Section 02110 3.02 (C): Must include the same specifications noted in 2200 3.03 (D).

Response

Specification Section 02110, 3.02(B) will state "In the wetland area of the Site, clearing and grubbing shall only be performed after inspection and staking of wetlands soils by the Engineer in coordination with the NYSDEC and in accordance with Section 02200." This will require the use of low ground pressure equipment and will prohibit excessive rutting and mixing of soils.

Major Comment 4

Within the vicinity of SB17, the backfilling of this area must occur immediately after this area is excavated to the required depth of 18 inches. The backfilling in this area must occur before de-watering activities cease. This area contains lead at 790 ppm. Migration of lead contaminated soils from this location must be prevented.

Response

Specification Sections 02200, 3.03(F) and 02900, 3.01(B)5 have both been added which state, "The area of the wetland in which 18 inches of soil are removed, shall be backfilled within 24 hours of completion of the excavation."

Major Comment 5

There is no criteria provided to define the lateral extent of excavation. The specifications need to specify what criteria the contractor must use to determine when to stop lateral excavation.

Response

The Drawings indicate the lateral extent of excavation on Sheet 14 which includes a limit of disturbance line. The lateral extent of excavation is generally limited by natural barriers such as existing berms, railroad tracks and the access road from Factory Avenue. Lateral extent of excavation is also addressed in Specification Section 02200, 3.02(A) which states "Contaminated soil and waste located outside the identified cap limits shall be excavated, and consolidated beneath the landfill cap in accordance with Section 02205."

Major Comment

The following criteria should be included in 3.01 of Section 02900. In areas where the confirmation sampling indicates that residual lead in the remaining soils is below 400 ppm, backfilling with only 6 inches of top soil would be acceptable. In areas where the confirmation sampling indicates that residual lead in the remaining soils is above 400 ppm, 12 inches of top soil would need to be added as a cover.

Response

As discussed previously with NYSDEC, no confirmation samples will be collected. Visual observation will be used to determine the depths of excavation. Previous investigation at the site indicated that the soils underlying the china are not contaminated. Additionally, the remediated areas will be covered with a minimum of 6 inches of clean topsoil and the site use will be restricted, minimizing the potential for contact with lead-impacted soils.

Major Comment 7

The procedure for staking the wetlands to determine vertical limits of excavation needs to be more clearly specified in Section 21103.02B. In addition to what is mentioned in this section about coordination with NYSDEC, it should note that the beginning point of the depth measurement is below the vegetative layer. It should also note that each stake and the beginning point of the depth measurement must be surveyed in, laterally and vertically. This information must be maintained for future reference when the depths of excavation are later confirmed through surveying.

Response

As discussed in Major Comment 1A, a reference to Section 02200 has been added to Section 02110, 3.02(B) and Section 02200, 3.03(C) has been changed to clarify the staking requirements and vertical limits of excavation. See Major Comment 1A for wording of Section 02200, 3.03(C).

Major Comment 8

Several sections need to have de-watering conditions placed in them. All activities requiring excavation or placement of materials are subject to the de-watering criteria. A description of the criteria which will be used to determine whether or not any materials require de-watering needs to be inserted in sections 1520, 2140, 2200, and 2205. It should be noted that there are two types of de-watering activities: (1) a localized de-

watering to keep excess water out of the current zone of excavation, (2) a contained de-watering of materials excavated and-or placed which do not pass the paint filter test according to the CQAP. All fluids obtained through de-watering activities must be managed according to Section 01562.

Response

Specification Section 01520, 1.01(C) was added which states "All staged materials that require dewatering must be staged in such a way that the liquids released by those materials are collected and managed according to Section 01562. Dewatering shall continue until materials pass the paint filter test in accordance with the CQAP." Dewatering of excavated sludges is already specified in Section 02140, 3.03. Section 02200, 3.04, "Dewatering of Excavated Soils" was added and states:

- A. "The Contractor shall select and provide the dewatering equipment, labor and materials to be used for the Work. In all cases, independent of the system selected and the conditions encountered, the Contractor shall be responsible for adequately and properly dewatering the excavated soils and treating the dewatering water."
- B. "Dewatering activities shall be performed in the staging area shown on the Drawings."
- C. "All soils shall be dewatered until the Contractor demonstrates that the soils pass the paint filter test in accordance with the requirements of the CQAP."
- D. "A staging area for the dewatering of excavated soils will be constructed in accordance with Section 01520. Excavated soils shall be staged until dewatering is complete. Dewatered soils shall be protected from precipitation."
- E. "The excavated soils, dewatered as necessary, will be consolidated under the proposed cap in accordance with Section 02205 and the Drawings."

Section 02205 already includes a dewatering reference in Paragraph 1.01(C) which has been changed and now states "All materials shall be excavated and dewatered (Section 02200) and staged (Section 01520) as necessary in accordance with these Specifications, and placed within the cap footprint shown on the Drawings."

Major Comment 9

Section 1520 must include a statement that says: "All staged materials that require de-watering must be stated in such a way that the liquids released by those materials are collected and managed according to Section 1562."

Response

This statement has been added to Section 01520, 1.01(C). See Major Comment 8 for wording.

Major Comment 10

Section 01520-3, Part 3.02: When the staging pads under soil stockpiles are removed and are no longer needed, confirmation samples must be taken in this location to ensure contamination did not migrate through the bottom liner. The same is true with the decon pad.

Response

Specification Section 01520, 3.02(D) was added which states "If the Contractor stages materials in an area of the site which has already been remediated or does not require remediation, soil samples shall be collected prior to staging materials in that area and after the staged materials have been removed. If the soils below or around the staged materials become contaminated, the Contractor shall excavate the contaminated soils and consolidate the material beneath the landfill cap in accordance with Section 02205. The Contractor shall also backfill any such excavations using clean fill. Any additional excavation and backfill required as a result of improper stockpiling shall be performed to the satisfaction of the Engineer at no cost to the Owner."

Major Comment 11

Other documents which need to be submitted to NYSDEC and NYSDOH for review include the contractor's Health and Safety Plan, Sampling and Analysis Plan, and a general Work Plan that explains how the contractor plans to implement the remaining activities included in these specifications.

Response

Section 00100 I-15 includes a list of the required submittals from the Contractor which include:

1. Contingency Plan
2. Health and Safety Plan
3. Special Construction Technique Submittal
4. List of Subcontractors
5. Quality Assurance/Control Plan
6. Construction Schedule
7. Implementation Plan
8. Erosion and Sediment Plan
9. Traffic Control Plan
10. Any other documents required by the Contract Documents

The Contractor submittals will be forwarded to NYSDEC and NYSDOH for review as required.

Major Comment 12

The O&M plan will not be formally reviewed until the construction is near completion and a Draft O&M plan is submitted for NYSDEC and NYSDOH review. Specific details will be discussed at that time. The general scope included in the specifications is adequate based upon projected final remedial conditions.

Response

Remedial Engineering acknowledges that the post remedial Operations and Maintenance Plan will not be formally reviewed until construction is near completion.

Minor Comment 1

Section 15102.01C(2): There are three desks, I would assume that at least three chairs are needed. A chair will need to be dedicated to the NYSDEC onsite representative.

Response

Specification Section 01510, 2.01(C) 2, c was changed to "three office swivel chairs."

Minor Comment 2

Section 1520.3.02A: The following statement or an equivalent statement must be included: "Soils that require de-watering need to be stated in such a way that all water that leaches from the soil is collected and managed according to Section 1562. The de-watering will continue until the material passes the paint filter test in accordance with the requirements of the CQAP."

Response

Management of water from dewatered soils was addressed in Section 01520, 1.01(C). Refer to Major Comment 8.

Minor Comment 3

Section 01560 1.03: A specific reference that states the need to meet specification 02200 3.03D & F should be added.

Response

Specification Section 01560, 1.03(D) has been changed and states "The Contractor shall take special precautions and comply with all applicable regulations when working in or near wetland areas. Clearing and grubbing shall be performed in accordance with Section 02110 and Section 02200 Paragraph 3.03."

Minor Comment 4

Section 01560 1.06: The following statement or an equivalent statement needs to be inserted: "Erosion control in consolidation areas upgradient of remediated wetlands is essential to prevent re-contamination of the remediated areas with a subsequent requirement for confirmation sampling."

Response

Specification Section 01560, 1.06(G) has been added and states "Erosion control upgradient of remediated wetland areas is essential to prevent recontamination. If remediated wetlands become re-contaminated with surface-water runoff, the area shall be excavated to limits determined by the Engineer and in accordance with Section 01562, Paragraph 1.01." Confirmation samples will not be collected as potential re-contamination due to surface-water runoff is being addressed with requirements for excavation.

Minor Comment 5

Section 02140 3.01 C(2): Need to be rewritten. The current schedule of operations says that the new SPDES treatment ponds will be completed and the process water diverted before any other construction activities begin. That which is currently written does not reflect this change in plans.

Response

Specification Section 02140, 3.01(C)2, has been rewritten and states "The new ponds shall be completed and placed into operation prior to excavation of the existing wastewater settling ponds and all sludge removal activities. Work on the existing ponds shall not occur until the new ponds are operating successfully in accordance with Section 01562 and as approved by the Engineer."

Minor Comment 6

Section 02140 3.02B: After "Pond 1: 10 feet" insert "of sludge located approximately." Do this for each of the other ponds described below this one.

Response

Specification Section 02140, 3.02(B) has been re-written and states,

B. "The ponds shall be excavated initially to the areal extent shown on the Drawings, and the depths as follows:

Pond 1: 10 feet of material located below approximately 1.5 feet of standing water.

Pond 2: 8 feet of material located below approximately 5.5 feet of standing water.

Pond 3: 7 feet of material located below approximately 3.5 feet of standing water.

Pond 4: 12 feet of material located below approximately 6.5 feet of standing water.

Sludge Pond: 10 feet of material located below approximately 0.5 feet of standing water."

Minor Comment 7

Section 2140 3.03 A: At the end add: "...and properly collecting and managing the fluids as specified in 01520 and 1562, respectively.

Response

Specification Section 02140, 3.03(A) was changed and the last sentence states "In all cases, independent of the system selected and the conditions encountered, the Contractor shall be responsible for adequately and properly dewatering the excavated sludges and collecting and managing fluids in accordance with Sections 01520 and 01562."

Minor Comment 8

Section 2200 3.03(F) must be added: "Excavation and construction water management must be performed in a manner that ensures that redeposition of lead contaminated sediments does not occur in remediated areas.

Response

Specification Section 02200, 3.03(G) was added and states "Excavation and construction water management must be performed in a manner that prevents redeposition of contamination in the wetland. Soils which become re-contaminated shall be excavated to limits determined by the Engineer and in accordance with Paragraph 1.01."

Minor Comment 9

Section 2205 1.01 A: Add a number "3. Clearing and grubbing materials."

Response

Specification Section 02205, 1.01(A)3 was added and states "Clearing and grubbing materials."

Minor Comment 10

Section 2205 1.01 C: The issues (i.e., excavated, de-watered and staged) are accurate, but the references to the specific specifications are not. Section 1500 does not exist and 1520 goes with staged, not de-watering as indicated in the text. There is no distinct de-watering specification. Refer to major comment #8.

Response

Specification Section 02205, 1.01(C) was rewritten to correct the Section references and states "All materials shall be excavated and dewatered (Section 02200) and staged (Section 01520) as necessary in accordance with these Specifications, and placed within the cap footprint shown on the Drawings."

Minor Comment 11

Section 22.5 3.01 B: The placement of the "other consolidated materials" and the "barrier protection layer" in reference to above and below the geosynthetic layer is not correct. Insert the following or equivalent: "Within the cap limits, all other consolidated materials placed below the geosynthetic membrane and the materials used in the barrier

protection layer placed above the geosynthetic layer shall be placed in six-inch lifts and compacted to 90 percent of the Standard Proctor Density."

Response

The first sentence of Section 02205, 3.01(B) was replaced with the following sentence, "Within the cap limits, all other consolidated materials placed below the geosynthetic membrane and the materials used in the barrier protection layer placed above the geosynthetic membrane shall be placed in six-inch lifts and compacted to 90 percent of the Standard Proctor Density."

Minor Comment 12

Section 2205 3.02 A(4): Include this statement: "Increasing the slopes or expanding the cap limits must be with NYSDEC concurrence."

Response

The following sentence was added to the end of Section 02205, 3.02(A)4, "Increasing the slopes or expanding the cap limits shall only occur with NYSDEC concurrence."

Minor Comment 13

Section 2223 1.01 A (1)a: there should be an 'a' and a 'b' here. The 'a' for what fill materials can be placed below the cap and the 'b' for what fill materials can be placed above the cap. Contaminated soils or clearing and grubbing materials cannot be placed above the geosynthetic liner.

Response

Specification Section 02223, 1.01(A)1, parts a and b were changed and state,

- a. "Contaminated fill materials from on-site soil sources may be used under the synthetic geomembrane only."
- b. "Uncontaminated on-site soil sources may be used in the cap both above and below the geosynthetic membrane."

Specification Section 02223, 1.01(C)4 was added which states,

"4. Landfill Cap Liner Cushion Layer"

Minor Comment 14

Section 02900 1.01: The following needs to be included:

- A. *Monitoring the success of the recovered wetland needs to be carried out for five years. (This is standard time period for monitoring wetland mitigation and restoration). If wetland mitigation and recovery are not sufficient, further remedial and restorative actions will be necessary.*

- B. Notification to Ray Nolan at Region 7 Cortland Office of commencement of wetland recovery work must be sent at least one week prior to anticipated start date. Fax, telephone or e-mail is OK.*
- C. Notification of completion of wetland recovery work accordingly must be sent to Ray Nolan not less than one week and not more than two weeks before substantial completion of the wetland recovery work.*
- D. Provision of a copy of "as built" plans for the wetland recovery portion of the project must be sent to Ray Nolan at the Region 7 Office in Cortland.*

Response

- A. The short term requirements for the Contractor are discussed in Section 02900 Paragraphs 3.03 and 3.04. The Scope of Work for Operations and Maintenance includes proposed long term vegetation inspection and maintenance. The NYSDEC indicated that the Scope of Work for Operations and Maintenance was adequate in the January 13, 2000 correspondence (refer to NYSDEC's Major Comment 12).
- B. Remedial Engineering will notify the appropriate NYSDEC personnel at least one week prior to the anticipated start-date for wetland remediation.
- C. Remedial Engineering will notify the appropriate NYSDEC personnel no less than one and not more than two weeks prior to completion of wetland restoration activities.
- D. Remedial Engineering will submit a complete set of as-built drawings to the appropriate NYSDEC personnel after completion of the remedial activities.

Minor Comment 15

Contingency Plan 2.2: The storm waters must be managed according to Section 01562.

Response

A sentence was added to the end of Section 2.2 of the Contingency Plan which states "Storm water will be managed in accordance with Section 01562 of the Specifications and the existing SPDES permit."

Minor Comment 16

Contingency Plan 4.2: If a spill occurs within the vicinity of the tracks, it would be a good idea to notify Conrail immediately instead of within 24-hours, especially if the spill is really close to the tracks and the use of the rail and the cleanup have a potential to overlap.

Response

Conrail is now CSX and an application to access CSX's right-of-way is currently being prepared. Remedial Engineering will require reporting of any spills in CSX's right-of-way in accordance with CSX's specifications.

Recommended Comment 1

Section 00010, Page 2, sixth paragraph: The plans and specifications should be the only items sent directly to each contractor. Otherwise, discrepancies between documents can arise and cause serious problems. Past documents (such as the RI, ROD, Consent Order, etc.) that need to be readily available to the contractor should be located in a document repository and referenced in the specifications. It should be clear that these documents are for information purposes only.

Similarly, items which need to be distributed to the contractor with the plans and specifications (i.e., boring logs, other subsurface information, etc.) should be separately bound with the words "not part of the contract documents" written on the cover. Again, it should be clear in the specifications that this is for informational purposes only.

Response

The Consent Order requires that a copy of the Consent Order be provided to the Contractor. Remedial Engineering acknowledges this comment and will advise the Contractor that other documents are for information purposes only.

Recommended Comment 2

Section 00010, Part IIIB and Section 00100 Part 1-20: The contractor should not be allowed to set a completion time. A definite number of days for substantial and final completion must be provided to the contractor. This is to ensure that all bidders are providing estimates based on the same work.

Response

Since the project schedule requires the Contractor to complete the project within the year (2000), the bids should be comparable. Remedial Engineering acknowledges this comment and will consider the project schedule prior to receipt of bids.

Recommended Comment 3

Agreement, Page 2: Since it is often difficult to predict when the contractor will be able to begin working, we suggest that a length of time (in days) for substantial and final completion is specified instead of a fixed date.

Response

Refer to Recommended Comment 2.

Recommended Comment 4

Section 01060: Has the PRP satisfied the conditions necessary for obtaining nationwide permit No. 38 from the USACOE for wetland mitigation work? The documentation showing compliance with this requirement must be provided. This section also indicates

that the discharged, treated construction water will need a permit. This is not true. It will need to meet the substantive requirements of a permit. The revised discharge limits will be reissued by the Division of Water, since the current discharge limits have expired.

Response

Pfaltzgraff is in the process of obtaining the United States Army Corps of Engineers (USACOE) Nationwide Permit No. 38 for the wetlands work and documentation will be provided to NYSDEC when it is received. Remedial Engineering will adjust the wording in Section 01060 to clarify that the discharges must meet the "substantive requirements" of the permits.

Recommended Comment 5

Section 01200, park 1.02A: We suggest changing the frequency of progress meetings from weekly to biweekly. Having them more frequently than biweekly diminishes the importance of each meeting and reduces overall attendance.

Response

Internal progress meetings between Pfaltzgraff, Remedial Engineering and the Contractor will be held weekly. NYSDEC may attend meetings bi-weekly.

Recommended Comment 6

Section 01562: The Department has some further concerns relating to management of site water. Specifically, these concerns are:

- a. The specs as written leave it up to the contractor to determine which technology will be used to temporarily treat construction and process waters. This in essence is a design-build job. We strongly urge that this is not permitted for this project. On our SSF projects, design-build jobs are not allowed because everyone is not bidding on the same thing. Contractors without engineering staff may be at a disadvantage, the overall number of bidders may be lowered and the design is not stamped and signed by a pre-approved engineer. Therefore, we believe that a proven technology for removing turbidity must be specified to the contractor in the specifications.*
- b. At a minimum, the discharge criteria must be included in this section.*

Response

- a. Specification Section 01562 will now require a minimum of one 20,000-gallon storage tank and bag filters to treat construction-related water. This section also requires the Contractor to meet the SPDES permit discharge limits. Remedial Engineering's opinion is that this information is sufficient for the Contractor to bid the construction-related water treatment system.
- b. The revised SPDES permit will be included at the end of the Specifications and is referenced in Section 01562.

Mr. Wayne D. Mizerak
February 29, 2000
Page 16

Recommended Comment 7

Appendices: any project plans which are not directly applicable to the contractor (i.e., consultant's HASP) should be removed from the specifications.

Response

Remedial Engineering acknowledges this comment, however, Remedial Engineering commonly provides the Contractor with a copy of Remedial Engineering's Health and Safety Plan (HASP) to aid the Contractor in preparing their own HASP.

Recommended Comment 8

Drawing 13, detail 4: Will the neoprene gasket be adequate to protect the PVC gas vents from expansion/contraction of the concrete mowing strip during changes in the weather? Are the concrete collars necessary?

Response

The pipe boot with the neoprene gasket is a standard detail from a geosynthetic membrane manufacturer and takes the concrete expansion and contraction into consideration.

Please note that revised specifications incorporating these changes have been sent to you under separate cover. We expect that these changes are consistent with our discussions of February 8, 2000 and as such we would anticipate your approval of the remedial element of this project. Should you have any questions or comments, feel free to call me at (631) 232-2600.

Sincerely,

REMEDIAL ENGINEERING, P.C.



Peter J. Gerbasi, P.E.
Principal Engineer

Attachments

cc: Elaine Enfonde – Nixon Peabody LLP

Table 1. Projected Number/Frequency of Field Samples (Remedial Action)

Parameter	Method	Sample Type	Frequency	Field Duplicates ^(a)	Field Blanks ^(a)	MS/MSD ^(b)	Estimated Total number of Samples
Fill Material							
Target Compound List	Various	Discrete	1/2500 cy	1/20	1/20	1/20	10
Polynuclear Aromatic Hydrocarbons	8270 ^(c)	Composite	1/1000 cy	1/20	1/20	1/20	25
RCRA Metals	6010/7471 ^(c)	Composite	1/1000 cy	1/20	1/20	1/20	25
Post Excavation							
Lead-sludge from ponds	USEPA 6010	Confirmatory	1/200 linear feet 1/2500 sq. feet	NA	NA	NA	29
Lead-over excavated soils below China	USEPA 6010	Confirmatory	4/acre	NA	NA	NA	28
Wastewater (Remediation Water) ^(e)							
Lead (total)	200.7 ^(d)	6 Hour composite	Weekly	NA	NA	NA	27
Total Suspended Solids(TSS)	160.2 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
Total Dissolved Solids (TDS)	106.1 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
pH	Meter	6 hour composite	Daily	NA	NA	NA	183
Biological Oxygen Demand 5 (BOD5)	Visible	Grab	Weekly	NA	NA	NA	27
Foam	Visible	6 hour composite	Daily	NA	NA	NA	183
Oil & Grease	Visible	Grab	Daily	NA	NA	NA	183
Flow	Monitor	Grab	Continuous	NA	NA	NA	NA
		Totalizer					
Wastewater (SPDES outfall) * ^(f)							
Flow	Monitor	Recorder	Recorder	NA	NA	NA	NA
Temperature	Monitor	Grab	Twice/week	NA	NA	NA	51
Total Dissolved Solids	106.1 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
Total Suspended Solids	160.2 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
BOD5	405.1 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
Oil & Grease	413.1 ^(d)	Grab	Monthly	NA	NA	NA	9
Boron (total)	212.3 ^(d)	6 hr composite	Quarterly	NA	NA	NA	5
Lead (total)	200.7 ^(d)	6 hour composite	Twice/month	NA	NA	NA	15
pH	Meter	Grab	Twice/week	NA	NA	NA	51

Notes:

The expected turnaround time for sample results is 10-14 days.

Estimated total number of samples is based on a 6-month construction period.

- (a) Frequency estimates based on one blank per twenty samples, or one per day minimum.
- (b) Matrix Spike/Matrix Spike Duplicate (for metals duplicate sample) - one per twenty samples.
- (c) Test Methods for Evaluating Solid Waste
- (d) 40 Code of Federal Regulations Part 136
- (e) Remediation wastewater shall be sampled for 3 consecutive events (with a 24-hour turnaround time), one event every 5,000 gallons for 3 events prior to discharge. Thereafter, wastewater shall be sampled in accordance with this table.
- (f) Facility wastewater shall be sampled for 3 consecutive events (with a 24-hour turnaround time), one event every 600,000 gallons for 3 events prior to discharge. Thereafter, wastewater shall be sampled in accordance with this table.

* In accordance with SPDES Permit Number NY 100137 issued to the facility operator.

**SPECIFICATIONS, PROJECT PLANS AND
CONTRACT DOCUMENTS**

VOLUME I OF II

**Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
Town of Salina, Onondaga County, New York**

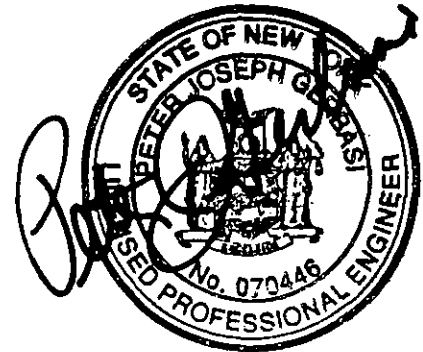
February 25, 2000

Prepared for:

**The Pfaltzgraff Co.
140 East Market Street
York, Pennsylvania 17401**

Prepared by:

**REMEDIAL ENGINEERING, P.C.
and
ROUX ASSOCIATES, INC.
1377 Motor Parkway
Islandia, New York 11788**



**SPECIFICATIONS, PROJECT PLANS
AND CONTRACT DOCUMENTS**

SPECIFICATIONS

Section	Title
<u>Division 0 – Contract Requirements</u>	
00010	Invitation to Bid
00100	Instruction to Bidders
00300	Bid Form
00310	Confidentiality Agreement
00500	Agreement
00700	General Conditions
00800	Supplementary Conditions
<u>Division 1 – General Requirements</u>	
01000	Measurement and Payment
01005	Definitions
01010	Summary of Work
01050	Surveys and As-Built Drawings
01060	Regulatory Requirements
01080	Fencing and Warning Signs
01200	Project Meetings
01300	Submittals
01400	Quality Control
01510	Temporary Construction Facilities and Utilities
01517	Health and Safety Requirements
01520	Temporary Staging and Storage Requirements
01550	Access Roads

**SPECIFICATIONS, PROJECT PLANS
AND CONTRACT DOCUMENTS**

SPECIFICATIONS

Section	Title
01560	Temporary Controls
01562	Management of Site Water
01565	Equipment Decontamination Requirements
01700	Contract Closeout

Division 2 - Site Work

02110	Clearing and Grubbing
02140	Pond Remediation
02200	Excavation
02205	Material Consolidation and Compaction
02210	Monitoring Wells and Gas Vents
02223	On-Site Fill Materials
02225	Off-Site Fill Materials
02275	Geotextiles
02277	Geosynthetic Membrane
02623	High Density Polyethylene (HDPE) Piping and Accessories
02900	Loaming, Hydroseeding and Northern Wetlands Restoration

PROJECT PLANS

Title
Citizen Participation Plan
Construction Quality Assurance Plan
Contingency Plan
Health and Safety Plan
Scope of Work for Operation and Maintenance
Sampling and Analysis Plan

MISCELLANEOUS DOCUMENTS

Title

Specific Requirements of CSX for Work On Its Right Of Way
Facility SPDES Permit
Construction Wastewater Discharge Memorandum

**SECTION 00010
INVITATION TO BID**

I. INTRODUCTION

This Invitation to Bid is being issued on behalf of The Pfaltzgraff Co. (Pfaltzgraff) by Remedial Engineering, P.C. (the Engineer or Remedial Engineering), an environmental engineering firm which has been retained by Pfaltzgraff to act as Owner's Representative in connection with the bidding and construction phases of the Remedial Action (RA) Site No. 7-34-053 listed in the New York State Registry of Inactive Hazardous Waste Sites (Project). The site is located to the north of the Syracuse China Company facility and south of Factory Avenue in the Town of Salina, Onondaga County, New York (Site). The remedial obligations regarding the Site will be set forth in the Consent Order (RD/RA Consent Order), a copy of which will be provided, once it is executed. A copy of the Record of Decision (ROD) which is included for informational purposes is attached in Appendix A.

The obligations and responsibilities of the contractor selected to provide RA services (Contractor) will be governed by applicable state, federal and local law which shall include all relevant statutes, rules, codes, regulations, orders, administrative and technical guidance and procedures, together with the RD/RA Consent Order, (Applicable Law) and the Remedial Design (RD) Documents prepared by Remedial Engineering, described below and copies of which are attached as Appendix B. Please accept this letter as a formal invitation to bid.

Pfaltzgraff is the entity which will be engaging and directing the work of the Contractor for the Project. Bidders should note that the Site is no longer owned by Pfaltzgraff, but by Syracuse China Company a wholly-owned subsidiaries of Libbey Glass Inc. (collectively, Site Owner or Purchaser). Despite the change in Site Ownership, Pfaltzgraff has retained remedial responsibilities at the Site. Consequently, the Contractor must be mindful during performance of the RA that while it is working for Pfaltzgraff it must also fully protect Site Owner and comply with the access rules and conditions imposed by the Site Owner as well as by Pfaltzgraff. Issues arising between Pfaltzgraff and the Site Owner will be resolved by those entities, and Contractor will take direction from Pfaltzgraff (or the Owner's Representative) alone, except with respect to Site security, access and safety issues. **Notwithstanding the change in Site Ownership, Pfaltzgraff is contractually required to take affirmative steps to avoid disruptions of Site Owner's operations. This is particularly critical with respect to the wastewater system which is used in the Site Owner's daily manufacturing operations. Any construction activity must provide for a continuous operation of the State Pollutant Discharge Elimination System (SPDES) outfall.**

While Pfaltzgraff is committed to achieving Site remediation, it desires to do so in the most cost-effective manner possible. Thus, Pfaltzgraff is interested in retaining a contractor who is fully qualified to perform RA services¹. This Invitation to Bid is for the scope of work identified in the RD documents. The principal aspects of the on-site RA consist of:

- A. Excavation and consolidation of landfill material, wastewater settling pond sludges, and northern wetland soils,
- B. Restoration of excavated areas,
- C. Installation of multi-layer impermeable cap, and
- D. Re-construction of temporary and permanent wastewater treatment facilities, as necessary, to maintain the current wastewater discharge.

The RA will also include all other features required by the Remedial Design documents.² The following Bidding documents, which are enclosed herein, will provide a more comprehensive description of the Site and the required remedial activities;

Site Investigation Documents

- Remedial Investigation

Remedial Design Documents

- Final Technical Specifications, Project Plans, and Contract Documents
- Final Construction Drawings

General

- RD/RA Consent Order
- Record of Decision
- Army Corps. of Engineers Wetland Permit
- Draft form of the Contract for Construction and Environmental Remediation Work
- Bid Forms
- Performance and Payment Bonds forms

¹ The Contractor must be fully qualified under Applicable Law to provide all of the services requested. To the extent it is required to prepare submittals and shop drawings, Contractor must comply with the requirements set forth at 6 NYCRR 360 1.9(e) for all engineering plans, reports and specifications prepared for submission to the New York State Department of Environmental Conservation (NYSDEC).

² The Remedial Design documents are subject to final review and approval by NYSDEC. Approval has been obtained on 95% complete RD documents, and the final documents are being submitted to NYSDEC concurrently with the issuance of this bid package. To the extent NYSDEC has comments, an addendum will be issued as promptly as possible and the time to respond will be equitably extended.

These documents are either available or attached to this Invitation to Bid for the Bidders' review and use in preparing its submissions. Documents that are not attached such as the Remedial Investigation report are available for your review at the Rochester office of Nixon Peabody LLP (NP), legal counsel for Pfaltzgraff. If you believe that a review of any other document is necessary to prepare your bid, please contact Elaine Enfonde of NP at (716) 263-1596 and the necessary arrangements will be made.

Prior to submitting a Bid for this Project, your firm must review and affirm its ability to perform work on the Project without conflict of interest with Pfaltzgraff, Site Owner, Remedial Engineering, Roux Associates, Inc. (Roux Associates) or NP. If a conflict exists, Contractor should not submit a bid. In addition, Contractor should not submit a bid if it lacks the financial or manpower resources, ability to comply with the indemnification, insurance and bonding requirements set forth herein, or expertise required to complete the Scope of Work outlined in this Invitation to Bid or if Contractor is unable to comply with Applicable Law in the performance of the obligations for this project. The Contractor's and Subcontractors' personnel must certify that they are in compliance with all requirements as specified in the OSHA regulations at a minimum, 29 CFR Part 1910.120, (HAZWOPER) 29 CFR 1926.62 (Lead Standard) and OSHA's Special Emphasis Program (SEP) for Silicosis.

II. OBJECTIVES

Pfaltzgraff's primary objective in selecting a Contractor is the successful construction and implementation, in accordance with Pfaltzgraff's budget and schedule constraints, of an RA that is consistent with the requirements set forth in the RD/RA Consent Order, and the Remedial Design Documents. The RA must meet the requirements set forth in the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), the National Contingency Plan (NCP), the U.S.E.P.A. Draft Guidance document "Superfund Remedial Design and Remedial Action Guidance," or any applicable NYSDEC or remedial action guidance and regulations (including subsequent revisions to date), and any appropriate remediation/construction administrative guidelines in effect.

III. CONTENTS OF BID

A. Scope of Work

General

A copy of the Summary of Work and a Sequence of Work prepared by Engineer is provided in the Technical Specifications. A temporary Site water management system must be operable prior to excavation, consolidation and relocation of the landfill material, pond sludges, and wetland soils. It should be noted that the materials on-site contain lead and silica, therefore an appropriate Health and Safety Plan (HASP) must be developed and implemented by the Contractor. The HASP must be signed and implemented by a certified health and safety professional.

B. Project Schedule

Bidders must include a proposed schedule for the Project (Project Schedule) indicating completion in 2000. The schedule shall provide a listing of detailed milestone dates required to complete each element of the RA. The Project Schedule must fulfill the requirements of Applicable Law and is subject to review and approval by Engineer and Owner.

C. Exceptions

Bidders must include with their bid response any comments regarding this Invitation to Bid, the terms of Contract and the other documents which will govern the Scope of Work. Any exceptions to the terms of this Invitation to Bid and its attachments must be set forth separately and in detail in an Exceptions Statement. Requests by Contractor for changes to the Invitation to Bid and/or its attachments after the Project has been awarded to Contractor may be deemed grounds for cancellation of the award.

D. Qualifications

Contractors desiring to submit a response to this Invitation to Bid (Bidders) shall submit a qualification package containing the following information:

1. Provide and identify the following financial and corporate information:
 - a. Provide an insurance certificate which provides the coverage required by the form of Contract attached hereto as Appendix C and can be amended to name Pfaltzgraff and the Site Owner, NP, Remedial Engineering, Roux Associates, and any site users as additional named insureds;
 - b. Summarize your bonding capability;
 - c. Identify the work you have completed in the past three years or are currently performing under contract with EPA and/or NYSDEC;
 - d. Describe any alleged regulatory violations (whether or not settled, resolved or pending) over the past five years and any ongoing litigation involving your firm;
 - e. Provide 1997 and 1998 audited financial statements;
 - f. Identify all existing relationships with Pfaltzgraff, or any other relationships or facts which may create a conflict of interest between your firm and Pfaltzgraff, the Site Owner, NP, Remedial Engineering, Roux or the NYSDEC;

- g. A current certified financial statement;
- h. List of contracts on hand and amount of each; and
- i. Include all of the above information (a-g) for all subcontractors your firm intends to use, if known, for any aspect of implementing the RA. All subcontractors will be subject to these requirements as well as the written approval of Pfaltzgraff.

2. Provide a list of similar experience and projects, along with a narrative description and total project budget amount for each of these projects, as well as specific experience with NYSDEC Region 7 and Central Office.

3. Provide a list of proposed Project Management personnel, along with resumés of each person on the Project Management Team (including at a minimum the field superintendent, the independent QA/QC personnel, and the corporate officer ultimately responsible for the work on the Project), and description of major Project assignments, responsibilities and activities on similar-scale projects. Changes in Project Management personnel will not be permitted without the written consent of Pfaltzgraff.

4. Provide a description of your construction quality control program as it applies to CERCLA construction projects. Also, describe your Construction Management Information System, as it operates on a day-to-day basis, especially with regard to the techniques and procedures used to:

- develop and submit required project plans;
- prepare, submit and track shop drawings;
- develop project schedules;
- integrate schedules and budgets;
- access and update financial information by Project Management personnel; and
- exercise project schedule and budget controls.

5. Provide at least three references from individuals or entities for whom similar types of services have been performed and who will be available to discuss your firm's performance and that of the Project Management team you have proposed.

6. Provide a description of your Health and Safety program as it applies to CERCLA construction projects. This shall include a description of the requirements for:

- training;
- monitoring;
- maintaining adherence to HASP requirements; and
- a list of accidents within the past three (3) years.

Be advised that all qualification package submittals of the Contractor and its subcontractors will be scrutinized in detail and will have a significant bearing on bid evaluations. In addition, they will be submitted to, and must be acceptable to, the NYSDEC as required by Applicable Law.

IV. BID SECURITY REQUIREMENTS

To be considered a complete Bid Form, the Bid Security and other required data must be included. Bid Security shall be in the form of a certified check or bank draft, negotiable U.S. Government Bond, (at par value), or a satisfactory Bid Bond executed by the Bidder in the amount of 5 percent (5%) of the Bid amount and an acceptable certificate of surety must accompany each Bid. Bids will remain valid and not allowed to be withdrawn for sixty (60) calendar days after the Bid opening, except as provided in the Instructions to Bidders.

V. CONFIDENTIALITY

All Bidders must treat this Invitation to Bid and the contents of the Bid submitted by the Contractor as Confidential Information as that term is defined in Appendix C in the proposed Contract for Construction and Environmental Remediation Work. The Bidder shall upon receipt of the Invitation to Bid execute the attached confidentiality agreement and submit it to the Owner's Representative.

VI. COST OF THE WORK

In order to ensure a complete and fair comparison of all bids, please complete the bid form as provided in the Specifications.

Each bid shall include unit costs for each of the individual elements of the work and shall be cumulated into a total bid as shown on the bid forms. In addition, a unit price bid must be provided for each contingent bid item and shall represent Contractor's complete price for the scope of work associated with that item, inclusive of all labor, materials, office overhead, site management, tools, equipment, equipment rentals, general conditions, insurance and bonds, taxes and employee benefit costs.

VII. GENERAL

A mandatory pre-bid meeting and site visit will be held in Syracuse on Monday, March 6, 2000 at 1:00 p.m. EST at the Syracuse China Facility. Each bidder is limited to three representatives. You must notify the Engineer, prior to Thursday, March 2, 2000, of your intention to participate in the site visit and the name(s) of your representatives. This will be the only opportunity for Bidders to visit the project site and resolve technical issues regarding the contract documents. Bidders failing to attend this meeting will not be allowed to bid on the project.

Each prospective Bidder will be furnished one (1) copy of the Bidding Documents. The price of additional copies of the Bidding Documents is \$250.00 payable to Pfaltzgraff. The Bid must include the intact bound copy of the bid form and the Bidding Documents along with the Bid security and other required data and must be returned to the Owner's Representative by the date set forth below. To assist in preparing the Bids, detailed Instructions to Bidders and associated forms have been provided.

In order to be considered for this Project, all bidders must submit their bid in a sealed envelope plainly marked "Bid for Remedial Action of the former Syracuse China Landfill." All bids must be received no later than 5:00 pm, EDT, Monday, March 27, 2000, by the Owner's Representative:

Peter J. Gerbasi, P.E.
Remedial Engineering, P.C.
1377 Motor Parkway, Suite 403
Islandia, NY 11788

After receipt and review of bid responses, Pfaltzgraff and the Engineer may interview one or more of the Bidders to discuss issues related to their possible selection. Pfaltzgraff hopes to select the Contractor and award the Contract for the Remedial Action within 30 days or other reasonably short time frame. Owner reserves the right, in its sole discretion, to accept elements of the Bid for portions, segments or phases of the Work. All Bidders will be informed of the selection shortly after it occurs.

If you have any questions regarding the terms of contract, please contact Bruce Baker, Esq. of NP in writing. All other questions regarding this request should be directed in writing to the Engineer, Mr. Peter J. Gerbasi, P.E. of Remedial Engineering.

SECTION 00100

INSTRUCTIONS TO BIDDERS

I-1 DEFINED TERMS

Terms used in these Instructions to Bidders which are defined in the Contract for Construction and Environmental Remediation Work (the Construction Contract) have the meanings assigned to them in the Construction Contract. The term "Bidder" means one who submits a Bid directly to Owner's Representative as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award. The term "Contract Documents" includes the Bid Documents, Technical Specifications, Construction Drawings and Specifications, and all Addenda issued prior to receipt of Bids as defined in Article 8 of the proposed Agreement with the Owner. The term "Bid Documents" includes the Invitation to Bid, Instructions to Bidders and Bid Proposal Documents. The term "Bid Proposal Documents" includes the Information Available to Bidders, Bid Proposal, Itemized Proposal, Bid Bond, and Certificate of Surety. The term "Document Forms" includes the Construction Contract, Performance Bond, Payment Bond, Certificate of Insurance, Award of Contract, Application for Payment, Field Order, Change Order, Certificate of Substantial Completion, and Certificate of Final Completion.

I-2 COPIES OF CONTRACT DOCUMENTS

- A. Complete sets of the Contract Documents in the number and for the non-refundable sum, if any, stated in the Invitation to Bid may be obtained from the Owner's Representative.
- B. Complete sets of Contract Documents must be used in preparing Bids; neither Owner, Owner's Representative nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Contract Documents.
- C. Owner, Owner's Representative and Engineer in making copies of Contract Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

I-3 RECEIPT AND OPENING OF BID PROPOSALS

- A. All bids shall be submitted in sealed envelopes clearly labeled "Bid for Remedial Action of the former Syracuse China Landfill"; along with the name of Bidder and Address.

B. The time scheduled for the receipt of bids shall be in accordance with the Invitation. Until the actual award and execution of a contract, the Owner reserves all its rights with respect to the inclusion rejection of proposals.

I-4 PREPARATION OF BID PROPOSAL

A. The bid forms are included in Section 00300 of the Technical Specifications. The Bidder is required to use the bid forms enclosed with the bidding documents and submit the complete proposal sealed and intact to the Owner's Representative. All blank spaces must be filled in, as noted, in ink. Proposals must give the prices proposed with amounts extended and totaled where required. No changes shall be made in the forms or in the items mentioned therein. Erasures and other changes in the Bid must be noted over the initials of the Bidder.

B. The Bidder shall sign the proposal in the blank space provided for this purpose. If the proposal is made by a partnership or corporation, the name and address of the partnership or corporation shall be indicated, together with the names and addresses of the partners or officers. If the proposal is made by a partnership, it must be acknowledged by one of the partners; if made by a corporation, by one of the officers.

C. Bidders shall furnish with their Bid proposals the following Bid Proposal Documents:

1. Certified check, bank draft, negotiable U.S. Government bond, or bid bond in the form required.
2. Bid Form.
3. Statement of Surety's Intent for Performance and Payment Bonds.
4. Certificate of Insurance.
5. Confidentiality Agreement.
6. Addendum Certification.

D. The information required in Items C2 and C5 shall be furnished on the forms included in the Contract Documents. The Bid Bond shall also conform to the specimens included in the bound volume of Contract Documents.

I-5 OBLIGATION OF BIDDER

A. At the time of the opening of bids, each bidder will be presumed to have thoroughly and completely inspected the site of the work at the pre-bid meeting and site visit, and to have read and to be thoroughly familiar with the Contract Documents (including all addenda). The failure or omission of any bidder to receive or examine any form, instrument, or document shall in no way relieve any bidder from any obligation with respect to its bid.

B. Although this is not a bid for a public works or other municipal services contract, each bidder must be fully informed of the conditions relating to the construction and labor under which the work will be performed, including applicable provisions of the New York State Labor Law. Failure to do so will not relieve a successful bidder of its obligations to furnish all material and labor necessary to carry out the provisions of the Contract Documents and to complete the contemplated work for the consideration set forth in its bid. Insofar as is possible, the Contractor in the carrying out of its work must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor, or the safety or convenience of the public.

C. Each bidder must attend the pre-bid meeting and site visit held on the date and at the location specified in the Invitation to Bid. An inspection of the proposed project site will be held in conjunction with the pre-bid meeting.

I-6 BID SECURITY

A. Each proposal must be accompanied by a certified check, bank draft, negotiable U.S. government bond or bid bond duly executed by the Bidder as principal and having as surety thereon an approved surety, in an amount equal to at least five percent (5%) of the total amount of the bid, as a guarantee that in case a contract is awarded to the Bidder, it will execute such Contract and furnish a satisfactory Performance Bond and Payment Bond. The check shall be made payable to the Owner. The bid bond shall be in the form of a document or its equivalent.

B. The surety on the bid must be a corporate surety licensed to transact business in New York State, and acceptable to the Owner. No bid bond will be accepted if the amount of the bond is less than five percent (5%) of the total amount of each bid.

C. Bid security accompanying bids shall be sealed in the Bid Proposal envelope.

I-7 CERTIFICATE OF SURETY

A. Each bidder shall furnish a specimen performance bond with its proposal, in conformance with the specimen copy included in the Contract Documents evidencing that it can obtain the required Performance Bond and Payment Bond in the event it is awarded the Contract.

I-8 SUBMISSION OF BID PROPOSALS

A. Proposals must be submitted no later than the time specified in the Invitation, unless the time for the opening of proposals has been postponed. Notification of Postponement will be by fax followed up with certified mail, return receipt requested.

B. Bidders may submit their proposals by hand delivery, registered mail, or overnight delivery provided the proposals are received by the Owner's Representative before the time set for the opening of proposals.

I-9 SUBCONTRACTORS

A. Contractor agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner.

B. Contractor shall be fully responsible for all acts and omissions of its Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that it is responsible for the acts and omissions of persons directly employed by it.

C. The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner and that approval of the proposed subcontract award cannot be given by the Owner unless and until the successful bidder submits all information and evidence to the Owner regarding the proposed subcontractor as is required in the General Conditions and elsewhere in the Contract Documents.

I-10 WITHDRAWAL OF BID PROPOSALS

A. Any proposal may be withdrawn by the bidder prior to the scheduled time for the receipt of bids or authorized postponement thereof provided the bidder's written request for withdrawal is delivered to the Owner's Representative before the proposals are opened. No bidder may withdraw its proposal after the actual opening thereof. A proposal which has been withdrawn will be returned to the bidder unopened at the time of the opening of the other proposals.

I-11 RETURN OF BID SECURITY

A. Bid Security will be returned only to those bidders who return the Contract Documents in good condition. Bidders' bid securities will be returned within sixty (60) days after the formal opening of the bids or within forty-eight (48) hours after the Owner and the successful bidder have executed the proposed contract, whichever is greater. In the event that none of the proposals are accepted, all bid securities will be returned within sixty (60) days after the date of the opening of the bids.

I-12 BASIS OF AWARD

A. The Contract will be awarded to that responsible Bidder as determined by the Owner in its sole discretion.

B. The Owner will not be bound by the award, nor shall any work be performed on account of the proposed contract until the contract has been fully executed, delivered and approved.

I-13 QUALIFICATIONS OF BIDDERS

A. The Owner may make such investigation as it deems necessary to determine the ability of the bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any proposal if the evidence submitted by or investigation of such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein or has previously failed to properly perform or complete on time any contract.

I-14 RIGHT TO REJECT BID PROPOSALS

A. The Owner reserves the right to reject any or all proposals or any portion of a proposal or to accept the proposal which in its judgment will be in the best interests of the Owner. Any proposal which contains any omissions, alterations of form, additions or alternates not called for, or any qualifications, erasures or corrections to conform to the requirements stated herein, may be disregarded and rejected as improper except that the Owner may waive any defects or irregularities. Any proposals which are submitted or received after the scheduled closing time for the receipt of proposals will be rejected and returned without being opened.

I-15 ACCEPTANCE AND AWARD OF CONTRACT

A. Within **sixty (60)** days after the opening of bids, the Owner will accept one of the bids or will reject all proposals. Acceptance of the bid and Notice to Award will be in writing signed by an officer of the Owner and mailed to the address designated in the Proposal. The Notice shall contain appropriate instructions and information as to the time and place set for the execution of the contract. The successful bidder or his duly authorized representative shall appear at the time and place designated and shall execute the contract and furnish the bonds and required insurance policies.

The successful bidder shall submit the following to the Owner's Representative within five (5) business days of Notice to Award:

1. Fully Executed Agreement
2. Performance Bond with Power of Attorney
3. Payment Bond with Power of Attorney
4. Certificate of Insurance
5. Preliminary Schedule
6. Corporate Resolution authorizing entering into of the contract

B. The successful bidder shall at a minimum, submit the following to the Owner's Representative within ten (10) business days of Notice to Award:

1. Contingency Plan
2. Health and Safety Plan
3. Special Construction Technique Submittal
4. List of Subcontractors
5. Quality Assurance/Control Plan
6. Construction Schedule
7. Implementation Plan
8. Erosion and Sediment Plan
9. Traffic Control Plan
10. Any other documents required by the Contract Documents

I-16 REQUIREMENTS OF BONDS

A. Prior to, or upon the signing of the contract, the Contractor shall furnish to the Owner's Representative a Performance Bond and a Payment Bond, each equal to one hundred percent (100%) of the amount of the contract and both of which shall remain in effect for two (2) years beyond final acceptance, in accordance with Article 5 of the General Conditions. A dual obligee rider shall be provided for both bonds naming Owner and Purchaser as co-obligees.

I-17 INSURANCE

A. The Contractor shall maintain in force during the performance of the work all insurance policies as described in the Construction Contract. Original policies, or properly executed conformed copies, evidencing the fact that the Contractor has procured the required insurance must be filed with the Owner at the time of the execution of the contract.

I-18 FAILURE TO EXECUTE CONTRACT

A. If the successful bidder shall fail to furnish the required bonds and insurance policies and/or to execute the contract in accordance with instructions contained in the Notice to Award, it shall be deemed to have refused to enter into the contract and to have waived all claim to the work; and it shall pay the Owner all damages sustained by the Owner as a consequence of its failure to enter into the contract including all loss from delay and interference with the Owner's construction program and the difference between the amount for which the Owner may contract with another to perform the work covered by said proposal, if the latter be in excess of the former. The surety on the bid bond shall be liable for such damages to the extent of the principal amount of the bid bond. Where the security deposited is a check, the Contractor shall be liable for such damages to the extent of the amount of the check.

I-19 CORRECTIONS, ERRORS, ADDENDA AND INTERPRETATION

A. Corrections by erasures or other changes in the Bid Proposal must be explained or noted over the signature of the Bidder.

B. If a Bidder finds any omissions, discrepancies or errors in the Contract Documents or is in doubt as to the meaning of the plans and specifications or other Contract Documents, he should notify the Owner's Representative, who may correct, amend or clarify such documents by an interpretation. If a Bidder fails to so notify the Owner's Representative, the Bidder will be held rigidly to the Owner's Representative's interpretation of the plans and specifications after the Contract is executed.

C. If the Owner shall deem any matter arising thereafter of such importance as to require correction, amendment or clarification, it may postpone the time for the opening of bids by notifying each prospective bidder of such postponement by mail, FAX, or telephone and issue an addendum. Failure of any bidder to receive any addendum shall not relieve the bidder from obligations under its bid if such addendum is actually sent to the bidder at the address furnished by it at the time it obtains copies of the Contract Documents. All addenda so issued, whether sent by mail, carrier, overnight delivery, FAX or obtained in person by Contractor (including representatives) shall become part of the Contract Documents.

I-20 CONTRACT TIME

A. As set forth in Section 00010, Part III C, bidders shall submit a bid showing Substantial Completion in 2000.

I-21 INTENT OF CONTRACT DOCUMENTS

A. The Drawings, the Technical Specifications, all Addenda, the Agreement, the Invitation for Bids, the Bid Form, General Conditions, and the Supplementary Conditions are all part of the Contract Documents. The intent of the Contract Documents is to provide for a complete, operable and efficient job. It shall be understood that the Bidder has satisfied itself as to the full requirements of the Contract Documents, and has based its Bid Proposal upon such understanding.

I-22 COMPLIANCE WITH LAWS

A. The bidder's attention is directed to the fact that all applicable federal and State Laws, municipal ordinances and codes, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written out in full.

B. The bidder's attention is directed to the requirements for compliance with applicable sections of the New York State Labor Law regarding hiring practices and payment of wages.

SECTION 00300

BID FORM

PROJECT IDENTIFICATION: Syracuse China Landfill Remedial Action

BID OF: _____ (Name of Contractor)

THIS BID IS SUBMITTED TO: Peter J. Gerbasi, P.E.
Remedial Engineering, Inc.
1377 Motor Parkway, Suite 403
Islandia, NY 11788

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into the Agreement as written, except as specifically modified, and to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid Form and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for sixty (60) calendar days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds, and other documents required by the Bidding Requirements within fifteen (15) days after the date of Owner's Notice to Award.
3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:
 - (a) BIDDER has examined and carefully studied the Bidding Documents and the following Addenda (receipt of all which is hereby acknowledged):

No. _____	Dated _____
No. _____	Dated _____
No. _____	Dated _____
 - (b) BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
 - (c) BIDDER is familiar with and is satisfied as to all federal, state and local laws and regulations that may affect cost, progress, performance and furnishing of the Work, including without limitation, laws concerning type and size of trucks on streets in and near the various on-site and off-site areas of the Project.

(d) BIDDER has given OWNER written notice of all conflicts, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by Engineer is acceptable to the BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.

(e) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other BIDDER to submit a false or sham BID; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other BIDDER or over OWNER.

4. BIDDER agrees to complete the Work for the unit prices listed on the Unit Price Schedule. BIDDER acknowledges that warranties are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents.
5. BIDDER agrees that Work will be completed and ready for final payment within _____ () Calendar days after the Contract Times commence to run as provided in paragraph 2.3 of the General Conditions.
6. The following documents are attached to and made a condition of this Bid:
 - (a) Bid Security.
 - (b) Required items listed in paragraph 4 of the Instructions to Bidders.
7. The terms used in this Bid which are defined in the General Conditions of the Construction Contract or Instructions to Bidders will have the meanings indicated in the General Conditions or Instructions.

Bid Submitted on _____

, 1999

State Contractor's License No. _____

If BIDDER is:

An Individual

By _____ (SEAL)
(Individual's Name)

doing Business as _____

Business Address: _____

Phone No: _____

A Partnership

By _____ (SEAL)
(Firm's Name)

doing Business as _____

(General Partner)

Business Address: _____

Phone No: _____

A Corporation

By _____ (SEAL)
(Corporation Name)

doing Business as _____

(General Partner)

(State of incorporation)

By _____
(Name of person authorized to sign)

(Title)

(Corporate Seal)

Attest

(Secretary)

Business address: _____

Phone No: _____

Date of Qualification to do business is _____

A Joint Venture

By _____

(SEAL)

(NAME)

(ADDRESS)

By _____

(SEAL)

(NAME)

(ADDRESS)

Phone Number and Address for receipt of official communications

(Each party to the joint venture must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above).

Bid Form
 Syracuse China Landfill Remedial Action
 (Site Number 7-34-053)
 Town of Salina, Onondaga County, New York

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNITS	UNIT BID	TOTAL AMOUNT (In Figures)	TOTAL AMOUNT (In Words)
01000	Mobilization/ Demobilization	NA	LS	_____	_____	_____
01050	Performance of Survey	NA	LS	_____	_____	_____
01080	Provision and Installation of Fencing and Warning Signs	NA	LS	_____	_____	_____
01510	Provision and Maintenance of Construction Facilities and Utilities	NA	LS	_____	_____	_____
01550	Construction and Maintenance of Access Roads	NA	LS	_____	_____	_____
01560	Provision of Temporary Controls	NA	LS	_____	_____	_____
01562	Management of Site Water	NA	LS	_____	_____	_____
01565	Equipment Decontamination	NA	LS	_____	_____	_____
02110	Clearing and Grubbing	NA	LS	_____	_____	_____
02140.A	Sludge Excavation	12,000	CY	_____	_____	_____
02140.B	Pond Reconstruction	NA	LS	_____	_____	_____
02200.A	Eastern Portion Soil and Waste Excavation	60,000	CY	_____	_____	_____
02200.B	Wetland Soil Excavation	12,000	CY	_____	_____	_____

Bid Form
 Syracuse China Landfill Remedial Action
 (Site Number 7-34-053)
 Town of Salina, Onondaga County, New York

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNITS	UNIT BID	TOTAL AMOUNT (In Figures)	TOTAL AMOUNT (In Words)
02210.A	Abandonment of Monitoring Wells	5	Each	_____	_____	_____
02210.B	Modification to Existing Monitoring Wells	NA	Each	_____	_____	_____
02210.C	Installation of Gas Vent Wells	7	Each	_____	_____	_____
02225.A	Provision and Placement of Barrier Protection Layer (Common Fill)	15,000	CY	_____	_____	_____
02225.B	Provision and Placement of Sand Drainage Layer	5,000	CY	_____	_____	_____
02225.C	Provision and Placement of Rip Rap for Drainage Swales and Down Chute	600	CY	_____	_____	_____
02275	Provision and Placement of Geotextile for Geomembrane Cushion	300,000	SF	_____	_____	_____
02277	Provision and Placement of Geosynthetic Membrane for Cap Construction	300,000	SF	_____	_____	_____
02623	Provision and Installation of HDPE Piping and Accessories	NA	LS	_____	_____	_____
02900.A	Provision and Placement of Topsoil	20,000	CY	_____	_____	_____

Bid Form

Syracuse China Landfill Remedial Action

(Site Number 7-34-053)

Town of Salina, Onondaga County, New York

ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNITS	UNIT BID	TOTAL AMOUNT (In Figures)	TOTAL AMOUNT (In Words)
02900.B	Provision and Placement of Seed and Soil Supplements	30	Acre	_____	_____	_____
TOTAL BID AMOUNTS					_____	_____
					(In Figures)	_____
						(In Words)

SECTION 00310

CONFIDENTIALITY AGREEMENT

The Owner's Representative will make available to Bidder certain confidential and proprietary engineering and technical data, and other information. The Owner's Representative also may make available additional confidential and proprietary engineering and technical data, and other information to Successful Bidder during the Work.

Bidder Agrees that:

1. All data and information, whether verbal or written, which are disclosed or made available by the Owner's Representative (either during the Bid, award, or construction phase of this Project), directly or indirectly shall be treated as confidential and shall not be disclosed or made available by Bidder, directly or indirectly, to any third party nor used for any purpose other than the preparation of the Bid or performance of Work under the Agreement, except as shall be agreed to in writing by the Owner's Representative. Bidder agrees to take all reasonable steps to preserve the confidentiality of such data and information and agrees that only such data and information will be made available to Bidder's associates, employees, or subcontractors as shall have been expressly consented to by Owner's Representative. Bidder's confidentiality obligations under this paragraph shall not extend to any data and information which: a) can be shown to have been in its possession prior to the receipt thereof from the Owner's Representatives; or b) is now, or hereafter becomes, information in the public domain through no act or failure to act by Bidder or any of Bidder's associates, employees, or subcontractors.
2. All written data and information furnished by the Owner's Representative, and all written data and information based on or derived therefrom, shall be and remain the exclusive property of the Owner's Representative, and Bidder agrees to deliver the same to Owner's Representative promptly if Bidder is unsuccessful.
3. The provisions of this confidentiality agreement bind Bidder and Bidder's successors and assigns, and shall not merge with or be terminated or superseded by any future agreement with Bidder, or Bidder's associates, employees, or subcontractors, unless such future agreement specifically so provides.

Agreed to and accepted by Bidder this ____ day of _____, 200__.

By: _____
(Bidder)

(Signature)

This document has important legal consequences; consultation with an attorney is encouraged with respect to its completion or modification.

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR ON THE BASIS OF A STIPULATED PRICE

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



AMERICAN CONSULTING
ENGINEERS COUNCIL



**National Society of
Professional Engineers**
Professional Engineers in Private Practice



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by

The Associated General  Contractors of America

This Standard Form of Agreement has been prepared for use with the Standard General Conditions of the Construction Contract, (No. 1910-8) (1990 Edition). Their provisions are interrelated and a change in one may necessitate a change in the others. The suggested language for instructions to bidders contained in the Guide to the Preparation of Instructions to Bidders, (No. 1910-12) (1990 Edition) is also carefully interrelated with the language of this Agreement. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents, (No. 1910-9) (1986 Edition). See also Guide to the Preparation of Supplementary Conditions, (No. 1910-17) (1990 Edition).

**THE PFALTZGRAFF CO.
REMEDICATION OF SYRACUSE CHINA COMPANY
INACTIVE HAZARDOUS WASTE SITE**

SUPPLEMENTARY GENERAL CONDITIONS

Supplementary General Conditions to EJCDC Document No. 1910-8 (1990 ed.) made a part of the Owner/Contractor Agreement (Agreement) by and between The Pfaltzgraff Co. (Owner) and Haseley Consultants, Inc. (Contractor) dated as of May 18, 1999x2000 Constructors, Inc.

The Agreement and the General Conditions of the Contract for Construction, EJCDC Doc. No. 1910-8, 1990 Edition Articles 1 through 17, attached hereto (General Conditions), shall govern the relationship between Owner and Contractor except as amended and supplemented by the Supplementary General Conditions. The purpose of these Supplementary General Conditions is to amend, supplement and, in some cases, void portions of the General Conditions. Accordingly, the General Conditions are hereby amended, supplemented or voided as hereinafter set forth, and except as hereby amended, supplemented or voided, the General Conditions shall remain in full force and effect. The article and paragraph numbers set forth in the Supplementary General Conditions correspond to the article and paragraph numbers set forth in the General Conditions. Any term used herein with initial capital letters that is not otherwise defined herein shall have the same meaning ascribed to such term as defined in the General Conditions.

**ARTICLE I
DEFINITIONS**

Delete the definition of Laws and Regulations; Laws or Regulations in its entirety and substitute the following:

1.22 Laws and Regulations; Laws or Regulations -

All laws, rules, regulations, ordinances, codes and/or orders, including the Americans with Disabilities Act, applicable to the performance of the Work or the Project.

Add the following:

Governmental Authorities - Any and all local, state or federal agency, authority, board, commission, court, municipality or other unit of government, and any duly authorized agents, employees, members or representatives at same, including, without limitation, New York State Department of Environmental Conservation, the United States Environmental Protection Agency, the City of Syracuse, the County of Onondaga and the State of New York.

Add the following:

Jul 31 2002 3:42PM
May 18 4:23PM

NIXON PEABODY LLP #1
Print Time May 18 4:18PM

No. 4767 P. 3/33
Received Time

**EJCDC
STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE**

THIS AGREEMENT is dated as of the 18 day of May in the
year of 2000 by and between The Pflaltzoraff Co.

(hereinafter called OWNER) and

Haseley Consultants / Constructors, Inc.
(hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Mobilization, Site Preparation, Management of Site Water, Clearing & Grubbing
Waste Relocation, Pond Reconstruction, Landfill Cap, Wet Land Excavation &
Topsoil Placement and Monitoring Wells Modifications/Installation.
Maintenance as Required, Site Restoration, Topsoil all areas,
Demobilization.

The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Syracuse China Landfill Remedial Action

Site Number 7 - 34 - 053

Town of Salina, Onondaga County, New York

Article 2. ENGINEER.

The Project has been designed by

Remedial Engineering, P.C.

who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIMES.

3.1 The Work will be substantially completed on or before October 30, ~~XX2000~~, and completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions on or before October 30, ~~XX2000~~.

3.1 The Work will be substantially completed within 169 days after the date when the Contract Times commence to run as provided in paragraph 2.3 of the General Conditions, and completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions within 199 days after the date when the Contract Times commence to run.

3.2 *Liquidated Damages.* OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER Nine Hundred Fifty Dollars dollars (\$950.00) for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER Nine Hundred Fifty dollars (\$950.00) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

[Where failure to reach a Milestone on time is of such consequence to OWNER that the assessment of liquidated damages is to be provided, appropriate amending or supplementing language should be inserted here.]

(Strike any of the above paragraphs that are inapplicable)

Article 4. CONTRACT PRICE.

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to paragraphs 4.1 and 4.2 below:

4.1 for all Work other than Unit Price Work, a Lump Sum of:

One Million Seven Hundred Seventy Five (\$1,775,545)
(use words) figures

Thousand Five Hundred Forty Five Dollars and No Cents

All specific cash allowances are included in the above price and have been computed in accordance with paragraph 11.8 of the General Conditions;

plus

4.2 for all Unit Price Work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this paragraph 4.2:

UNIT PRICE WORK

NO.	ITEM	UNIT	ESTIMATED QUANTITY	UNIT PRICE	TOTAL ESTIMATED
-----	------	------	--------------------	------------	-----------------

See Attached Bid Sheets: Pages 00300-5, 00300-6, 00300-7

TOTAL OF ALL UNIT PRICES One Million Five Hundred Seventy \$1,574,824 (dollars)

(use words)

Thousand Eight Hundred Twenty Four Dollars and no cents

As provided in paragraph 11.9 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classification are to be made by ENGINEER as provided in paragraph 9.10 of the General Conditions. Unit prices have been computed as provided in paragraph 11.9.2 of the General Conditions.

[In special circumstances, the Bid may be attached to avoid extensive retyping. See paragraph 13.10 below. Any exhibits attached should be listed in Article 8.]

[If adjustment prices for variations from stipulated Base Bid quantities have been agreed to, insert appropriate provisions. See Suggested Bid Form Paragraph 4 and Comment 1.]

1,775,545
1,574,824
333,500

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1. *Progress Payments; Retainage.* OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER, on or about the First day of each month during construction as provided in paragraphs 5.1.1. and 5.1.2. below. All such payments will be measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.1.1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

90 % of Work completed (with the balance being retainage). If Work has been 50% completed as determined by ENGINEER, and if the character and progress of the Work have been satisfactory to OWNER and ENGINEER, OWNER, on recommendation of ENGINEER, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no additional retainage on account of Work completed, in which case the remaining progress payments prior to Substantial Completion will be in an amount equal to 100% of the Work completed.

90 % (with the balance being retainage) of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in paragraph 14.2 of the General Conditions).

5.1.2. Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 95 % of the Contract Price (with the balance being retainage), less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2. *Final Payment.* Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

Article 6. INTEREST.

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum rate allowed by law at the place of the Project.

Article 7. CONTRACTOR'S REPRESENTATIONS.

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1. CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."

7.2. CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.

7.4. CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. CONTRACTOR accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.2 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

7.5. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.

7.6. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.7. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1. This Agreement (pages 1 to 8, inclusive).
- 8.2. Exhibits to this Agreement (pages _____ to _____, inclusive).
- 8.3. Performance, Payment, and other Bonds, identified as exhibits A and consisting of 7 pages.
- 8.4. Notice to Proceed.
- 8.5. General Conditions (pages 1 to 42, inclusive).
- 8.6. Supplementary Conditions (pages 1 to 25, inclusive).
- 8.7. Specifications bearing the title Syracuse China Landfill Remedial Action and consisting of I & II divisions and _____ pages, as listed in table of contents thereof.
- 8.8. Drawings consisting of a cover sheet and sheets numbered 1 through 14, inclusive with each sheet bearing the following general title:

[Fill in, and, if a set of Drawings is not attached to each signed counterpart of Agreement, so indicate in which case OWNER and CONTRACTOR should initial or otherwise appropriately identify each Drawing.] Drawings 1 - 14 and 5R and 12R.

- 8.9. Addenda numbers 1 to 6, inclusive.

[Those Addenda which pertain exclusively to the bidding process need not be listed.]

- 8.10. CONTRACTOR's Bid (pages 300-1 to 300-7, inclusive) marked exhibit B.

[Attach actual Bid only in special circumstances.]

- 8.11. Documentation submitted by CONTRACTOR prior to Notice of Award (pages 1 to 54, inclusive).

8.12. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.5 and 3.6 of the General Conditions.

The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 13. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.5 and 3.6 of the General Conditions.

Article 9. MISCELLANEOUS.

9.1. Terms used in this Agreement which are defined in Article I of the General Conditions will have the meanings indicated in the General Conditions.

9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.

9.4. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.5 OTHER PROVISIONS.

[Insert other provisions here if applicable.]

Jul 31 2002 3:45PM
MAY 18 4:22PM

NIXON PEABODY LLP #1
Print Time

MAY 18 4:18PM

Received Time
No. 4767 P. 10/33

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

This Agreement will be effective on May 18, 2000 (which is the Effective Date of the Agreement).

OWNER The Pflaltzgraff Co.

CONTRACTOR Haseley Consultants /

Constructors, Inc.

By: _____

By: Mark M. Haseley

W. Edwin Jackson
[CORPORATE SEAL]

Mark M. Haseley President
[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Gary D. Capen, Project Manager
Address for giving notices

140 East Market Street

10315 Lockport Road

York, PA. 17401

Niagara Falls, New York 14304

(If OWNER is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Agreement.)

License No. _____

Agent for service of process: _____

(If CONTRACTOR is a corporation, attach evidence of authority to sign).

© 1990 National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314

American Consulting Engineers Council
1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers
345 East 47th Street, New York, NY 10017

This document has important legal consequences: consultation with an attorney is encouraged with respect to its completion or modification.

**STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

Prepared by
Engineers Joint Contract Documents Committee

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by

The Associated General  Contractors of America

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1990 Editions). Their provisions are interrelated and a change in one may necessitate a change in the others. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents (No. 1910-9) (1986 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1990 Edition). When bidding is involved, the Standard Form of Instructions to Bidders (No. 1910-12) (1990 Edition) may be used.

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GENERAL CONDITIONS

ARTICLE I—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1.1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bidding Requirements or the Contract Documents.

1.2. *Agreement*—The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3. *Application for Payment*—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

1.4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

1.5. *Bid*—The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.6. *Bidding Documents*—The advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

1.7. *Bidding Requirements*—The advertisement or invitation to Bid, instructions to bidders, and the Bid form.

1.8. *Bonds*—Performance and Payment bonds and other instruments of security.

1.9. *Change Order*—A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

1.10. *Contract Documents*—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agree-

ment, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders and ENGINEER's written interpretations and clarifications issued pursuant to paragraphs 3.5, 3.6.1, and 3.6.3 on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to paragraphs 6.26 and 6.27 and the reports and drawings referred to in paragraphs 4.2.1.1 and 4.2.2.2 are not Contract Documents.

1.11. *Contract Price*—The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

1.12. *Contract Times*—The numbers of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13.

1.13. *CONTRACTOR*—The person, firm or corporation with whom OWNER has entered into the Agreement.

1.14. *defective*—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

1.15. *Drawings*—The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.

1.16. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

1.17. *ENGINEER*—The person, firm or corporation named as such in the Agreement.

1.18. *ENGINEER's Consultant*—A person, firm or corporation having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

1.19. *Field Order*—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.

1.20. *General Requirements*—Sections of Division I of the Specifications.

1.21. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

1.22. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

1.23. *Liens*—Liens, charges, security interests or encumbrances upon real property or personal property.

1.24. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.25. *Notice of Award*—The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.26. *Notice to Proceed*—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

1.27. *OWNER*—The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

1.28. *Partial Utilization*—Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

1.29. *PCBs*—Polychlorinated biphenyls.

1.30. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

1.31. *Project*—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.32. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

1.33. *Resident Project Representative*—The authorized representative of ENGINEER who may be assigned to the site or any part thereof.

1.34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.35. *Shop Drawings*—All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

1.36. *Specifications*—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

1.37. *Subcontractor*—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

1.38. *Substantial Completion*—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

1.39. *Supplementary Conditions*—The part of the Contract Documents which amends or supplements these General Conditions.

1.40. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

1.41. *Underground Facilities*—All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.42. *Unit Price Work*—Work to be paid for on the basis of unit prices.

1.43. *Work*—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

1.44. *Work Change Directive*—A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.23. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in paragraph 10.2.

1.45. *Written Amendment*—A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Times; Notice to Proceed:

2.3. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the

Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Work:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the site prior to the date on which the Contract Times commence to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless CONTRACTOR knew or reasonably should have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2.6.2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.7. Before any Work at the site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with paragraphs 5.4, 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Contract Times start to run, but before any Work at the site is started, a conference

attended by CONTRACTOR, ENGINEER and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.6, procedures for handling Shop Drawings and other submittals, processing Applications for Payment and maintaining required records.

Initially Acceptable Schedules:

2.9. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.6. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until the schedules are submitted to and acceptable to ENGINEER as provided below. The progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within any specified Milestones and the Contract Times, but such acceptance will neither impose on ENGINEER responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor. CONTRACTOR's schedule of Shop Drawing and Sample submissions will be acceptable to ENGINEER as providing a workable arrangement for reviewing and processing the required submittals. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3. Reference to Standards and Specifications of Technical Societies; Reporting and Resolving Discrepancies:

3.3.1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3.3.2. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any Supplier referred to in paragraph 6.5, CONTRACTOR shall report it to ENGINEER in writing at once, and, CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as authorized by paragraph 6.23) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.5 or 3.6; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

3.3.3. Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement thereto issued by one of the methods indicated in paragraph 3.5 or 3.6, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

3.3.3.1. the provisions of any such standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

3.3.3.2. the provisions of any such Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, ENGINEER or any of ENGINEER's Consultants, agents or employees any duty or authority to supervise or direct the furnishing or

performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.13 or any other provision of the Contract Documents.

3.4. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.13 or any other provision of the Contract Documents.

Amending and Supplementing Contract Documents:

3.5. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.5.1. a formal Written Amendment,

3.5.2. a Change Order (pursuant to paragraph 10.4), or

3.5.3. a Work Change Directive (pursuant to paragraph 10.1).

3.6. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.6.1. a Field Order (pursuant to paragraph 9.5),

3.6.2. ENGINEER's approval of a Shop Drawing or Sample (pursuant to paragraphs 6.26 and 6.27), or

3.6.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.7. CONTRACTOR, and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER (i) shall not have or acquire any title to or ownership rights in any

of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaption by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a correct statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's lien against such lands in accordance with applicable Laws and Regulations. OWNER shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR and OWNER are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times as a result of any delay in OWNER's furnishing these lands, rights-of-way or easements, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2. Subsurface and Physical Conditions:

4.2.1. *Reports and Drawings:* Reference is made to the Supplementary Conditions for identification of:

4.2.1.1. *Subsurface Conditions:* Those reports of explorations and tests of subsurface conditions at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents; and

4.2.1.2. *Physical Conditions:* Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that have been utilized by ENGINEER in preparing the Contract Documents.

4.2.2. *Limited Reliance by CONTRACTOR Authorized; Technical Data:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

4.2.2.1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto, or

4.2.2.2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

4.2.2.3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.2.3. *Notice of Differing Subsurface or Physical Conditions:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:

4.2.3.1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate, or

4.2.3.2. is of such a nature as to require a change in the Contract Documents, or

4.2.3.3. differs materially from that shown or indicated in the Contract Documents, or

4.2.3.4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then

CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Contract Documents Change:* If ENGINEER concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.3., a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

4.2.6. *Possible Price and Times Adjustments:* An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR's cost of, or time required for performance of, the Work; subject, however, to the following:

4.2.6.1. such condition must meet any one or more of the categories described in paragraphs 4.2.3.1 through 4.2.3.4, inclusive;

4.2.6.2. a change in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;

4.2.6.3. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and

4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if:

4.2.6.4.1. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or

4.2.6.4.2. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If OWNER and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.3. *Physical Conditions—Underground Facilities:*

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on

information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

4.3.1.2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work.

4.3.2. *Not Shown or Indicated:* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.23), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document such consequences. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or the amount or length of any such adjustment in Contract Price or Contract Times, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages incurred or sustained by CONTRACTOR on or in connection with any other project or anticipated project.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations

without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

4.5. Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material:

4.5.1. OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.

4.5.2. CONTRACTOR shall immediately: (i) stop all Work in connection with such hazardous condition and in any area affected thereby (except in an emergency as required by paragraph 6.23); and (ii) notify OWNER and ENGINEER (and thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such hazardous condition or take corrective action, if any. CONTRACTOR shall not be required to resume Work in connection with such hazardous condition or in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of such Work stoppage or such special conditions under which Work is agreed by CONTRACTOR to be resumed, either party may make a claim therefor as provided in Articles 11 and 12.

4.5.3. If after receipt of such special written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order such portion of the Work that is in connection with such hazardous condition or in such affected area to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a claim therefor as provided in Articles 11 and 12. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

4.5.4. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's

Consultants and the officers, directors, employees, agents, other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from such hazardous condition, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph 4.5.4 shall obligate OWNER to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

4.5.5. The provisions of paragraphs 4.2 and 4.3 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site.

ARTICLE 5—BONDS AND INSURANCE

Performance, Payment and Other Bonds:

5.1. CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR'S obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Financial Management Service, Surety Bond Branch, U.S. Treasury Department. (Phone 202-874-6850). All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.

5.3. Licensed Sureties and Insurers; Certificates of Insurance:

5.3.1. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance

companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.3.2. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain in accordance with paragraph 5.4. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7 hereof.

CONTRACTOR's Liability Insurance:

5.4. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.4.1. claims under workers' compensation, disability benefits and other similar employee benefit acts;

5.4.2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.4.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.4.4. claims for damages insured by customary personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5.4.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

5.4.6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The policies of insurance so required by this paragraph 5.4 to be purchased and maintained shall:

5.4.7. with respect to insurance required by paragraphs 5.4.3 through 5.4.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers and employees of all such additional insureds;

5.4.8. include the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

5.4.9. include completed operations insurance;

5.4.10. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.12, 6.16 and 6.31 through 6.33;

5.4.11. contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.3.2 will so provide);

5.4.12. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing *defective* Work in accordance with paragraph 13.12; and

5.4.13. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

OWNER's Liability Insurance:

5.5. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.4, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the *Contract Documents*.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insur-

ance upon the Work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

5.6.1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

5.6.2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework and Work in transit and shall insure against at least the following perils: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions;

5.6.3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

5.6.4. cover materials and equipment stored at the site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER; and

5.6.5. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with thirty days written notice to each other additional insured to whom a certificate of insurance has been issued.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

5.8. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.11.

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR, Subcontractors or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount, will be borne by CONTRACTOR, Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraphs 5.6 or 5.7. OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.11. Waiver of Rights:

5.11.1. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraphs 5.6 and 5.7 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. In addition, OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them, for:

5.11.2.1. loss due to business interruption, loss of use or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of or resulting from fire or other peril, whether or not insured by OWNER; and

5.11.2.2. loss or damage to the completed Project or part thereof caused by, arising out of or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.10, after substantial completion pursuant to paragraph 14.8 or after final payment pursuant to paragraph 14.13.

Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in this paragraph 5.11.2 shall contain provisions to the effect that in the event of payment of any such loss, damage or consequential loss the insurers will have no rights of recovery against any of CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them.

Receipt and Application of Insurance Proceeds

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

Acceptance of Bonds and Insurance; Option to Replace:

5.14. If either party (OWNER or CONTRACTOR) has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within ten days after receipt of the certificates (or other evidence requested) required by paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was

required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

Partial Utilization—Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours and

CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

Progress Schedule:

6.6. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.9 as it may be adjusted from time to time as provided below:

6.6.1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

6.6.2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of paragraph 12.1. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.7. Substitutes and "Or-Equal" Items:

6.7.1. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by ENGINEER under the following circumstances:

6.7.1.1. *"Or-Equal"*: If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or-equal" item, in which case review and approval of the proposed item may, in ENGINEER's sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

6.7.1.2. *Substitute Items*: If in ENGINEER's sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an "or-equal" item under subparagraph 6.7.1.1, it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by the ENGINEER will include the following as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute.

6.7.1.3. *CONTRACTOR's Expense*: All data to be provided by CONTRACTOR in support of any proposed "or-equal" or substitute item will be at CONTRACTOR's expense.

6.7.2. *Substitute Construction Methods or Procedures*: If a specific means, method, technique, sequence or procedure of

construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.7.1.2.

6.7.3. *Engineer's Evaluation*: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.7.1.2 and 6.7.2. ENGINEER will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized without ENGINEER's prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR's expense a special performance guarantee or other surety with respect to any "or-equal" or substitute. ENGINEER will record time required by ENGINEER and ENGINEER's Consultants in evaluating substitutes proposed or submitted by CONTRACTOR pursuant to paragraphs 6.7.1.2 and 6.7.2 and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER accepts a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER's Consultants for evaluating each such proposed substitute item.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER's or ENGINEER's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be adjusted by the difference in the cost occasioned by such

substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject *defective Work*.

6.9.1. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. *Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.*

6.9.2. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the ENGINEER through CONTRACTOR.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.6 or 5.7, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance

of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.3.2.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of

the Project which are applicable during the performance of the Work.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. CONTRACTOR shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the Work. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of

the Work, these record documents, Samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all persons on the Work site or who may be affected by the Work;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

Safety Representative:

6.21. CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and

responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

Hazard Communication Programs:

6.22. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.

Emergencies:

6.23. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a *Work Change Directive or Change Order* will be issued to document the consequences of such action.

6.24. Shop Drawings and Samples:

6.24.1. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see paragraph 2.9). All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show ENGINEER the materials and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.26.

6.24.2. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.26. The numbers of each Sample to be submitted will be as specified in the Specifications.

6.25. Submittal Procedures:

6.25.1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

6.25.1.1. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto,

6.25.1.2. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and

6.25.1.3. all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

6.25.2. Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR'S review and approval of that submittal.

6.25.3. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals accepted by ENGINEER as required by paragraph 2.9. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a *functioning whole as indicated by the Contract Documents*. ENGINEER's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract

Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.25.1.

6.28. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by ENGINEER as required by paragraph 2.9, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.30. CONTRACTOR's General Warranty and Guarantee:

6.30.1. CONTRACTOR warrants and guarantees to OWNER, ENGINEER and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

6.30.1.1. abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or

6.30.1.2. normal wear and tear under normal usage.

6.30.2. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

6.30.2.1. observations by ENGINEER;

6.30.2.2. recommendation of any progress or final payment by ENGINEER;

6.30.2.3. the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;

6.30.2.4. use or occupancy of the Work or any part thereof by OWNER;

6.30.2.5. any acceptance by OWNER or any failure to do so;

6.30.2.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13;

6.30.2.7. any inspection, test or approval by others; or

6.30.2.8. any correction of defective Work by OWNER.

Indemnification:

6.31. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person or entity.

6.32. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.31 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

6.33. The indemnification obligations of CONTRACTOR under paragraph 6.31 shall not extend to the liability of ENGINEER and ENGINEER's Consultants, officers, directors, employees or agents caused by the professional negligence, errors or omissions of any of them.

Survival of Obligations:

6.34. All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with

the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

ARTICLE 7—OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, or let other direct contracts therefor which shall contain General Conditions similar to these, or have other work performed by utility owners. If the fact that such other work is to be performed was not noted in the Contract Documents, then: (i) written notice thereof will be given to CONTRACTOR prior to starting any such other work, and (ii) CONTRACTOR may make a claim therefor as provided in Articles 11 and 12 if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the amount or extent thereof.

7.2. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure so to report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in such other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the following will be set forth in Supplementary Conditions:

7.4.1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;

7.4.2. the specific matters to be covered by such authority and responsibility will be itemized; and

7.4.3. the extent of such authority and responsibilities will be provided.

Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8—OWNER'S RESPONSIBILITIES

8.1. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and drawings of physical conditions in existing structures at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.10.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

8.9. The OWNER shall not supervise, direct or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

8.10. OWNER'S responsibility in respect of undisclosed Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.5.

8.11. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

OWNER's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work. ENGINEER's visits and on-site observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.13, and particularly, but without limitation, during or as a result of ENGINEER's on-site visits or

observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work.

Project Representative:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more continuous observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.13 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree to the amount or extent thereof, if any, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform the Work involved promptly. If OWNER or CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree as to the amount or extent thereof, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or

that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraphs 6.24 through 6.28 inclusive.

9.8. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

9.9. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other and to ENGINEER written notice of intention to appeal from ENGINEER's decision and: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in Exhibit GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to ENGINEER's decision, unless otherwise agreed in writing by OWNER and CONTRACTOR. Such appeal will not be subject to the procedures of paragraph 9.11.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant

to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after the start of such occurrence or event unless ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to ENGINEER and the claimant within thirty days after receipt of the claimant's last submittal (unless ENGINEER allows additional time). ENGINEER will render a formal decision in writing within thirty days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. ENGINEER's written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR unless: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in EXHIBIT GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within thirty days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty days of the date of such decision, unless otherwise agreed in writing by OWNER and CONTRACTOR.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 or 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.15) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant to Article 16.

9.13. Limitations on ENGINEER's Authority and Responsibilities:

9.13.1. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by ENGINEER shall create, impose or give rise to any duty owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them.

9.13.2. ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.13.3. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9.13.4. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and Other documentation required to be delivered by paragraph 14.12 will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with, the Contract Documents.

9.13.5. The limitations upon authority and responsibility set forth in this paragraph 9.13 shall also apply to ENGINEER's Consultants, Resident Project Representative and assistants.

ARTICLE 10—CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Times that should be allowed as a result of a Work Change Directive, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.5 and 3.6 except in the case of an emergency as provided in paragraph 6.23 or in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

10.4.1. changes in the Work which are (i) ordered by OWNER pursuant to paragraph 10.1, (ii) required because of acceptance of defective Work under paragraph 13.13 or correcting defective Work under paragraph 13.14, or (iii) agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Times which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an adjustment in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after the start of such occurrence or event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the adjustment claimed covers all known amounts to which the claimant is entitled as a result of said occurrence or event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will

be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows:

11.3.1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive);

11.3.2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2);

11.3.3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 11.3.2, on the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 11.6).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen and other personnel employed full-time at the site. Payroll costs for employees not employed full-time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the

cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed or furnished by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in paragraphs 11.4, 11.5, 11.6 and 11.7. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4—all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

11.6. The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or

11.6.2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's fee shall be fifteen percent;

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's fee shall be five percent;

11.6.2.3. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraphs 11.4.1, 11.4.2, 11.4.3 and 11.6.2 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be paid a fee of fifteen percent of the costs incurred by such Subcontractor under paragraphs 11.4.1 and 11.4.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

11.6.2.4. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.5. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

11.6.2.6. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.5, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

11.8.1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.9. Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if:

11.9.3.1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2. there is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result

of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12—CHANGE OF CONTRACT TIMES

12.1. The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times (or Milestones) shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. All time limits stated in the Contract Documents are of the essence of the Agreement.

12.3. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.4. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii)

delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

**ARTICLE 13—TESTS AND INSPECTIONS;
CORRECTION, REMOVAL OR
ACCEPTANCE OF DEFECTIVE WORK**

13.1. *Notice of Defects:* Prompt notice of all defective Work of which OWNER or ENGINEER have actual knowledge will be given to CONTRACTOR. All defective Work may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.4. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

13.4.1. for inspections, tests or approvals covered by paragraph 13.5 below;

13.4.2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.9 below shall be paid as provided in said paragraph 13.9; and

13.4.3. as otherwise specifically provided in the Contract Documents.

13.5. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection, or

approval. CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

13.6. If any Work (or the work of others) that is to be inspected, tested or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

13.7. Uncovering Work as provided in paragraph 13.6 shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, CONTRACTOR shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

OWNER May Stop the Work:

13.10. If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work

shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any surety or other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with Work that is not *defective*. CONTRACTOR shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.12. Correction Period:

13.12.1. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with Work that is not *defective*, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

13.12.2. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

13.12.3. Where *defective* Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph 13.12, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall

pay all claims, costs, losses and damages attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to be approved by ENGINEER as to reasonableness). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct *defective* Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors and ENGINEER and ENGINEER's Consultants access to the site to enable OWNER to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and

will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

14.5.1. the Work has progressed to the point indicated,

14.5.2. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation), and

14.5.3. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of any payment, including final payment, shall not mean that ENGINEER is responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.5. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is defective, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct defective Work or complete Work in accordance with paragraph 13.14, or

14.7.4. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.4 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

14.7.5. claims have been made against OWNER on account of CONTRACTOR's performance or furnishing of the Work,

14.7.6. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens.

14.7.7. there are other items entitling OWNER to a set-off against the amount recommended, or

14.7.8. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.4 inclusive;

but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform

ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER at OWNER's option of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all

particulars in which this inspection reveals that the Work is incomplete or defective. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance required by paragraph 5.4, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.4.13, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and (ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after the presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to

CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Waiver of Claims:

14.15. The making and acceptance of final payment will constitute:

14.15.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to paragraph 14.11, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

OWNER May Suspend Work:

15.1. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

OWNER May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as adjusted from time to time pursuant to paragraph 6.6);

15.2.2. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

15.2.3. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.4. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety, if any,) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work such excess will be paid to CONTRACTOR. If such claims, costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and when so approved by ENGINEER incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items):

15.4.1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

15.4.2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

15.4.3. for all claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and

15.4.4. for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

CONTRACTOR May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.4. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within thirty days after it is submitted, or OWNER has failed for thirty days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may upon seven day's written notice to OWNER and ENGINEER stop the Work until payment of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.5 are not intended to preclude CONTRACTOR from making claim under Articles 11 and 12 for an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.

ARTICLE 16—DISPUTE RESOLUTION

If and to the extent that OWNER and CONTRACTOR have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure, if any, shall be as set forth in Exhibit GC-A, "Dispute Resolution Agreement," to be attached hereto and made a part hereof. If no such agreement on the method and procedure for resolving such disputes has been reached, and subject to the provisions of paragraphs 9.10, 9.11, and 9.12, OWNER and CONTRACTOR may exercise

such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17—MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Times:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight will constitute a day.

Notice of Claim:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or

act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

Cumulative Remedies:

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.12, 6.16, 6.30, 6.31, 6.32, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

Professional Fees and Court Costs Included:

17.5. Whenever reference is made to "claims, costs, losses and damages," it shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs.

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**EXHIBIT GC-A to General Conditions of the
Agreement Between OWNER and CON-
TRACTOR Dated _____
For use with EJCDC No. 1910-8 (1990 ed.)**

DISPUTE RESOLUTION AGREEMENT

OWNER and CONTRACTOR hereby agree that Article 16 of the General Conditions to the Agreement between OWNER and CONTRACTOR is amended to include the following agreement of the parties:

16.1. All claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of or relating to the Contract Documents or the breach thereof (except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.15) will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, subject to the limitations of this Article 16. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance herewith as provided in this Article 16 will be specifically enforceable under the prevailing law of any court having jurisdiction.

16.2. No demand for arbitration of any claim, dispute or other matter that is required to be referred to ENGINEER initially for decision in accordance with paragraph 9.11 will be made until the earlier of (a) the date on which ENGINEER has rendered a written decision or (b) the thirty-first day after the parties have presented their evidence to ENGINEER if a written decision has not been rendered by ENGINEER before that date. No demand for arbitration of any such claim, dispute or other matter will be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof in accordance with paragraph 9.11; and the failure to demand arbitration within said thirty days' period will result in ENGINEER's decision being final and binding upon OWNER and CONTRACTOR. If ENGINEER renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence but will not supersede the arbitration proceedings, except where the decision is acceptable to the parties concerned. No demand for arbitration of any written decision of ENGINEER rendered in accordance with paragraph 9.10 will be made later than ten days after the party making such demand has delivered written notice of intention to appeal as provided in paragraph 9.10.

16.3. Notice of the demand for arbitration will be filed in writing with the other party to the Agreement and with the

American Arbitration Association, and a copy will be sent to ENGINEER for information. The demand for arbitration will be made within the thirty-day or ten-day period specified in paragraph 16.2 as applicable, and in all other cases within a reasonable time after the claim, dispute or other matter in question has arisen, and in no event shall any such demand be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

16.4. Except as provided in paragraph 16.5 below, no arbitration arising out of or relating to the Contract Documents shall include by consolidation, joinder or in any other manner any other person or entity (including ENGINEER, ENGINEER's Consultant and the officers, directors, agents, employees or consultants of any of them) who is not a party to this contract unless:

16.4.1. the inclusion of such other person or entity is necessary if complete relief is to be afforded among those who are already parties to the arbitration, and

16.4.2. such other person or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings, and

16.4.3. the written consent of the other person or entity sought to be included and of OWNER and CONTRACTOR has been obtained for such inclusion, which consent shall make specific reference to this paragraph; but no such consent shall constitute consent to arbitration of any dispute not specifically described in such consent or to arbitration with any party not specifically identified in such consent.

16.5. Notwithstanding paragraph 16.4 if a claim, dispute or other matter in question between OWNER and CONTRACTOR involves the Work of a Subcontractor, either OWNER or CONTRACTOR may join such Subcontractor as a party to the arbitration between OWNER and CONTRACTOR hereunder. CONTRACTOR shall include in all subcontracts required by paragraph 6.11 a specific provision whereby the Subcontractor consents to being joined in an arbitration between OWNER and CONTRACTOR involving the Work of such Subcontractor. Nothing in this paragraph 16.5 nor in the provision of such subcontract consenting to joinder shall create any claim, right or cause of action in favor of Subcontractor and against OWNER, ENGINEER or ENGINEER's Consultants that does not otherwise exist.

16.6. The award rendered by the arbitrators will be final, judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal.

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16.7. OWNER and CONTRACTOR agree that they shall first submit any and all unsettled claims, counterclaims, disputes and other matters in question between them arising out of or relating to the Contract Documents or the breach thereof ("disputes"), to mediation by The American Arbitration Association under the Construction Industry Mediation Rules of the American Arbitration Association prior to either of them initiating against the other a demand for arbitration pursuant to paragraphs 16.1 through 16.6, unless delay in initiating arbitra-

tion would irrevocably prejudice one of the parties. The respective thirty and ten day time limits within which to file a demand for arbitration as provided in paragraphs 16.2 and 16.3 above shall be suspended with respect to a dispute submitted to mediation within those same applicable time limits and shall remain suspended until ten days after the termination of the mediation. The mediator of any dispute submitted to mediation under this Agreement shall not serve as arbitrator of such dispute unless otherwise agreed.

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SECTION 00800

SUPPLEMENTARY GENERAL CONDITIONS

Supplementary General Conditions to EJCDC Document No. 1910-8 (1990 ed.) made a part of the Owner/Contractor Agreement (Agreement) by and between The Pflaltzgraff Co. (Owner) and _____ (Contractor) dated as of _____, 1999.

The Agreement and the General Conditions of the Contract for Construction, EJCDC Doc. No. 1910-8, 1990 Edition Articles 1 through 17, attached hereto (General Conditions), shall govern the relationship between Owner and Contractor except as amended and supplemented by the Supplementary General Conditions. The purpose of these Supplementary General Conditions is to amend, supplement and, in some cases, void portions of the General Conditions. Accordingly, the General Conditions are hereby amended, supplemented or voided as hereinafter set forth, and except as hereby amended, supplemented or voided, the General Conditions shall remain in full force and effect. The article and paragraph numbers set forth in the Supplementary General Conditions correspond to the article and paragraph numbers set forth in the General Conditions. Any term used herein with initial capital letters that is not otherwise defined herein shall have the same meaning ascribed to such term as defined in the General Conditions.

ARTICLE I
DEFINITIONS

Delete the definition of Laws and Regulations; Laws or Regulations in its entirety and substitute the following:

1.22 Laws and Regulations; Laws or Regulations -

All laws, rules, regulations, ordinances, codes and/or orders, including the Americans with Disabilities Act, applicable to the performance of the Work or the Project.

Add the following:

Governmental Authorities - Any and all local, state or federal agency, authority, board, commission, court, municipality or other unit of government, and any duly authorized agents, employees, members or representatives at same, including, without limitation, New York State Department of Environmental Conservation, the United States Environmental Protection Agency, the City of Syracuse, the County of Onondaga and the State of New York.

Add the following:

Product - all materials, supplies, equipment and systems incorporated into the Work or the Project or used to perform or provide the Work.

Add the following:

Purchaser – the Syracuse China Company, a subsidiary of Libbey Glass, Inc.

Delete the first sentence of the definition of Substantial Completion and substitute the following:

1.38 Substantial Completion - The Work (or a specific part thereof) has progressed to the point where, in the opinion of the ENGINEER, as evidenced by ENGINEER'S definitive Certificate of Substantial Completion and agreed to by the OWNER, is sufficiently completed, in accordance with the Contract Documents, so that the scope and level of remediation have been achieved and all requisite government approvals from the appropriate Governmental Authorities have been obtained.

Delete the definition of Work in its entirety and substitute the following:

1.43 Work - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents, including, but not limited to, all such work or Product necessary to ensure a complete and proper job as intended by the Contract Documents, and procure, furnish, construct, start-up, test, operate and make the Project complete and fit for its intended use and purpose and capable of functioning safely and reliably.

ARTICLE 2 PRELIMINARY MATTERS

Copies of Documents:

Delete paragraph 2.2 in its entirety and substitute the following:

2.2 The Contractor will be furnished without charge five sets of the Contract Documents. Additional sets of Drawings and Specifications will be furnished, if available, at cost of reproduction plus handling.

Before Starting Construction:

2.6 First line, delete "Effective Date of Agreement" and substitute "Notice to Proceed".

2.6.3 Second line. Add after "which will include" and before "quantities and prices" the following: "a complete breakdown of all lump sum items in the Bid and"

2.7 Delete paragraph 2.7 in its entirety and substitute the following:

Before starting work at the site, Contractor shall furnish to Owner and Engineer certificates of insurance and copies of insurance policies as required by Article 5.

2.9 Fifth line. After "Engineer" add "and Owner."

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ARTICLE 3
CONTRACT DOCUMENTS; INTENT, AMENDING, REVISE

Intent:

- 3.1 Sixth line. Delete "law of the place of the Project" and substitute "laws of the State of New York".
- 3.2 Delete first sentence in its entirety and substitute:

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents, and equipment, components, systems etc., therein shall be made operable by the Contractor.

Reference to Standards . . .

- 3.3.1 Third line, delete "governmental authority" and substitute "Governmental Authority."
- 3.3.2 Eighth line. After "Engineer" add "and Owner."

Add new paragraph as follows:

EXECUTION, CORRELATION AND INTENT

- 3.8 By executing the Contract, the Contractor represents that it has examined the job site and the Drawings and Specifications, has satisfied itself as to the conditions under which it will be obliged to operate in performing the Work; amount of Work; actual levels; character and nature of the Work; the equipment and facilities needed preliminary to and during the prosecution of the Work; the accommodation of the Work to and/or by work that may be performed by or for the Owner under other contracts, all required connections of any sort to such work under other contracts, and scheduling of Work as required in coordination with such work under other contracts; and any other consideration which may affect the Work in any manner. Contractor represents and warrants that it has reviewed and fully understands the scope of work set forth in the Drawings and Specifications dated December 1, 1999 issued by Architect/Engineer. No allowance will be made in this connection to the Contractor unless an agreement therefore shall have been made in writing by the Owner at the time of, or prior to, the signing of the Agreement.

3.8.1 Contractor represents and warrants that it is an experienced general contractor, and is fully qualified to perform the Work as described in the Contract Documents.

3.8.2 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities, provided, however, that the most stringent condition shall control:

- i. The Agreement, as modified.

I-7 CERTIFICATE OF SURETY

A. Each bidder shall furnish a specimen performance bond with its proposal, in conformance with the specimen copy included in the Contract Documents evidencing that it can obtain the required Performance Bond and Payment Bond in the event it is awarded the Contract.

I-8 SUBMISSION OF BID PROPOSALS

A. Proposals must be submitted no later than the time specified in the Invitation, unless the time for the opening of proposals has been postponed. Notification of Postponement will be by fax followed up with certified mail, return receipt requested.

B. Bidders may submit their proposals by hand delivery, registered mail, or overnight delivery provided the proposals are received by the Owner's Representative before the time set for the opening of proposals.

I-9 SUBCONTRACTORS

A. Contractor agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of Owner.

B. Contractor shall be fully responsible for all acts and omissions of its Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that it is responsible for the acts and omissions of persons directly employed by it.

C. The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner and that approval of the proposed subcontract award cannot be given by the Owner unless and until the successful bidder submits all information and evidence to the Owner regarding the proposed subcontractor as is required in the General Conditions and elsewhere in the Contract Documents.

I-10 WITHDRAWAL OF BID PROPOSALS

A. Any proposal may be withdrawn by the bidder prior to the scheduled time for the receipt of bids or authorized postponement thereof provided the bidder's written request for withdrawal is delivered to the Owner's Representative before the proposals are opened. No bidder may withdraw its proposal after the actual opening thereof. A proposal which has been withdrawn will be returned to the bidder unopened at the time of the opening of the other proposals.

I-11 RETURN OF BID SECURITY

A. Bid Security will be returned only to those bidders who return the Contract Documents in good condition. Bidders' bid securities will be returned within sixty (60) days after the formal opening of the bids or within forty-eight (48) hours after the Owner and the successful bidder have executed the proposed contract, whichever is greater. In the event that none of the proposals are accepted, all bid securities will be returned within sixty (60) days after the date of the opening of the bids.

I-12 BASIS OF AWARD

A. The Contract will be awarded to that responsible Bidder as determined by the Owner in its sole discretion.

B. The Owner will not be bound by the award, nor shall any work be performed on account of the proposed contract until the contract has been fully executed, delivered and approved.

I-13 QUALIFICATIONS OF BIDDERS

A. The Owner may make such investigation as it deems necessary to determine the ability of the bidder to perform the work, and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any proposal if the evidence submitted by or investigation of such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein or has previously failed to properly perform or complete on time any contract.

I-14 RIGHT TO REJECT BID PROPOSALS

A. The Owner reserves the right to reject any or all proposals or any portion of a proposal or to accept the proposal which in its judgment will be in the best interests of the Owner. Any proposal which contains any omissions, alterations of form, additions or alternates not called for, or any qualifications, erasures or corrections to conform to the requirements stated herein, may be disregarded and rejected as improper except that the Owner may waive any defects or irregularities. Any proposals which are submitted or received after the scheduled closing time for the receipt of proposals will be rejected and returned without being opened.

5.2 If the Surety on any Bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business in the State of New York is revoked, the Contractor shall within five days thereafter substitute another Bond or Surety, both of which shall be acceptable to Owner.

5.3 A. The Contractor shall provide and maintain during the term of this Agreement, and be responsible for premium payments for, the following forms of insurance, in the broadest form available on usual commercial terms and written by insurers rated A:X or better by A.M. Best Company, Inc., in Best's Key Rating Guide and authorized to write insurance in New York State, to cover damage caused by actions of the Contractor, its employees, Subcontractors (with the exception of insurance to be carried by the Subcontractors pursuant to Section B) or agents. The Owner shall be responsible for all policy exclusions approved by it.

1. Workers' Compensation Insurance

Workers' Compensation Insurance as required by law, including U.S. longshoremen's and harbor workers' coverage and maritime coverage and including employers' liability (with "state of hire" benefits for all employees not covered by any workers' compensation law), for all of its employees and those of any Subcontractors performing any Work. It is understood by the parties to this Agreement that the Contractor's employees are not employees of the Owner and vice versa.

2. Comprehensive General Liability Insurance

Comprehensive General Liability Insurance written on an occurrence basis including products and/or completed operations, independent contractors, personal injury, broad form property damage with coverage comparable to ISO Form GL 0404, insurance covering liability arising from explosion, collapse and underground property damage, and contractual liability insurance covering claims arising out of the ownership, operation, maintenance, condition or use of the Project during the construction period with limits of not less than Two Million Dollars (\$2,000,000) each occurrence, and Two Million Dollars (\$2,000,000) general aggregate.

3. Automobile Liability Insurance

Automobile Liability Insurance written on an occurrence basis including owned, non-owned and hired auto coverage with limits of at least Two Million Dollars (\$2,000,000) combined single limit for personal injury and property damage.

4. Umbrella/Excess Liability Insurance

Umbrella/Excess Liability Insurance written on an occurrence basis covering losses that exceed the above liability limits on a combined basis of at least Eight Million Dollars (\$8,000,000). The umbrella/excess coverage shall expressly include coverage for explosions, collapse and underground property damage, and shall be at least as broad as the primary coverage using a follow form.

5. Pollution Liability Insurance

Pollution Liability Insurance written on an occurrence basis with limits of at least Five Million Dollars (\$5,000,000) covering personal injury, property damage and economic loss resulting from the discharge or spillage of hazardous materials at the Site.

B. Subcontractors to the Contractor shall be required to procure and maintain Worker's Compensation, Comprehensive General Liability and Automobile Liability Insurance in amount reasonably necessary, but in any event not less than One Million Dollars (\$1,000,000) (for Comprehensive General Liability and Automobile Liability), to cover damage caused by actions of the Subcontractors, their agents and employees.

C. The proceeds of such insurance, to the extent they are intended to compensate for damages or loss to the Project, shall be made payable to the insureds as their interests may appear. No policy shall contain any clause which would result in the insured thereunder being required to carry insurance with respect to the Work covered thereby in an amount equal to a minimum specified percentage of the full insurable value of such Work in order to prevent the insured from becoming a co-insurer of any loss with the insurer under such policy. All insurance carried in accordance with Part A of this Section shall be endorsed to provide that inasmuch as the policy is written to cover more than one insured, the terms, conditions, insuring agreements and endorsements, with the exception of limits of liability, shall operate in the same manner as if there were a separate policy covering each insured.

D. Unless otherwise stated herein as to any policy, certificates of insurance coverage required to be carried in a coverage satisfactory to the Owner must be furnished, together with proof of payment of the premiums therefor, before the Notice to Proceed Date. The Contractor shall deliver to the Owner on or before the first Business Day of each calendar year thereafter a certificate dated not earlier than the immediately preceding December 1 reciting that there is in full force and effect, with a term covering at least the next succeeding calendar year, insurance in the amounts and of the types required by Part A of this Section (together with proof of the payment of the premium therefor). Prior to expiration of any such policy, the Contractor shall furnish the Owner with evidence that the policy has been renewed or replaced or is no longer required by this Agreement. The Contractor shall provide such further information to the Owner from time to time with respect to insurance coverage as the Owner in its reasonable discretion may require.

E. In addition, the insurance policies shall be endorsed to provide that the coverages afforded thereby shall not be invalidated or affected by any unintentional errors, omissions, or improper description of premises, or in the policy, provided the error, omission and/or description is reported as soon as practical after discovery.

F. The policies shall also be endorsed to provide that failure of any agent, servant, or employee of an insured or an officer of any insured to notify the insurer of any occurrence of which he has knowledge shall not invalidate the insurance afforded by the policy as respects the named insureds.

a. Such endorsement shall also include a provision to the effect that where the insured reports an occurrence to the Compensation Carrier insuring its *compensation insurance which later develops into a liability claim*, failure to report such occurrence shall not be deemed in violation of any general conditions requiring notice to the company upon the understanding and agreement, however, that the insured must as soon as it is definitely made aware of the fact that the particular occurrence is a liability case rather than a compensation case, give notification of the aforesaid occurrence to the insurer.

G. The policies shall also provide that knowledge of an occurrence by the agent, servant, or employee of the insured shall not in itself constitute knowledge by the insured, unless an executive officer of the insured's corporation or the owner or a partner of any partnership insured shall have received such notice from its or their agent, servant, or employee.

- 5.4 If at any time any of the insurance required to be provided by Contractor should be canceled, terminated or modified so that the required insurance is not in effect, Owner may require Contractor to suspend performance of the Work. No extension of time shall be allowed to Contractor in the event of any such suspension. Whether or not the work is suspended, Owner may, at its option, obtain replacement coverage in whole or in part, the cost of which shall be payable by Contractor to Owner. Neither the procurement nor the maintenance of any insurance by Owner or Contractor shall in any way be construed or deemed to limit, discharge, waive or release Contractor from any obligation under the Contract, nor to limit the liability of Contractor for any act or omission.
- 5.5 If any of the property and casualty insurance requirements are not complied with at their renewal dates, payments to Contractor will be withheld until these requirements have been met, or at the option of Owner, Owner may pay the renewal premiums and withhold such payments from any monies due Contractor.
- 5.6 In the event that claims in excess of the insured amounts provided herein are filed by reason of any operations under the Contract, the amount of excess of such claims, or any portion thereof, may be withheld from payment due or to become due Contractor until such time as the Contractor shall furnish such additional security covering such claims as may be determined by Owner.

5.7 All policies and certificates of insurance of the Contractor shall contain the following clauses:

5.7.1 Insurers shall have no right of recovery or subrogation against the Owner or the Purchaser and their agents and agencies and the Engineer, it being the intention of the parties that the insurance policies so effected shall protect those parties and be primary coverage for any and all losses covered by the above described insurance.

5.7.2 The clause "other insurance provisions" in a policy in which the Owner and the Purchaser and their agents and agencies and Engineer are named as an insured, shall not apply to these parties.

5.7.3 The insurance companies issuing the policy or policies shall have no recourse against Owner and/or the Purchaser and their agents and agencies and Engineer for payment of any premiums or for assessments under any form of policy.

5.7.4 Any and all deductibles in the above described insurance policies shall be assumed by and be for the account of and at the sole risk of Contractor.

ARTICLE 6
CONTRACTOR'S RESPONSIBILITIES

6.1 Renumber as 6.1.1

Add the following:

6.1.2 Contractor shall not be relieved from its obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Engineer in his administration of the Contract or by inspections, tests, or approvals required or performed by persons other than Contractor.

6.1.3 Contractor, its employees, Subcontractors, suppliers, representatives, invitees and agents will be subject to such rules and regulations for the conduct of Work as Owner and Purchaser may establish. Contractor will be responsible for the enforcement among its employees of Owner's and Purchaser's instructions.

6.1.4 Neither Contractor nor any Subcontractor nor any other person employed at the site shall sell, use, permit or suffer intoxicating drink or illegal drugs on or about the site.

6.1.5 Contractor shall be responsible for harmony among the various craftsmen employed to perform the Work.

6.1.6 Contractor shall at all times maintain a full work force at the site as appropriate for the stage of the Work.

6.1.7 Contractor shall be responsible for providing a copy of the New York Department of Environmental Conservation's Order on Consent, dated _____, Index No. A-0346-9609, Site Code No. 7-34-053 (attached hereto as "Exhibit A") to each Subcontractor hired to perform work under this contract.

Labor, Materials and Equipment:

6.5 Renumber as 6.5.1

Add the following:

6.5.2 Contractor shall cause delivery of all product at such times as will ensure speedy and uninterrupted progress of Work.

Substitutes or "Or-Equal" items:

6.7.1.2 Forty-first line. After "Engineer" add "in consultation with Owner".

6.7.2 Sixth line. After "Engineer" add "and Owner".

6.7.2 Eighth line. After the first "Engineer". Delete , "in Engineer's sole discretion", and substitute "in consultation with Owner".

6.7.3 Second/third lines. After "Engineer" add "in consultation with Owner,".

Concerning Subcontractors, Suppliers and Others:

6.8.1 Third line. After "Owner" add "Governmental Agencies".

6.8.1 Fifth line. After "Owner" add ", Governmental Authorities".

6.8.2 Sixth line. After "Owner" add ", Governmental Authorities".

6.8.2 Ninth Line. After "Owner's" add "Governmental Authorities".

6.10 First line. At the beginning thereof, add "Except as provided in the Bid."

Delete paragraph 6.11 in its entirety and substitute the following:

6.11 All Work performed for Contractor by a Subcontractor shall be pursuant to an appropriate agreement between Contractor and Subcontractor. The Subcontractor shall not commence work until Contractor has obtained all insurance as required by paragraphs 5.3 through 5.8, inclusive.

Patent Fees and Royalties:

Delete paragraph 6.12 in its entirety and substitute the following:

6.12 Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work of any invention, design, process, products or device which is the subject of patents, copyrights or other proprietary rights held by others. Contractor shall indemnify and hold harmless Owner and Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses, including attorney's fees, arising out of any infringement of patents, copyrights or other proprietary rights incident to the use in the performance of the Work or furnished by him in fulfillment of the requirements of this Contract. In the event of any claim or action by law on account of such patents or fees, it is agreed that Owner may retain out of the monies which are or which may become due Contractor under this Contract, a sum of money sufficient to protect itself against loss, and to retain the same until said claims are paid or are satisfactorily adjusted.

Laws and Regulations:

6.14.1 Add after the first sentence:

“When there is an order of any Government Authority, Contractor shall immediately inform Engineer in writing”.

Delete paragraph 6.14.2 in its entirety and substitute the following:

6.14.2 If Contractor observes that the Contract Documents are at variance with any Laws, Rules or Regulations, Contractor shall give Engineer prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If Contractor performs any Work knowing or having reason to know it to be contrary to any Laws or Regulations, and without such notice to Engineer, Contractor shall bear all costs arising therefrom. Contractor shall, at all times, observe and comply with and shall cause all his agents and employees and all his subcontractors to observe and comply with all existing and future Laws or Regulations, and shall protect and indemnify the Owner and the Engineer and the municipalities in which Work is being performed, and their officers and agents against any claim or liability arising from or based on the violation of any Law or Regulation, whether by himself or his employees or any of his subcontractors.

Use of Premises:

6.16 Renumber as 6.16.1

Fifteenth line. Delete “by arbitration or other dispute resolution proceeding or”.

Add the following:

6.16.2 Contractor recognizes that the Site is owned by Purchaser and that due care must be afforded to the ongoing manufacturing operations conducted by Purchaser. Contractor shall confine operations at the Site to areas permitted by law, ordinances, permits, the Contract Documents, Engineer, Owner, and Purchaser, and shall not unreasonably encumber the Site with any materials or equipment. Contractor will schedule and

otherwise perform its work so as not to interrupt or disturb the activities of Owner, Purchaser or other contractors employed at the site or conducted within or about Purchaser's buildings and lands adjacent to the site. Included in the foregoing, but not by way of limitation, are noxious or offensive odors; dust; objectionable noise; blockage of vehicular or pedestrian traffic by Contractor's personnel, equipment, vehicles, debris or materials; and interruption of utilities or services essential to Purchaser's activities.

If one or more local residents complains about noise, odors, or dust coming from the Site, Contractor shall (a) cooperate with authorities of the City of Syracuse (the "City") or Onondaga County (the "County") in responding to the person or persons making the Complaint and (b) make reasonable efforts to implement procedures which will reduce the noise, odors or dust to an acceptable level at its own expense.

Contractor shall make reasonable efforts to address the legitimate concerns of local residents during the course of the performance of its work under the Contract and establish and maintain positive relationships with the Governmental Authorities. All communications with local residents or the Governmental Authorities shall be through Owner or Engineer.

6.16.3 Should Owner or Purchaser permit Contractor to use any of their equipment, tools, or facilities, such use will be gratuitous and Contractor shall release Owner and Purchaser from and indemnify and save Owner and Purchaser harmless from and against any claims for personal injuries, including death, arising out of the use of any such equipment, tools, or facilities whether or not based upon the condition thereof or any alleged negligence of Owner or Purchaser in permitting the use thereof or otherwise.

6.17 Fifth line. After "waste materials" add "temporary fencing,".

Safety:

6.20 Add after the first sentence: "Contractor shall submit a Site Safety Plan to Owner, Purchaser and Engineer for review and approval prior to starting the Work in accordance with Paragraph 2.3 and 2.4. After approval, Contractor shall implement the Site Safety Plan.

6.21 Add: "Contractor will not change its superintendent during the course of Work without prior notification to and written approval of Owner and Engineer."

Emergencies:

6.22 Add: "If Contractor fails to take immediate corrective action following notice from Engineer of any unsafe condition, Owner may take all necessary action to correct the unsafe condition at Contractor's expense."

6.30 Contractors' General Warranty and Guaranty

Renumber paragraph 6.30.1 as 6.30.1.1

6.30.1.1 Add ", Purchaser" after "Owner" in the second line.

Renumber paragraph 6.30.1.1 as 6.30.1.1.1

Renumber paragraph 6.30.1.2 as 6.30.1.1.2

Add the following:

6.30.1.2 All materials or equipment delivered to the site shall be accompanied by certificates, signed by an authorized officer of the Supplier, guaranteeing that the materials or equipment conform to specification requirements. Such certificates shall be immediately turned over to Engineer. Materials or equipment delivered to the site without such certificates will be subject to rejection.

6.30.1.3 The warranties provided in Paragraph 6.30.1.1 shall be in addition to and not limit any other warranty or remedy available to Owner or Purchaser by law, equity or in any other portion of the Contract Documents.

6.30.1.4 Contractor warrants that all manufacturer's or other warranties on all product furnished by Contractor shall run directly to or be specifically assigned to Owner and Purchaser.

6.30.1.5 Contractor warrants that the installation of any and all products, materials or equipment shall be in strict accordance with the manufacturer's requirements unless specified otherwise in the Contract Documents. In the event that the Owner or Purchaser seeks to enforce a claim based on a manufacturer's warranty and should such manufacturer then fail to honor its warranty based in whole or in part on a claim of defective installation, Owner and Purchaser shall be entitled to enforce said warranty against Contractor in accordance with the terms of said warranty, except that a claim of defective installation shall not be a defense to any warranty claim by Owner or Purchaser against Contractor.

6.30.1.6 The warranties set forth in 6.30.1 shall survive termination of this Agreement.

Indemnification:

Delete 6.31 and replace with the following:

6.31 To the fullest extent permitted by law, Contractor shall defend, indemnify and hold harmless Owner, Purchasers, their officers, directors, agents, employees and representatives (the "Indemnitees") from and against all liabilities, claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting

directly or indirectly from the performance of the Work or the enforcement by Owner of this Contract, provided that any such liability, claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, including without limitation, to any employees of Contractor or others or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom or to other economic loss sustained by Indemnities, and is caused in whole or in part by any act or omission of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, irrespective of whether there is a breach of a statutory obligation or rule of apportioned liability except to the extent it is caused by the negligence of a person indemnified hereunder and indemnification of such person is precluded by statute. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist to any indemnified party or person described in this Paragraph 6.30.

6.31.1 With respect to compliance by Contractor with applicable New York State and federal labor regulations and requirements, including but not limited to Wage Determination Schedules, Equal Opportunity regulations, OSHA statutes and regulations, the Americans with Disabilities Act, and Hazardous Substance exposure regulations, the indemnifications set forth in Paragraph 6.30 shall survive for seven years following the Completion Date of the Work.

Add the following:

6.32.1 Nothing in the Contract Documents shall create or give to third parties any claim or right of action against Contractor, Owner, Purchaser or Engineer beyond such as may legally exist irrespective of the Contract.

Add the following:

Assignment of Contract:

6.35 Contractor shall not assign, transfer, convey, or otherwise dispose of the Contract, or of his legal right, title, or interest in or to the same or to any part thereof, without the prior written consent of Owner. Contractor shall not assign by power of attorney or otherwise any monies due him and payable under this Contract without the prior written consent of Owner. Such consent, if given, will in no way relieve Contractor from any of the obligations of this Contract.

ARTICLE 7 OTHER WORK

Related Work at Site:

7.1 Renumber as 7.1.1

Add the following:

ARTICLE 11
CHANGE OF CONTRACT PRICE

11.2 Delete in its entirety - and substitute the following:

The Contract Price may only be changed by a Change Order [provided, however, that delay damages as provided in Article 18 herein shall not be considered a change in Contract Price but rather an indemnity payment.] Any claim for an increase in the Contract Price shall be based on written notice delivered to Engineer within fifteen days of the occurrence of the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within forty-five days of such occurrence unless Engineer allows and additional period of item to ascertain accurate cost data. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order.

Add the following:

11.3.4 By mutual acceptance of agreed unit prices.

Cost of the Work:

Delete paragraph 11.4.2 in its entirety and substitute the following:

11.4.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field service required in connection therewith. All cash discounts, rebates and refunds that ar materials and equipment shall accrue to Owner, and Contractor shall accrue to Owner, and Contractor shall make provisions so that they may be obtained. All cash discounts, rebates and refunds, from the sale of surplus materials and equipment shall accrue to Contractor.

Delete paragraph 11.4.3 in its entirety and substitute the following:

11.4.3 Payments made by Contractor to the Subcontractors for by Subcontractors. All subcontracts shall be subject to the provisions of the Contract Documents.

Delete paragraph 11.4.4 in its entirety.

Delete paragraph 11.4.5.1 in its entirety.

Delete paragraph 11.4.5.3 in its entirety and substitute the following:

11.4.5.3 Rentals of all construction equipment and machinery, whether rented from Contractor or others, which shall be negotiated between Engineer and Contractor. Rates shall include all fuel, lubricants, insurance, etc. Equipment rental charges shall not exceed the prorated monthly rental rates listed in the current edition of the "Compilation of Rental Rates for Construction Equipment" as published by the Associated Equipment Distributors. Charges per hour shall be determined by dividing the monthly rates by 176.

The rental of any such equipment and machinery shall cease when the use thereof is no longer necessary for the Work.

Delete paragraph 11.4.5.6 in its entirety.

Delete paragraph 11.4.5.7 in its entirety.

Delete paragraph 11.4.5.8 in its entirety.

Delete paragraph 11.4.5.9 in its entirety.

Delete paragraph 11.5.4 in its entirety.

Contractor's Fee:

Delete paragraph 11.6.1 in its entirety.

11.6.2 First line, delete "if a fixed fee is not agreed upon,".

11.6.2.1 Second line, delete "fifteen" and substitute "ten".

Add the following: "Contractor's fee shall not be applied to payroll taxes, social security contributions, or unemployment taxes."

Add the following:

11.6.3 When the cost of a change order exceeds \$25,000, Contractor's Fee shall be determined by negotiations between Owner and Contractor. In no event shall Contractor's fee be greater than the previously established percentages of supplementary conditions 11.6.2.1 and 11.6.2.2.

Unit Price Work:

Delete paragraph 11.9.3 in its entirety and substitute the following:

11.9.3 The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

11.9.3.1 If the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than fifteen percent from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2 If there is no corresponding adjustment with respect to any other item of work; and

11.9.3.3 If Contractor believes that Contractor has carried additional expense as a result thereof; or

11.9.3.4 If Owner believes that the quantity variation entitles Owner to an adjustment in the unit price.

Either Owner or Contractor may make a claim for an adjustment in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 12
CHANGE OF CONTRACT TIME

12.1 Fifteenth through eighteenth line. Delete "All claims for adjustment . . . cannot otherwise agree."

ARTICLE 13
TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF
DEFECTIVE WORK

Access to Work:

Delete paragraph 13.2 in its entirety and substitute the following:

13.2.1 Engineer and its representatives and other representatives of Owner, State and public agencies shall have unrestricted access to the Work. Contractor shall provide proper and safe facilities for such access and observation of the Work and also for any inspection or testing thereof by others.

13.2.2 If witnessed shop tests or inspections are required at the point of manufacture, Contractor shall keep Engineer advised as to the progress of the work so that Engineer may arrange for witnessing or inspection at the proper time and place.

Tests and Inspections:

Delete paragraph 13.3 in its entirety and substitute the following:

13.3.1 Contractor shall give Engineer timely notice of readiness of the Work for all inspections, tests or approvals. If any such Work required so to be inspected, tested or approved is covered without written approval of Engineer, it must, if requested by Engineer, be uncovered for observation, and such uncovering and replacement shall be at the Contractor's expense.

13.3.2 At any time during the progress of the work and up to the date of final acceptance, Engineer shall have the right to reject any work which does not conform to the requirements of the Contract Documents, even though such work has been previously inspected and paid for. Any omissions or failure on the part of Engineer to disapprove or reject any work or materials at the time of inspection shall not be construed as an acceptance of any defective work or materials. If any work or materials shall be

determined by Engineer to be defective, or improperly done, such work shall be removed and replaced, or the defects otherwise remedied in a manner satisfactory to Engineer, and consistent with the intent of the Contract, at the Contractor's expense.

Delete paragraph 13.4 in its entirety and substitute the following:

13.4.1 If the Contract Documents, Laws or Regulations of any public authority having jurisdiction require any Work to specifically be inspected, tested, or approved, Contractor shall assume full responsibility therefor, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. All other inspections, tests and approvals required by the Contract Documents shall be performed by an experienced testing laboratory acceptable to Engineer, Owner and Contractor and costs thereof shall be borne by Contractor.

13.4.2 Owner and Purchaser reserve the right to independently perform at their own expense, laboratory tests on random samples of material or performance tests on equipment delivered to the site. These tests if made will be conducted in accordance with the appropriate referenced standards or specification requirements. The entire shipment represented by a given sample, samples, piece, or pieces of equipment may be rejected on the basis of the failure of samples or pieces of equipment to meet specified test requirements. All rejected materials or equipment shall be removed from the site, whether stored or installed in the Work, and the required replacements shall be made, all at no additional cost to the Owner.

Renumber paragraph 13.12 as 13.12.1.

13.12.2 Delete and substitute:

If a particular item of equipment or major system is placed in service before Substantial Completion of all the Work, or is otherwise accepted or used, the correction period for that item or major system shall start to run from the date such item or system is placed in service, and shall continue until one year after the Substantial Completion Date for all the Work.

Add the following:

13.12.4 Contractor shall submit to the Owner duplicate copies of a general guarantee for the entire Work. The guarantee shall be unconditional and cover all labor, material and equipment furnished. All guarantees shall be written and in a form satisfactory to Owner and Purchaser.

13.12.5 Final payment for the Work shall be due and payable thirteen months after the date of Substantial Completion unless any defects in equipment, materials and workmanship remain at such date.

ARTICLE 14
PAYMENTS TO CONTRACTOR AND COMPLETION

Application for Progress Payment:

Delete paragraph 14.2 in its entirety and substitute the following:

14.2.1 Not later than the fifth day of every month, the Contractor shall submit to Engineer for review an Application for Payment, filled out and signed by Contractor, covering the percentage of the total amount of the Contract which has been completed from the start-up of the Project to and including the last day of the preceding month, accompanied by such data and supporting evidence as Owner or Engineer may require. Contractor shall furnish Engineer, with its Application for Payment, a certified true copy of his payroll, including but not limited to, hours, rate classification and total sum paid each employee charged to or working on the Project. Applications for payment with the exception of the first shall be notarized by a Notary Public licensed in the State of New York.

Partial payment, up to the estimated value less retainage, will be allowed for any materials and equipment not incorporated in the Work, pursuant to the following conditions:

- A. Major equipment items stored off-site shall be properly stored in a bonded warehouse or manufacturer's facility, protected and maintained during storage.
- B. Equipment or materials stored on the site shall be properly stored, protected and maintained during storage.
- C. For any partial payment, Contractor shall submit, with its monthly progress payment a certified receipt bill from each Supplier in the amount of the partial payment requested.
- D. Contractor shall submit evidence that it has paid for materials or equipment stored and for which Engineer has authorized partial payment and previous progress payments, prior to submission of the next monthly payment request. Not later than the tenth day of the month following the month in which the submittal of an Application for Payment (which was approved by the Owner and Engineer) was made, the Owner will make partial payment to the Contractor on the basis of a duly certified approved estimate of the work performed during the preceding period by the Contractor, but the Owner will retain ten (10) percent of the amount of each such estimate until Engineer's approval of the Final Application for Payment for all work covered by the Contract.

14.2.2 The Application for Payment shall also be accompanied by such data, satisfactory to owner, as will establish Owner's title to the material and equipment and protect his interest therein, including applicable insurance. Each subsequent Application for Payment shall include an affidavit of Contractor stating that all previous progress

payments received on account of the Work have been applied to discharge in full all of Contractor's obligations reflected in prior Applications for Payment.

14.2.3 The Application for Payment shall also contain a certification by Contractor that as of the date of the Application for Payment, all of its subcontractors were in compliance with applicable New York State and federal labor regulations and requirements, including but not limited to Wage Determination Schedules, Equal Opportunity regulations, the Americans with Disabilities Act, OSHA statutes and regulations, and Hazardous Substances exposure regulations.

14.2.4 Contractor shall monitor the payment of wages to its employees and to the employees of its subcontractors on a weekly basis, and shall pay when due all amounts owed to subcontractors and suppliers of labor, materials or equipment other than normal retainages and amounts contested in good faith by Contractor. Contractor shall appear and defend the Site, the Work and Owner against all claims for contested amounts.

14.3 Add "and Purchaser" after "Owner" in the fourth line.

Review of Applications for Progress Payment:

Delete paragraph 14.4 in its entirety and substitute the following:

14.4 Engineer will, within ten days after receipt of each Application for Payment, either indicate in writing its recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. Owner shall at presentation to it of a recommended Application for Payment, pay Contractor the amount approved by Engineer in accordance with paragraph 14.2 and the time periods state therein.

14.7.3 Third line. Delete "or."

14.7.4 Third line. Delete "." substitute ",".

Add the following:

14.7.5 of reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum, or

14.7.6 of reasonable evidence that the Work will not be completed within the Contract Time.

Partial Utilization:

14.8 Add "and Purchaser" after "Engineer" in the eighth line.

Delete paragraph 14.10 in its entirety and substitute the following:

14.10 Prior to Substantial Completion of the Project, Owner may request Contractor in writing to permit it to use a specified part of the Project which it believes it may use without significant interference with construction of the other parts of the Project. If Contractor agrees, it will certify to Owner and Engineer that said part of the Project is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Project. Within a reasonable time thereafter Owner, Contractor and Engineer shall make an inspection of that part of the Project to determine its status of completion. If Engineer and Owner do not consider that it is substantially complete, Engineer will notify Contractor in writing giving the reasons therefor. If Engineer and Owner consider that part of the project to be substantially complete, Engineer will execute and deliver to Owner and Contractor a certificate to that effect, fixing the date of Substantial Completion as to that part of the Project, attaching thereto a tentative list of items to be completed or corrected before Substantial Completion of the Project and fixing the responsibility between Owner and Contractor for maintenance, heat and utilities as to that part of the Project. Owner shall have the right to exclude Contractor from any part of the Project which Engineer has so certified to be substantially complete, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list. Owner shall also have the right to operate any part of the Project indicated in Engineer's certificate of partial completion, and to exclude the Contractor from such parts of the Project, but Owner shall allow Contractor reasonable access to complete the remainder of the work.

Final Application for Payment:

Renumber paragraph 14.12 as 14.12.1

Add the following:

14.12.2 Final payment for the Work shall be the Contract Price less previous payments less any charges for corrective work or damages for defective equipment, materials and workmanship occasioned in correcting the same.

Renumber paragraph 14.13 as 14.13. 1.

Add the following:

14.13.2 Following the Engineer's issuance of the Certificate of Substantial Completion of the Work or designated portion thereof, and Contractor's completion of the Work, Contractor shall forward to the Engineer a written notice that the Work is ready for final inspection and acceptance and shall also forward to the Engineer a final Application for Payment. Upon receipt the Engineer will make the necessary evaluations and forward recommendations to the Owner who, together with the Engineer, will promptly make such inspection. When the Engineer finds the work acceptable under the Contract Documents and the Contract fully performed, the Engineer will issue a Final Certificate for Payment approving and recommending final payment to Contractor. This approval and recommendation will constitute a representation that, to the best of the Engineer's knowledge, information and belief, and on the basis of the Engineer's observations and inspections, the Work has been completed in accordance with the terms

and conditions of the Contract Documents and that the entire balance found to be due Contractor, and noted in said Final Certificate, is due and payable.

14.13.3 Neither the final payment nor the remaining retainage shall become due until Contractor submits to the Engineer (1) an affidavit that all payrolls, bills for product and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible, have been paid or otherwise satisfied, (2) consent of surety, if any, to final payment, and (3) other data establishing payment or satisfaction of all such obligations, such as receipts and releases arising out of the Contract, to the extent and in such form as may be designated by Owner. If any Subcontractor or Sub-subcontractor refuses to furnish a release required by Owner, Contractor may furnish a bond satisfactory to Owner to indemnify Owner against any such lien. If any such lien remains unsatisfied after all payments are made, Contractor shall refund to Owner all monies that the latter may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees, together with interest thereon at Owner's primary cost of borrowing.

14.15.2 Add "and/or Purchaser" after "Owner" in the second line.

ARTICLE 15
SUSPENSION OF WORK AND TERMINATION

Owner may terminate:

15.2 Delete third sentence and substitute:

If Owner so terminates this Contract, Owner shall pay Contractor for all Work properly performed, less any amounts to which Owner may be entitled under this Agreement. In no event shall Owner or Purchaser be liable to Contractor in an amount greater than the Contract Price for any prospective loss of profits or unabsorbed overhead nor shall the cost of termination exceed that portion of the Contract Price which the completed portion of the Work (plus additional obligations approved by the Owner) bears to the contemplated total value of the Work. Nothing in this paragraph shall in any way affect Owner's right to terminate because of Contractor's default, nor affect any remedies therefor.

15.4 Add at end of paragraph:

Upon any termination pursuant to this paragraph, Contractor agrees any claims for damages on account of such termination and agrees that the sole remedy of Contractor is to receive payment for the Work properly incurred or done respectively by the date of termination, plus the cost of settling Subcontractor and vendor claims, and an equitable amount for demobilization and winding up Contractor's activities. In no case shall any payment be made for anticipatory profit, underutilization of personnel or equipment, or items of consequential loss or shall not pay, or cause to be paid, any amounts due hereunder except upon receipt of

documentation reasonably satisfactory to Owner and Engineer with respect to amounts claimed by Contractor.

Add the following:

Termination:

15.6 Upon a termination under this Article 15 Contractor, every Subcontractor, and every Sub-subcontractor shall assign or otherwise make available to Owner, as Owner in his discretion may direct, all contracts, purchase orders, product, other supplies and any other items pertaining to the Work.

ARTICLE 16
ARBITRATION

Delete Article 16 in its entirety.

ARTICLE 17
MISCELLANEOUS

Giving Notice:

Re-number paragraph 17.1 as 17.1.1

Add the following:

17.1.2 No oral statement of any person whomsoever shall in any manner or degree modify or otherwise affect the terms of this Contract. Any notice to Contractor, from Owner and Engineer, relative to any part of this Contract shall be in writing.

**SECTION 01000
MEASUREMENT AND PAYMENT**

This Measurement and Payment Section separates the Work of this Contract into measurable units for payment purposes, in identical units to those presented in the Bid Form incorporated in the Contractor's proposal. The Contractor shall be entirely responsible for performing all Work described in the Contract Documents, whether or not specifically or fully described in this section. The total proposal price must include all Work described in the Contract Documents whether or not such Work is explicitly described in this section.

Payment will not be made for quantities which exceed the stated quantities in the Contract Documents unless additional quantities are approved in writing by the Engineer.

The item numbers in this Section, with the exception of Item 01000 Mobilization/Demobilization, correspond to the most applicable Specification section where the technical requirements are described.

ITEM 01000 - MOBILIZATION/DEMOBILIZATION

Measurement

The cost for this item shall include the mobilization of personnel, equipment and materials necessary which are not included in the other payment items, and demobilizing the same personnel, equipment and materials. This item also includes provision of insurance and payment bonds.

Payment

Seventy-percent (70%) of the stated price for mobilization/demobilization will be paid upon completion of mobilization at the Site, as determined by the Engineer, and the remaining thirty-percent (30%) will be paid upon completion of the project closeout activities described in Section 01700.

ITEM 01050 - PERFORMANCE OF SURVEY

Measurement

The cost for this item shall include provision of survey information as described in Specification Section 01050. This includes, but is not limited to, establishment of new benchmarks, preservation of new and existing benchmarks, laying out the location of the Work, recording the horizontal and vertical locations of all Work, and provision of field records and as-built drawings

Payment

Payment will be made on a lump sum basis. The Contractor may elect to submit interim invoices for payment, in which the invoice will be paid for the percentage of the surveying Work acceptably performed, as determined by the Engineer.

ITEM 01080 - PROVISION AND INSTALLATION OF FENCING AND WARNING SIGNS

Measurement

The cost for this item shall include the provision and placement of plastic temporary fencing, metal temporary fencing, permanent fencing and warning signs as described in Section 01080. This item also includes the removal of temporary fencing following completion of project closeout activities described in Specification Section 0 1700.

Payment

Payment will be made on a lump sum basis for the proper provision, and placement of fencing and warning signs, as determined by the Engineer.

ITEM 01510 - PROVISION AND MAINTENANCE OF CONSTRUCTION FACILITIES AND UTILITIES

Measurement

The cost for this item shall include the provision and maintenance of construction facilities and utilities when required at the Site to perform the Work, as described in Specification Section 01510. This item also includes removal from the Site when the facilities are no longer needed. These facilities and utilities consist of telephone service, electrical power, temporary water, Engineer and Contractor trailer, sanitary facilities, trash disposal, security provisions, emergency equipment and materials, and any other facility or utility determined to be necessary for the Contractor to perform the Work.

Payment

Payment will be made on a lump sum basis for the proper provision and maintenance of construction facilities and utilities. Payment will be made following project closeout activities.

ITEM 01550 - CONSTRUCTION AND MAINTENANCE OF ACCESS ROADS

Measurement

The cost for this item will include the construction and maintenance of temporary and permanent access roads as described in Specification Section 01550. This Work shall be performed as necessary so that access to all areas of the Site, where Work is being performed, is maintained.

Payment

Payment will be made on a lump sum basis for the proper construction and maintenance of access roads, as determined by the Engineer.

ITEM 01560 - PROVISION OF TEMPORARY CONTROLS

Measurement

The cost for this item shall include the provision of materials and equipment for temporary control of dust, traffic, erosion, noise and pollution throughout the duration of the project, as described in Specification Section 01560.

Payment

Payment will be made on a lump sum basis for the proper provision of temporary controls throughout the duration of the project. Payment will be made following completion of project closeout activities.

ITEM 01562 - MANAGEMENT OF SITE WATER**Measurement**

The cost for this item shall include the management of Site water generated from facility operations and includes provision of tanks and associated pumping equipment necessary to divert and temporarily store facility-generated Site water. This item also includes sampling of the facility-generated. Site water and any treatment necessary as directed by the Engineer. The Contractor shall not be paid for construction-related Site water generated by the Contractor

Payment

Payment will be made on a lump sum basis for the management of the facility-generated Site water.

ITEM 01565 - EQUIPMENT DECONTAMINATION**Measurement**

The cost for this item shall include the provision of materials and equipment to decontaminate trucks and equipment as described in Specification Section 01562.

Payment

Payment will be made on a lump sum basis for equipment decontamination.

ITEM 02110 - CLEARING AND GRUBBING**Measurement**

The cost for this item shall include cutting, removal, chipping and placement within the landfill of all above grade vegetation and perishable subgrade materials such as stumps and roots. The Contractor shall not be paid for clearing and grubbing performed outside of the limits of disturbance shown on the Drawings.

Payment

Payment will be made on a lump sum basis for clearing and grubbing activities.

ITEM 02140.A - SLUDGE EXCAVATION**Measurement**

The cost for this item shall include sludge removal from the process wastewater settling ponds as described in Specification Section 02140. Dewatering of the ponds during sludge excavation, subsequent dewatering of the sludge following excavation and prior to placement under the cap, and chemical confirmatory sampling are also included in this item.

Payment

Payment will be made in cubic yards of sludge excavated, dewatered, transported and compacted in the new landfill area.

ITEM 02140.B - POND RECONSTRUCTION

Measurement

The cost for this item shall include reconstruction of the wastewater settling ponds as described in Specification Section 02140 which includes placement of fill to bring the settling ponds to the correct elevation, excavation of swales flowing into and out of the settling pond, construction of headwalls and necessary piping.

Payment

Payment will be made on a lump sum basis for the reconstruction of the wastewater settling ponds.

ITEM 02200.A - EASTERN PORTION SOIL AND WASTE EXCAVATION

Measurement

The cost of this item shall include removal of waste and soil from the eastern portion of the landfill as described in Specification Section 02200. Dewatering of the area during excavation, hand excavation of holes for visual inspection and chemical confirmatory sampling. The Contractor shall not be paid for excavation of waste and soil in the eastern portion which has not been approved by the Engineer.

Payment

Payment will be made in cubic yards excavated from the eastern portion of the landfill, transported and compacted in the proposed landfill area.

ITEM 02200.B - WETLAND SOIL EXCAVATION

Measurement

The cost of this item shall include removal of soil from the northern wetland area as described in Specification Section 02200. Dewatering of the excavation, performance of the Paint Filter Test and any dewatering required prior to placing the wetland soils in the landfill are also included in this item.

Payment

Payment will be made in cubic yards excavated from the northern wetland, transported and compacted in the proposed landfill area.

ITEM 02210.A - ABANDONMENT OF MONITORING WELLS

Measurement

The cost of this item shall include the provision of materials and equipment to abandon monitoring wells as described in Specification Section 02210.

Payment

Payment will be made at the actual number of monitoring wells abandoned.

ITEM 02210.B - MODIFICATION TO EXISTING WELLS

Measurement

The cost of this item shall include the provision of materials and equipment to modify monitoring wells as described in Specification Section 02210.

Payment

Payment will be made for the actual modifications which are made including installation of risers and standpipes to raise existing wells to higher elevations and cutting down wells where the new grade is lower than the original grade.

ITEM 02210.C - INSTALLATION OF GAS VENT WELLS

Measurement

The cost of this item shall include the provision of materials and equipment to install permanent gas vent wells as described in Specification Section 02210.

Payment

Payment will be made at the actual number of gas vent wells installed.

ITEM 02225.A - PROVISION AND PLACEMENT OF BARRIER PROTECTION LAYER

Measurement

The cost of this item shall include the provision of materials and equipment to install the barrier protection layer as described in Specification Section 02225. This includes provision of the imported fill, required physical and chemical testing, transportation and compaction in the new landfill area.

Payment

Payment will be made in cubic yards transported, placed and compacted in the new landfill area.

ITEM 02225.B - PROVISION AND PLACEMENT OF SAND DRAINAGE LAYER

Measurement

The cost of this item shall include the provision of materials and equipment to install the sand drainage layer as described in Specification Section 02225. This includes provision of the imported fill, required physical and chemical testing, transportation and compaction in the new landfill area.

Payment

Payment will be made in cubic yards transported, placed and compacted in the new landfill area.

ITEM 02225.C - PROVISION AND PLACEMENT OF RIP RAP

Measurement

The cost of this item shall include provision of materials and equipment to install rip rap as described in Specification Section 02225. This includes rip rap installed in the drainage swales, down chute and energy dissipater.

Payment

Payment will be made in cubic yards transported and placed in the drainage swales, down chute and energy dissipater.

ITEM 02275 - PROVISION AND PLACEMENT OF GEOTEXTILE FOR GEOMEMBRANE CUSHION

Measurement

The cost of this item shall include provision of materials and equipment to install geotextile as part of the geomembrane cushion as described in Specification Section 02275. This includes materials, transportation, installation and required destructive and non-destructive testing.

Payment

Payment will be made in square feet installed in the new landfill area.

ITEM 02277 - PROVISION AND PLACEMENT OF GEOSYNTHETIC MEMBRANE FOR CAP CONSTRUCTION

Measurement

The cost of this item shall include the provision of materials and equipment to install the geosynthetic membrane as described in Specification Section 02277. This includes materials, transportation, installation, required destructive and non-destructive testing, and the retaining of a qualified installer and independent QA/QC personnel.

Payment

Payment will be made in square feet installed in the new landfill area.

ITEM 02623 - PROVISION AND INSTALLATION OF HDPE PIPING AND ACCESSORIES

Measurement

The cost of this item shall include provision of materials and equipment to install the HDPE piping and accessories as described in Specification Section 02623. This includes corrugated drainage pipe and flared end outlet.

Payment

Payment will be made on a lump sum basis for installation of HDPE piping and accessories.

ITEM 02900.A - PROVISION AND PLACEMENT OF TOPSOIL

Measurement

The cost of this item shall include the provision of materials and equipment to install the topsoil layer as described in Specification Section 02900. This includes provision of the imported fill, required chemical testing, transportation and placement.

Payment

Payment will be made in cubic yards transported and placed in the new landfill area, the eastern portion and the northern wetlands.

ITEM 02900.B - PROVISION AND PLACEMENT OF SEED AND SOIL SUPPLEMENTS

Measurement

The cost of this item shall include provision of materials and equipment to apply seed and soil supplements as described in Specification Section 02900. This includes seed, lime and fertilizer, mulch, required physical and chemical testing and soil erosion matting.

Payment

Payment will be made in acres seeded in the new landfill area, the eastern portion and the northern wetlands.

SECTION 01005

DEFINITIONS

PART 1-GENERAL

1.01 DESCRIPTION

The following terms which are defined below are used throughout the Contract Documents.

1.02 DEFINITIONS

Addenda - Written or graphic instruments issued prior to the opening of Bids, which clarify, correct or change the Contract Documents.

Application for payment - The form accepted by the Engineer which is to be used by the Contractor in requesting progress or final payments.

As-built drawings - Copies of the Drawings which have been marked to show all features of the Work as they have been actually constructed. As-built drawings show all changes from the original Drawings, including all change orders, vertical and horizontal changes and all other items that are not the same as they were originally drawn.

Bid - The offer or proposal of bidder(s) submitted to Pfaltzgraff setting forth the prices for the Work to be performed.

CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act

CFR - Code of Federal Regulations

Change order - The document signed by Pfaltzgraff and the Contractor to amend the Contract to provide for changes in the Work or extra work.

Contract - The agreement entered into by Pfaltzgraff and Contractor, covering the Work to be performed including the Contract Documents, and any subsequent change orders signed by both Pfaltzgraff and the Contractor.

Contract Documents - The Contract, Specifications, Drawings, Citizen Participation Plan, Construction Quality Assurance Plan, Contingency Plan, Operation and Maintenance Plan and Sampling and Analysis Plan.

Contractor - The corporation, company, partnership or individual with whom Pfaltzgraff enters into an agreement and who will perform the Work specified in the Contract.

Contractor's HASP - The health and safety plan to be submitted to Pfaltzgraff by the Contractor

CP - Contingency Plan

CQAP - Construction Quality Assurance Plan

Day - A calendar day, unless expressly stated to be a working day

Defective - Unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged by the Contractor.

Drawings - Illustrated items which show the character and scope of the Work to be performed.

Engineer - Pfaltzgraff's representative (Remedial Engineering, P.C. or its designated representative).

Engineer's-approved equal - Materials or equipment which the Engineer deems to be of equal or greater value than that material or equipment specified in the Contract Documents.

HASP - Health and Safety Plan

HAZWOPER - Hazardous Waste Operations and Emergency Response

NYCRR - Official Compilation of New York State Codes, Rules and Regulations

NYSDEC - New York State Department of Environmental Conservation

Notice of Award - The written notice by Pfaltzgraff to the apparent successful bidder that upon compliance with the conditions specified therein, Pfaltzgraff will sign and deliver the Contract.

Order - The Order-on-Consent Index #A-0346-9609 issued to the Pfaltzgraff Company.

OSHA - United States Department of Labor Occupational Safety and Health Administration

Pfaltzgraff Co., The - The Owner, responsible for the Work

Project - The total construction which constitutes the Work to be provided under the Contract Documents

RCRA - Resource Conservation and Recovery Act

Request for Bid - Proposal for the Work distributed by Pfaltzgraff to potential bidder(s).

Request for Payment - An invoice submitted by the Contractor requesting progress or final payments, which is to include supporting documentation.

ROD - Record of Decision signed by the NYSDEC in March 1996.

SAP - Sampling and Analysis Plan

Site - The land located to the north of the manufacturing facility on the Syracuse China Company property, and includes the industrial landfill, the wastewater settling ponds and the northern wetlands between the landfill and Factory Avenue.

Site Water - Water generated from the facility wastewater operations, stormwater runoff from areas disturbed during construction and all construction-generated water, including but not limited to, dust suppression, dewatering operations, decontamination activities, and leachate from stockpiles.

Site Owner - the Purchaser or any successor in title to the Site (currently Syracuse China Company, a Subsidiary of Libbey Glass, Inc.).

Sludge - Wet soil- and sediment-like material existing in the waste water settling ponds.

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, execution, and standards.

SPDES - State Pollution Discharge Elimination System

SPDES Outfall 001 - Discharge point, as shown on the Drawings, from which Site water is discharged from the Site.

TAGM - NYSDEC issued Technical and Administrative Guidance Memorandum.

Waste - Solid materials outside of the proposed cap footprint (mainly in the eastern portion of the Site), other than soil and sludge, that will be consolidated within the cap footprint.

Wetland Soil - Soil located outside the proposed cap footprint (mainly in the northern portion of the Site), other than waste and sludge, that will be consolidated within the cap footprint.

Work - The obligations of performance of Contractor including, but not limited to, providing all materials, supplies, equipment, tools, supervision, labor, and services, as set forth by the Contract Documents.

PART 2-PRODUCTS

(Not Used)

PART 3-EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The purpose of this section is to summarize the Work to be performed at the Syracuse China Site. This section is not all inclusive and is intended to describe only the general performance requirements of the Work. The Contractor shall be entirely responsible to perform all Work described in the Contract Documents whether or not specifically or fully described in this section.
- B. The Contract Documents have been prepared in accordance with the Order on Consent issued by the NYSDEC, Index #A-0346-9609, to the Pfaltzgraff Co. The Record of Decision dated March 1996 is an attachment to the Order on Consent. A copy of the Order on Consent is included as one of the Contract Documents, and all Work shall be performed in accordance with the terms of the Order on Consent.
- C. The Contractor shall refer to the various site investigative reports and the Record of Decision for information pertaining to the chemicals and associated concentrations of those chemicals that are found at the Site.
- D. Several components of the Work, including dewatering and dewatering water treatment, have been described by performance specifications, to give the Contractor latitude in developing cost-effective methods which will accomplish the goals of the Site remedy in the Record of Decision.
- E. The construction sequence in Paragraph 1.03 of this Section describes the key remedial tasks to be performed and the specific order required for those tasks. The sequence commences after Contractor mobilization and Site preparation activities are complete. The Contractor shall be responsible to coordinate, schedule, and sequence all other Work not specifically noted in the sequence. The Contractor is encouraged to offer any alternate construction sequence that will minimize the time required to complete the Work, however, the remediation of the northern wetland shall not be permitted until new settling ponds are operating and the excavation and consolidation of all waste, sludge and soil from the eastern portion of the Site has been completed. The alternate construction sequence shall be implemented only with the written approval of the Engineer.

1.02 SUMMARY OF WORK

- A. The Work to be performed in accordance with these Contract Documents shall include but not be limited to:
 - 1. The provision of all temporary facilities and utilities.

2. Performance of Site preparation work including clearing and grubbing.
3. Set up and maintenance of decontamination areas, erosion control devices, staging areas, and dust control devices.
4. Preparation of a Contractor's Health and Safety Plan and provision of health and safety services for Contractor's employees.
5. Performance of surveys and preparation of as-built drawings.
6. Verification of utility locations.
7. The excavation and consolidation within the cap area of the following estimated quantities of in-place materials:
 - a. 12,000 cubic yards of sludge from the wastewater ponds
 - b. 56,000 cubic yards of waste and soil from the eastern portion of the Site
 - c. 12,000 cubic yards of soil and associated vegetative layer from the northern wetland
8. Furnishing and installing temporary sheeting, if necessary during excavation work.
9. Provision of all equipment necessary for dewatering of sludge prior to sludge consolidation and any dewatering, at the Contractor's discretion, necessary to remove water in the excavation areas.
10. Installation of a cap consisting of the provision and placement of the following:
 - a. 10-ounce non-woven geotextile
 - b. 40 mil textured linear low density polyethylene (LLDPE) geosynthetic membrane
 - c. cap drainage layer
 - d. barrier protection layer
 - e. cap perimeter and sideslope horizontal drainage swales
 - f. topsoil and seed
 - g. energy dissipation structures for stormwater runoff from the landfill and associated underground piping
11. The pumping, storage, treatment and discharge of all Site waters.
12. Re-construction of the settling ponds, as necessary to maintain the current waste water discharge of the Syracuse China Company facility.

13. Performance of final grading and the provision and placement of topsoil, seed, soil supplements, and erosion control blanket if necessary, in all disturbed areas of the Site.
14. Construction and maintenance (during construction) of access roads and perimeter fencing.
15. Performing work pertaining to groundwater and gas wells including abandonment of monitoring wells, upgrade of existing monitoring wells, and installation of gas vent wells.
16. Equipment decontamination.
17. Final Site restoration and demobilization from the Site.

1.03 SEQUENCE OF WORK

- A. The sequence of Work that shall be required to be implemented by the Contractor shall be generally consistent with the following:
 1. Set up and operate the temporary construction facilities and utilities.
 2. Set up and operate systems for the management of Site water as described in section 01562.
 3. Abandon monitoring wells indicated in section 02210.
 4. Excavate and consolidate waste and over excavate soil from the eastern portion of the Site to allow reconstruction of the settling ponds for the Syracuse China facility.
 5. Re-construct the settling ponds as shown on the drawings and as described herein.
 6. Excavate and consolidate all remaining waste from the eastern portion of the Site.
 7. Excavate and consolidate dewatered sludge from the ponds.
 8. Excavate and consolidate soil from the eastern portion of the Site
 9. Excavate and consolidate northern wetland soils.
 10. Establish the four benchmarks on the landfill, and monitor settlement until completion.
 11. Perform final grading in the eastern portion of the Site as shown on the Drawings, followed by placement of topsoil, seed and soil supplements over all of the disturbed areas of the eastern portion.
 12. Perform final grading in the northern wetland as shown on the Drawings, followed by placement of topsoil, seed and soil supplements over all disturbed areas of the northern wetland

13. Following settlement, regrade the consolidated waste subgrade to allow for construction of the cap to meet the grades shown on the Drawings.
14. Install gas vent wells at the locations shown on the Drawings
15. Provision and placement of the following components of the cap:
 - a. LLDPE geosynthetic membrane
 - b. cap drainage layer
 - c. barrier protection layer
 - d. topsoil and seed
 - e. perimeter and side slope drainage swales
 - f. drainage chute
16. Construct cap perimeter drainage swales and the energy dissipation structures
17. Remove the systems installed for the management of Site water, provided additional construction dewatering is not necessary.
18. Install and modify monitoring wells indicated in section 02210.

1.04 CONRAIL REQUIREMENTS

- A. Work in the vicinity of CSX property shall be performed in accordance with the CSX requirements included at the end of these Specifications.
- B. The Contractor shall not bear any responsibility for securing access to the CSX property or paying any fees associated with securing such access.

1.05 SYRACUSE CHINA FACILITY REQUIREMENTS

- A. The Contractor shall access the Site through the existing entrance on Factory Avenue. The Contractor may request to access the Site through the Syracuse China Facility if necessary for certain portions of the Work, and may do so only with the prior written approval of the Engineer.
- B. During construction, facility wastewater effluent and stormwater which discharges to the existing settling ponds shall not be discharged without appropriate treatment. The Contractor shall be responsible for diversion of this water to reconstructed settling ponds followed by discharge to the existing SPDES Outfall 001 and shall be responsible for any temporary treatment facilities until the proposed final treatment facilities are constructed and operational. Operations at the Syracuse China facility shall not be interrupted at any time by the Contractor's activities.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01050
SURVEYS AND AS-BUILT DRAWINGS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall employ a New York State-licensed surveyor who shall lay out the location of all Work, and who shall perform all other surveying associated with the Work and specified herein. For Contractor's information, previous survey work at the Site has been performed by Ryan Surveying, Syracuse, New York (December 1997). A Site survey has been performed (in the National Geodetic Vertical Datum of 1929) and is included as part of the Drawings. Any errors, or apparent discrepancies found in the Drawings with respect to existing Site conditions shall be called to Engineer's attention for interpretation prior to proceeding with the Work.
- B. The Contractor shall carefully preserve all benchmarks, and in the case of disturbance or destruction thereof caused by its Work, Contractor shall be charged with the expense and damage resulting therefrom, and shall be responsible to correct any mistakes that may be caused by the unnecessary loss or disturbance of such benchmarks, at no additional cost to Owner.
- C. The Contractor shall additionally re-establish one permanent survey benchmark of known elevation measured from a United States Geological Survey benchmark at the completion of the project at the location shown on the Drawings and be maintained at the Site. This benchmark shall be the reference point for establishing vertical elevations.
- D. All reference ties associated with the benchmarks recorded therefore shall be furnished to and reviewed by the Engineer. All computations necessary to establish the exact position of the Work shall be made and preserved by the Contractor.
- E. The Contractor shall set 4 benchmarks as shown on the Drawings and additional pins and other permanent markings spaced at 100-foot intervals around the cap perimeter to define the limit of the cap.

1.02 SUBMITTALS

- A. The Contractor shall submit all control information to the Engineer weekly for the duration of the Work.
- B. The Contractor shall submit all As-Built drawings and survey information to the Engineer before receipt of approval for the Contractor's final payment request.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 LAYOUT AND LEVELS

- A. Field records and as-built drawings shall show the exact surveyed location and elevation of all Work in relation to the bench marks, including, but not limited to:
 - 1. All utilities identified or uncovered during performance of the Work.
 - 2. Limits and elevations of all soil, sludge and waste excavations.
 - 3. Limits of backfill placement.
 - 4. Horizontal and vertical alignment of piping.
 - 5. Locations and elevations of the proposed wastewater settling pond.
 - 6. Locations and elevations of proposed drainage swales, anchor trenches and structures.
 - 7. Waste subgrade elevations.
 - 8. Elevations and slopes of final grade of the cap following final settlement.
 - 9. Locations of all repairs made to the cap.
 - 10. Site survey grid.
- B. All record data shall be surveyed to the control system indicated on the Drawings.
- C. Vertical coordinates shall be surveyed to the nearest 0.01 foot and horizontal coordinates shall be surveyed to the nearest 0.1 foot.
- D. The Contractor may perform additional intermediate surveys at its discretion for payment purposes.

3.02 SETTLEMENT MONITORING

- A. Following placement of all soil, sludge and waste, Contractor shall establish four benchmarks as shown on the Drawings.
- B. Contractor shall survey elevations at the four benchmarks two times per week for one month, and notify Engineer of the results in accordance with the CQAP.

3.03 AS-BUILT DRAWINGS

- A. Upon completion of all Work and before requesting final payment, Contractor shall provide mylar reproducibles of the as-built drawings showing all deviations from the Contract Documents. Two sets of paper prints shall be submitted to Engineer for review and approval.
- B. Contractor shall revise the as-built drawings in accordance with Engineer's comments and resubmit two additional sets of paper prints of the revised as-built drawings for Engineer's review and approval if requested by Engineer.
- C. All as-built drawings showing final elevations and the locations and dimensions of Work shall be sealed and signed by a New York State-licensed surveyor employed by the

Contractor. An electronic copy of the as-built drawings shall be submitted to the Engineer in AutoCad Version 14.0, or earlier. All of the information required in Paragraph 3.01(A)1-8 shall be saved on eight separate layers within the file.

- D. Engineer's checking and approval of as-built drawings will apply to content only. Contractor shall be responsible for the accuracy and completeness of its Work.
- E. Engineer will not approve Contractor's request for final payment until the as-built drawings are received and approved.
- F. Shop drawings will not be deemed acceptable as as-built drawings.

(END OF SECTION)

SECTION 01060
REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 REGULATORY REQUIREMENTS

- A. The Contractor shall perform all Work in accordance with all applicable federal, state and local regulations including, but not limited to, the following:
 - 1. CERCLA
 - 2. RCRA
 - 3. Clean Water Act
 - 4. OSHA
 - 5. Regulations promulgated under the authority of the NYSDEC including 6 NYCRR Part 360
- B. The Contractor shall obtain all applicable local permits from Onondaga County and the Town of Salina.

1.02 PERMITS

- A. Federal and State permits are not required to be obtained for Work under CERCLA. However, Contractor shall comply with the substantive requirements of permits from all agencies and authorities, in lieu of obtaining any permits.
- B. Prior to use of the Eastern Borrow Area of the site, the Contractor shall complete the application, and pay the required fees for the required local excavation permit and submit the package to the Engineer. The Engineer will submit the application to the Town of Salina. The Contractor shall prepare for and attend one public meeting with the Town of Salina.
- C. Wastewater discharge from the Site is currently regulated under a SPDES discharge permit issued by the NYSDEC. Construction wastewater discharge will be regulated by the NYSDEC Department of Environmental Remediation. All wastewater from either source shall be discharged from the Site through the SPDES discharge location (refer to Specification Section 01562). Each discharge, without exception, shall meet the requirements of their respective permits.

1.03 REGULATORY INFORMATION

A. Copies of federal regulations pertaining to the Work may be purchased from:

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

B. Copies of state environmental regulations are available from:

New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

C. Town of Salina Building Department

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01080
FENCING AND WARNING SIGNS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish and install temporary and permanent fencing and warning signs as specified herein and as shown on the Drawings.
- B. Prior to construction activities, the Contractor shall install permanent fencing on the Site to the limits shown. The installed permanent fence shall be securely attached to the two sets of existing gates installed with the permanent fence, at locations shown on the drawings.
- C. The Contractor shall install all temporary fencing as required to control the access to work areas within the permanent fencing. The Contractor shall also install all temporary fencing required to comply with OSHA and any other applicable regulation.
- D. Contractor shall install warning signs specified below along the permanent fence.

1.02 SUBMITTALS

- A. In accordance with Section 01300, the Contractor shall submit the following:
 - 1. Sample of the warning sign
 - 2. A description, including drawings, of the products used for the temporary and permanent fence.

PART 2 - PRODUCTS

2.01 TEMPORARY FENCING

- A. Orange colored plastic (polyethylene or polyethylene-propylene) barrier fences shall be a *minimum of four feet tall, attached to chicken wire on one side, and installed with steel support posts spaced at no more than eight feet.*

2.02 PERMANENT FENCING

- A. Permanent fencing shall be provided as shown on the Drawings.

2.03 WARNING SIGNS

- A. As per OSHA regulations, warning signs shall be orange with black lettering, and shall be provided with the wording "Unauthorized Personnel Keep Out". Signs shall be seven inches by ten inches.

PART 3 - EXECUTION

3.01. TEMPORARY FENCING

- A. The Contractor shall install orange plastic fence around the wastewater settling ponds, open excavations, any areas in the northern wetland containing standing water, and other locations as necessary to control access to on-Site personnel during construction activities.

3.02 PERMANENT FENCING

- A. Permanent fencing shall be installed as shown on the Drawings.

3.03 WARNING SIGNS

- A. Warning signs shall be securely attached to the permanent fence approximately 5 feet from ground surface elevation, every 100 feet along the perimeter.

(END OF SECTION)

SECTION 01200
PROJECT MEETINGS

PART 1 - GENERAL

1.01 PRE-CONSTRUCTION MEETING

- A. Following Contract Award, and prior to the Contractor mobilizing to the Site, a pre-construction meeting will be held at the Site which will be attended, at a minimum, by the Owner, the Site Owner, Engineer, Contractor and possibly the NYSDEC. At a minimum, the Contractor's project manager, independent QA/QC consultant, superintendent and site safety representative shall attend the meeting. This pre-construction meeting will be conducted by the Engineer and will discuss an overview of the construction activities that will be performed at the Site and responsibility of the Engineer and Contractor. This meeting will be held in the main building of the Syracuse China Company facility and will include a Site inspection.
- B. As specified in Section 01300, the Contractor is required to submit various plans and other documents pertaining to his proposed execution of the Work, prior to the Pre-Construction meeting. These will be reviewed to provide the Engineer with a general understanding of the Contractor's quality control system and other submitted documents. Procedures and processing of submittals, substitutions, change orders, applications for payment, proposals, field changes and contract closeout will be discussed. The Contractor's schedule will also be reviewed. Questions concerning the administrative requirements outlined during the Pre-construction Conference or any other aspect of the project may also be addressed.
- C. The pre-construction meeting will also address specific requirements of the Site Owner, including the limitations of use of the available facilities by the Contractor and the access of the Site Owner to the Work. The pre-construction meeting will also address the Site Owner requirements for security and housekeeping during the performance of the Work.

1.02 PROGRESS MEETINGS

- A. Progress meetings will be held once every week that Work is performed at the Site.
- B. The purpose of the progress meetings will be to discuss Work progress, plan work activities for the upcoming week and discuss any unanticipated Site conditions encountered.
- C. The Engineer shall be responsible for conducting the progress meetings. The Contractor shall be responsible for attending all progress meetings, preparing the meeting agenda, and preparing meeting minutes. The Contractor shall also be responsible for distribution of the draft meeting agenda and meeting minutes to the Engineer for review and comment prior to the distribution of each to all attendees. After distribution of each document, the

Contractor shall solicit comments and shall incorporate comments from all individuals present.

D. The following is the suggested agenda for Progress Meetings:

1. Review and approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede construction and proposed corrective actions.
5. Review of delivery schedules.
6. Review submittal schedules.
7. Revisions to the construction schedule.
8. Anticipated progress during the succeeding work period.
9. Coordination of schedule.
10. Maintenance of construction quality and health and safety standards.
11. Pending changes and substitutions.
12. Review proposed changes for effect on construction and project completion date.
13. Other business, as appropriate.

E. Contractor personnel must attend each progress meeting and shall include, at a minimum, the Contractor's superintendent and health and safety representative.

F. If required by Owner or Engineer, a representative of any subcontractor used by the Contractor shall attend any requested progress meetings.

G. It is anticipated that in addition to Owner, Engineer, Site Owner and Contractor personnel, the progress meetings may be attended by representatives of NYSDEC.

H. All progress meetings will be held in the trailers provided by the Contractor.

I. Site inspections may be performed as a component of the progress meetings.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. The types of submittal requirements for performance of the Work include shop drawings, product data, samples, test and inspection results, and written plans. Individual submittal requirements for the Contractor are specified in applicable specification sections and the CQAP for each unit of Work.

1. Work-related submittals of this section are categorized for convenience as follows:

- a. Shop drawings include specially-prepared technical data for this project, not in standard printed form for general application to several projects. The Contractor shall collect required data into one submittal for each unit of Work or system, and mark each copy to show which choices and options are applicable to the project and will be provided. Include manufacturer's standard printed recommendations for installation, application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. The Contractor shall provide shop drawings as necessary for the execution of the Work as required by the Drawings and Specifications. Contractor shall maintain copies of each shop drawing, along with product data at the Site at all times.
- b. Product data includes standard printed information on materials, products, systems and construction methods and shall be submitted as required in each unit of Work. Contractor shall clearly indicate which item is proposed.
- c. Samples include both fabricated and unfabricated physical examples of materials, products and units of Work, either for limited visual inspection or for more detailed testing and analysis. The Contractor shall provide units identical with final condition of proposed materials or products for the Work when required by Specifications. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards.
- d. Test and inspection results as described in the CQAP.
- e. *The Contractor's written plans as described in the applicable specifications.*

1.02 GENERAL SUBMITTAL REQUIREMENTS

- A. All required submittals shall be provided with six (6) complete sets of submittal information, unless otherwise specified.
- B. The Contractor shall coordinate preparation and processing of submittals with performance of the Work so that Work will not be delayed by submittals. Contractor shall not perform work until review of submittals is complete.

- C. Each submittal shall be complete in all respects, incorporating all information and data required for evaluation by Engineer. Partial, incomplete, or illegible submissions will be returned to the Contractor without review, for resubmittal by Contractor.
- D. The Contractor shall provide a permanent marking on each submittal to identify the project, data, contractor and submittal name. Submittals which are received from sources other than through Contractor's office will be returned.
- E. The Contractor shall clearly indicate on its submission any deviations from the Specifications and Drawings.

1.03 REQUIRED SUBMITTALS

- A. Specific submittals are described in each specification section. Additional submittals are described below shall be submitted to the Engineer within 7 days of Notice of Award.
 - 1. Materials and Equipment Suppliers and Manufacturers:
 - a. The Contractor shall submit to Engineer a list of major material and equipment suppliers and manufacturers for review and approval.
 - 2. Subcontractors:
 - a. Contractor shall submit qualifications of subcontractors. Contractor may change subcontractors, persons, or organizations proposed for the Work only with Engineer's written consent.
 - 3. Construction Schedule:
 - a. The Contractor shall submit a detailed construction schedule and shall be in accordance with the sequence of work in Section 01010 and the project duration indicated in Request for Bid. The schedule shall be updated every week and submitted to Engineer for review and approval.
 - 4. Quality Control Procedures:
 - a. The Contractor shall submit quality control procedures. The quality of Work shall be the responsibility of the Contractor and shall maintain an effective quality control program that complies with the Contract Documents. The Contractor shall furnish qualified personnel, appropriate facilities, instruments and testing devices necessary for the performance of the quality control system, which shall be adequate to cover all operations, including both on-Site and off-Site testing. Sufficient inspections and tests shall be performed on a continuous basis of all items of Work, including Work performed by subcontractors.
 - 5. Work Sequence:
 - a. The Contractor shall prepare and submit a detailed sequence of all Work to be performed. The sequence of Work shall address specific means, methods and procedures for all tasks that will be employed by the Contractor.

6. Contractors Health and Safety Plan:

- a. The Contractor shall prepare and submit a site-specific health and safety plan as described in Section 01517.

1.04 ACTION ON SUBMITTALS

- A. Where action and return is required or requested, Engineer will review each submittal, with an appropriate marking, and return within 15 working days of receipt in Engineer's office. Where submittal must be held for additional coordination, Contractor will be so advised without delay.
- B. Engineer will return two (2) copies of submittals to the Contractor for appropriate action.
- C. Review of a submittal by Engineer will constitute review of the subject matter for which the submittal was submitted and not for any other structure, material, equipment or appurtenances shown.
- D. Engineer's Action:
 1. Work may proceed, provided it complies with Contract Documents, when submittal is returned with the following:

Marking: "Reviewed Without Comment"

2. Minor corrections are noted. A resubmittal is not required, however, confirmation from the Contractor is required. Work may proceed at Contractor's own risk, provided it complies with notations and corrections on submittal and with Contract Documents.

Marking: "Reviewed With Comment"

3. Do not proceed with Work. Major corrections are required. Revise submittal in accordance with notations thereon, and resubmit complete submittal without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the Work:

Marking: "Reviewed - Resubmittal Required"

4. Based on the information submitted, the submission is not in conformance with the Contract Documents. The causes of this action may include:
 - a. The deviations from the Contract Documents are too numerous to list and a completely revised submission of the proposed equipment or a submission of other equipment is required.
 - b. Reproducible transparencies and resultant prints are not legible and will not be reviewed and a resubmittal is required.

c. Partial or incomplete submittals will not be reviewed.

Marking: "Not Reviewed – Resubmittal Required"

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall provide all samples and test results and perform or cause to be performed by an independent quality assurance/quality control engineer, manufacturers representative or laboratory approved by the Engineer all tests, field services, reports, and analysis as described in these drawings, specifications, and all associated project plans.
- B. This section includes descriptions of the requirements for the following.
 - A. Quality assurance and control of installation.
 - B. References.
 - C. Field samples, inspection and testing laboratory services.
 - D. Manufacturers' field services and reports.
- C. Prior to the start of the construction, the Contractor shall meet with the Engineer and discuss the Contractor's quality control system. During the meeting, the system details shall be developed, including the forms for recording the Contractor quality control operations, control activities, testing, administration of the system, and the interrelationship of Contractor's inspection and control with the Owner's quality assurance activities. The Contractor shall take minutes of the meeting and submit copies to the Engineer. As required by the Engineer, there may be occasions when subsequent conferences will be called to reconfirm understandings as to the Contractor's quality control system and procedures.
- D. The Contractor's quality control system shall include a schedule of all inspection and tests. The Contractor's control system shall provide for inspection of each feature of the work to verify that work is carried out in accordance with the drawings and specifications. The Contractor shall not conceal any feature of work containing uncorrected defects. Each such inspection shall be made a matter of record in the Contractor's quality control documentation. The Contractor's Quality Control System shall include three phases of inspections. The methods include the following:
 - 1. Preparatory Inspection. This shall be performed prior to beginning any work on any definable feature of the Work. It shall include a review of contract requirements, a check to make sure that all materials and/or equipment have been tested, submitted and approved in accordance with the specifications, a check to verify that provisions have been made to provide required control testing, examination of the work area to ascertain that all preliminary work has been completed, and a physical examination of

materials, equipment and samples to verify that they conform to approved shop drawings or submittal data. The Engineer shall be notified at least 24 hours in advance of the preparatory inspection. The results of the preparatory phase actions shall be made a matter of record in the Contractor's QC documentation.

2. Initial Inspection. This shall be performed as soon as a representative portion of the particular feature of work has been accomplished and shall include an examination of the quality of workmanship and a review of control testing for compliance with contract requirements. The Engineer shall be notified at least 24 hours in advance of the initial inspection. The inspection results shall be made a matter of record in the Contractor's QC documentation. The initial inspection shall be repeated for each new phase of work onsite, or sooner, if acceptable standards of workmanship are not being met.
 3. Follow-Up Inspection. These shall be performed daily to verify continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The inspections shall be made a matter of record in the Contractor's QC documentation. Final follow-up inspections shall be conducted and test deficiencies corrected prior to the start of additional features of work.
- E. The Engineer will notify the Contractor of any non-compliance with quality control requirements. Upon such notice the Contractor shall immediately take corrective action. If the Contractor does not comply promptly, the Engineer may issue a directive to stop all or part of the work until corrective action is taken. No part of time not utilized due to these directives shall be subject to a claim for extension of time, additional costs or damages by the Contractor.

1.02 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

- A. The Contractor shall monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. The Contractor shall comply fully with manufacturers' instructions, including performing each step of any installation instruction in sequence.
- C. Should manufacturers' instructions conflict with contract documents, the Contractor shall request clarification from the Engineer before proceeding.
- D. The Contractor shall comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. The Work shall be performed only by persons in the Contractor's employ who are qualified to produce workmanship of the specified quality.
- F. The Contractor shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.03 REFERENCES

- A. The Contractor shall conform to reference standard by the date of issue current on the date for receiving bids.

1.04 FIELD SAMPLES, INSPECTION AND TESTING LABORATORY SERVICES

- A. The Contractor shall supply qualified personnel, adequate facilities, instruments, test devices, equipment, chemicals and supplies required to perform all testing and collect, assure proper handling, storage and transport of samples.
- B. The Contractor shall perform all chemical and physical analyses required to fulfill the obligations of the Contract including all quality management, quality assurance, and quality control activities.
- C. The Contractor shall assist the Engineer or Regulatory Agencies in the collection, handling, storage and transport of any split samples that may be obtained throughout the progress of the Work.

1.05 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification sections, the Contractor shall require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance equipment, and operator training as applicable, and to initiate instructions when necessary.
- B. The Contractor shall furnish the services of individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- C. At the completion of the term of field services, the Contractor shall submit all reports in accordance with Section 01300 within seven days of observation to the Engineer for review.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

(END OF SECTION)

SECTION 01510

TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Contractor shall establish and initiate use of each temporary facility when it is reasonably required for proper performance of the Work, and shall terminate the use of, and remove from the Site, the facilities when no longer needed.
- B. Contractor shall install, operate, maintain and protect temporary facilities in a manner which will be safe, non-hazardous, sanitary, and protective of persons and property. Facilities shall be located where shown on the Drawings or as directed by the Engineer during Contractor mobilization.
- C. The Engineer, with the authorization of the Site Owner, will designate to Contractor an on-site location for storage of equipment and supplies.

PART 2 - PRODUCTS

2.01 TEMPORARY CONSTRUCTION FACILITIES

- A. Electrical Power:
 - 1. Electrical power is not available for use by the Contractor at the Site. Contractor shall provide its own power source, which shall be a weatherproof, grounded, power distribution system sufficient to accommodate construction operations, field offices, use of power tools, electrical heating and lighting. Installation and use shall comply with all applicable electrical and safety codes.
- B. Temporary Water:
 - 1. Non-potable water is not available at the Site, however, potable water is available at the facility. The Contractor may provide, as required, a tank truck and other equipment necessary for the conveyance of water to the Site. In any event, the Contractor must make potable water available as needed at the Site for human consumption of Site personnel or for the performance of construction operations.
- C. Engineer's Trailer:
 - 1. The Contractor shall provide and maintain a suitable all-year-round heated and air-conditioned office for the use of the Engineer, Owner and regulatory authorities. The office shall have a locking or adequately padlocked exterior door, and at a minimum of one operable window at each exterior wall. Four (4) keys shall be provided to Engineer. Safe and properly constructed metal or wooden stairways with handrails shall be provided at each access doorway. Adequate individual

electric outlets shall be provided for all items provided in the Engineer's Trailer. For each work area, a minimum of two duplex convenience electrical outlets and adequate lighting shall be provided.

2. Engineer's trailer shall contain two work areas and shall contain the following items in good condition:
 - a) two office desks with drawers;
 - b) one office desk and telephone designated for NYSDEC use only;
 - c) three office swivel chairs;
 - d) one five-foot drafting table;
 - e) *one four-drawer letter-sized file cabinet with lock and key;*
 - f) one laptop computer equipped with Microsoft Excel, Word and Scheduling software of the latest version, telephone/computer modem and a separate telephone number;
 - g) one plain paper facsimile machine with its own separate telephone line number;
 - h) one small capacity microwave oven;
 - i) one small capacity refrigerator; and
 - j) two portable Type ABC fire extinguishers, 10 lb capacity.
3. The Engineer's trailer shall not be available for use by the Contractor.

D. Contractor's Trailer:

1. Contractor may maintain a trailer on the Site for use as a field office, at its discretion.

E. Telephone Service:

1. Contractor shall install and maintain telephone service for its operations throughout the duration of the project and shall install, maintain and pay the cost of service for telephone service for the Engineer's trailer.
2. The Contractor shall also maintain on-site two-way radio service for his use. One two-way radio capable of communication with the Contractor and his forces shall also be provided to the Engineer.

F. Sanitary Facilities:

1. The Contractor shall provide a suitable number of self-contained toilet (Port-O-John) units for use by Engineer and Contractor's personnel.
2. Sanitary facilities shall be maintained on a regular basis, and when directed by the Engineer.
3. The Contractor shall provide separate facilities for male and female personnel when both genders are working in any capacity at the Site.

G. Trash Disposal:

1. Contractor shall make arrangements to dispose of trash off of the Site on a daily basis.

2.02 SECURITY/PROTECTION PROVISIONS

- A. Contractor is responsible to provide all security/protection services for the Site.
- B. Contractor shall provide services to limit access onto the Site by all non-authorized personnel, and shall limit access by checking that gates are locked and inspecting the temporary and permanent fencing daily.

2.03 EMERGENCY EQUIPMENT AND MATERIALS

- A. The Contractor shall supply equipment and materials for use at the Site in the event of an emergency. They shall be stored in a secure, readily accessible location and consist of the following, at a minimum:
 1. Sand stockpile and unfilled sandbags in a quantity sufficient to place over all solid material stockpiles, where any plastic liners used are subject to movement by wind.
 2. Oil absorbing pads in the event of a fuel spill.
 3. Pumping equipment, piping and additional storage tanks to remove water from operating storage tanks in the event of a leak in any of the operating tanks.

PART 3 - EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01517
HEALTH AND SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work to be performed will result in possible lead exposures. The Contractor shall be responsible for compliance with the medical surveillance provisions of the OSHA Lead Standard (29 CFR 1926.62). In addition, the Contractor shall also be responsible for compliance with the OSHA silica special emphasis program.
- B. The Contractor shall prepare a Site-specific health and safety plan (the Contractor's HASP). The Contractor shall submit the Contractor's HASP to the Engineer prior to performing Work at the Site. This plan shall be consistent with the requirements of OSHA (29 CFR 1910 and 1926) federal, state and local authorities. The Contractor's HASP shall be signed by a certified health and safety professional. The Health and Safety Plan (HASP) prepared by Remedial Engineering/Roux Associates for its and its subcontractor's use may be used as a reference, however, the Contractor is not obligated to use this Health and Safety Plan.
- C. The Contractor shall include as part of the Health and Safety Plan an Emergency Contingency Plan which shall include, at a minimum, emergency/contact phone numbers.
- D. All personnel working at the Site must be HAZWOPER-certified, and have obtained medical clearance to perform the Work at the Site.
- E. The Contractor shall monitor health and safety conditions during all phases of the Work and fully enforce the Contractor's HASP.
- F. The Contractor shall implement a Fugitive Dust Suppression and Particulate Monitoring Program consistent with the NYSDEC TAGM 4031. The Contractor shall also implement a community health and safety program for particulate monitoring.
- G. Engineer will not be responsible for Contractor's compliance with the Contractor's HASP. However, Engineer is authorized to issue orders stopping Work if the Contractor is conducting Work in an unsafe manner at the discretion of the Engineer. No part of the time lost due to such stop orders shall be made subject of a claim against Owner or Engineer by the Contractor.

PART 2 - PRODUCTS

- A. Products used as part of health and safety procedures shall be consistent with 29 CFR 1910 and 1926 and the Contractor's HASP, and with manufacturers' recommendations.

PART 3 - EXECUTION

- A. Contractor shall execute all Work in a manner consistent with 29 CFR 1910 and 1926 and in accordance with the Contractor's HASP.

(END OF SECTION)

SECTION 01520

TEMPORARY STAGING AND STORAGE REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for the staging and segregation of all solid and liquid wastes generated during performance of the Work. All solid materials generated on-Site shall be staged in waste piles, and any containerized liquid shall be staged in tanks. The Contractor shall size stockpiles and storage tanks and provide as many units as necessary to perform the Work.
- B. All staging areas for Site media, sludge, soil and waste shall be sized by the Contractor as necessary to perform its Work, and located as approved by the Engineer.
- C. All staged materials that require dewatering must be staged in such a way that the liquids released by those materials are collected and managed according to Section 01562. Dewatering shall continue until materials pass the paint filter test in accordance with the CQAP.
- D. Lined, covered, liquid-tight rolloffs are an acceptable substitute for the waste pile requirements described herein for all solid wastes. Contractor is responsible for unloading, reloading, corrective actions, and other remedial Work resulting from any leakage of rolloffs.
- E. All Site water shall be collected and stored in tanks provided by the Contractor and sampled prior to off-site discharge. The tanks shall be located to the west of the trolley berm as shown on the Drawings. Site water management requirements are discussed in Section 01562.
- F. Waste piles shall have run-on and run-off control systems capable of preventing flow onto or off of the stockpiled material, from a minimum of a 25-year, 24-hour storm event. At the Site, this storm event is equivalent to 5 inches of rainfall in 24 hours.
- G. During and following storm events, Contractor shall expeditiously manage all water collection systems installed as part of the Work in order to maintain the design capacity of the systems.
- H. Contractor shall inspect all waste piles and storage tanks, daily and following storms, to detect any deterioration, malfunction, leaks, or presence of liquids, and shall immediately correct any problems encountered.
- I. Any tank, rolloff, or lined waste pile that is leaking shall be immediately taken out of service, the waste removed if necessary to repair the leak, and any visible releases to the environment contained and remediated.

1.02 SUBMITTALS

- A. In accordance with Section 01300, the Contractor shall submit the following:
 - 1. Manufacturer's and Contractor's certifications that all tank systems and waste piles have been constructed/installed to meet the requirements of this specification.

2. Certification that all tanks have been tested for water tightness prior to placing any Site water.
 3. Certification that tanks have been decontaminated in accordance with the manufacturer's instructions and Section 01565 prior to removal from the Site.
 4. The Contractor's Spill Contingency Plan.
- B. The Contractor shall submit a Temporary Staging and Storage Plan that identifies his intended equipment, materials, management and location of the staging area.

PART 2 - PRODUCTS

2.01 TEMPORARY STORAGE TANKS

- A. The Contractor shall provide holding tanks with a maximum capacity of 20,000 gallons. The tanks shall be either a "frac" style or modular style. If modular tanks are provided, each tank shall have a minimum liner thickness of 40 mils, constructed of a material that will be compatible with all liquids to be stored in the tank.
- B. The Engineer will direct Contractor when the tanks shall be removed from the Site. The tanks shall be decontaminated as required by the tank supplier prior to their removal from the Site.
- C. The Contractor shall provide all equipment necessary to transfer the Site water in the storage tanks, between the storage tanks and to the SPDES outfall for discharge.

2.02 POLYETHYLENE LINER AND SHEETING

- A. All polyethylene liners used under stockpiles for staging purposes shall be 30 mils thick. LLDPE geotextile used in conjunction with the liner shall be 6 oz woven geotextile.
- B. All polyethylene sheeting used to cover stockpiles for staging purposes shall be 20 mils thick, reinforced construction grade sheeting.

PART 3 - EXECUTION

3.01 SEGREGATION OF WASTE STREAMS

- A. Contractor shall establish separate staging areas for the following:
 1. soil and waste from the eastern portion of the site;
 2. soil from the northern wetland;
 3. sludge;
 4. asphalt and concrete; and
 5. construction waste waters.
- B. Personal protective equipment shall be staged with the soil and waste.

3.02 STAGING OF SOILS AND SOLID WASTES

- A. Solid materials that are staged in areas of the Site that have not yet been remediated may be staged in stockpiles placed directly on the ground surface.
- B. All sludges and solid materials that are staged in areas of the site that do not require remediation, or have already been remediated, shall be staged in waste piles meeting the following requirements:
 - 1. The waste pile shall be lined with geotextile, and a welded polyethylene liner which is chemically resistant to the wastes, to prevent any migration of wastes or liquids from the waste pile. The geotextile and liner shall be as specified in Section 2.02.
 - 2. Waste piles shall be covered with polyethylene sheeting specified in Section 2.02 at all times unless waste is being added to or removed from the pile.
 - 3. Waste piles shall be provided with perimeter berms to limit run on and run off. The perimeter berms shall be covered with polyethylene sheeting as specified in Section 2.02 at all times.
 - 4. Temporary safety fencing and silt fence shall be installed around all waste piles.
- C. A waste pile that has been removed from service due to deterioration leakage may not be restored to service until the liner system is repaired or replaced to the satisfaction of the Engineer.
- D. If the Contractor stages materials in an area of the site which has already been remediated or does not require remediation, soil samples shall be collected prior to staging materials in that area and after the staged materials have been removed. If the soils below or around the staged materials become contaminated, the Contractor shall excavate the contaminated soils and consolidate the material beneath the landfill cap in accordance with Section 02205. The Contractor shall also backfill any such excavation, using clean fill. Any additional excavation and backfill required as a result of improper stockpiling shall be performed to the satisfaction of the Engineer at no cost to the Owner.

3.03 STAGING OF BACKFILL

- A. Backfill from off-site sources shall be placed on, and covered with a polyethylene liner as specified in Section 2.02. Contractor shall replace the liner as necessary. Haybales or silt fence shall be installed around the perimeter of stockpiles.

3.04 STAGING OF CONSTRUCTION WASTE WATER

- A. All tanks used to store construction waste water shall meet the requirements of Paragraph 2.01 of this section.
- B. Tanks must be tested and certified by the supplier for water tightness prior to use.
- C. The Contractor shall use appropriate controls and practices to prevent spills and overflows from tanks.

3.05 SPILL RESPONSE MEASURES - SOLID WASTES

- A. Spills of solid wastes shall be immediately cleaned up by the Contractor using appropriate equipment, tools and supplies. Any "clean" soil or sediment potentially contaminated by spills of solid wastes during remediation activities shall be excavated and disposed at no cost to the Owner.
- B. Any "clean" equipment, materials or facilities which are contaminated by a spill event shall be decontaminated by the Contractor in a manner approved by the Engineer.
- C. If there is evidence of a leak of a waste pile liner system, the Contractor shall be immediately required to stop adding material to the pile, contain all leakage which has or is occurring, and take measures which will stop the leak.
- D. If the leak cannot be stopped by other means, the wastes shall be removed from the pile and placed in a newly constructed waste pile.

3.06 SPILL RESPONSE MEASURES - CONSTRUCTION WASTE WATERS

- A. If a spill of construction waste water occurs anywhere on-site, flow to the tank shall be immediately stopped and the spill immediately contained. The source of the spill shall be identified and shall be repaired, subject to the approval of the Engineer prior to the continuation of activities.
- B. In the event of a tank leak anywhere onsite, the source of the leak shall be identified immediately and repaired subject to the approval of the Engineer. If the tank is identified as the source and the leak cannot be repaired without removing the waste water from the tank, the tank shall be immediately drained and removed from service. Prior to reuse, the tank shall be repaired subject to the approval of the Engineer.
- C. All spills of construction waste waters, including leakage of free liquids from transport vehicles, shall be immediately cleaned up and collected by the Contractor using appropriate tools and supplies as identified in the Contractor's Contingency Plan.
- D. All materials used for the cleanup of liquid spills (e.g., absorbent materials) shall be collected, stored, and disposed of offsite at no additional cost to the Owner.
- E. All collected liquids resulting from spills shall be stored separately from construction waste waters for subsequent testing and disposal or discharge as described in Section 01562.
- F. Any "clean" soil which may have been contaminated by liquid spills during remediation activities shall be excavated and disposed at no additional cost to the Owner. Any "clean" equipment, materials (e.g., concrete or asphalt paving) or facilities with impervious surfaces which are potentially contaminated by a liquid spill event shall be immediately cleaned up by the Contractor in a manner acceptable to the Engineer.

3.07 SPILL RESPONSE MEASURES - PETROLEUM AND CHEMICALS

- A. If a spill of petroleum or chemical product occurs anywhere onsite, the appropriate NYSDEC personnel shall be notified. Immediately after the spill is discovered, the source of the spill shall be identified and repaired prior to the continuation of activities.

- B. Spills of petroleum or chemical products shall be contained by the use of soil berms or absorbent materials as identified in the Contractor's Contingency Plan.
- C. All soil or materials used for the cleanup of petroleum or chemical product spills shall be collected and disposed offsite at no additional cost to the Owner.
- D. Any "clean" soil which may have been contaminated by liquid spills during remediation activities shall be excavated and disposed at no additional cost to the Owner. Any "clean" equipment, materials (e.g., concrete or asphalt paving) or facilities with impervious surfaces which are potentially contaminated by a liquid spill event shall be immediately cleaned up by the Contractor in a manner acceptable to the Engineer.

(END OF SECTION)

SECTION 01550
ACCESS ROADS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for temporary and permanent access roads.
- B. The access road leading to Factory Avenue contains concrete blockades. The Contractor shall remove these structures and transport them to an on-site area for storage as directed by the Engineer. At the completion of the work these concrete blockades shall be returned to their original location or other location directed by the Engineer.

1.02 SUBMITTALS

- A. In accordance with Section 01300, Contractor shall submit locations, materials and methods of construction of the temporary access roads.

1.03 TEMPORARY ACCESS ROADS

- A. Contractor shall only access the Site from Factory Avenue. Temporary access roads may be constructed on the Site in order to provide stable access from the Site entrance to all Work areas, as needed by the Contractor at no additional cost to the Owner.
- B. Access roads must be restricted to areas within the limit of disturbance on the Site, as shown on the Drawings.
- C. Due to the steep topography in some portions of the Site, the locations of temporary access roads shall be chosen to minimize grades, as necessary to enable their use by Contractor's equipment.
- D. The installation and maintenance of temporary access roads shall be performed to limit dust generation and minimize tracking of contaminated materials throughout the Site. The Contractor shall maintain a minimum thickness of 6 inches of 2-inch stone at all times.
- E. Access to the northern wetlands is anticipated to be difficult due to standing water in portions of the area. At its discretion, Contractor may place a geogrid to provide a more stable driving surface for construction equipment. The size of temporary access roads shall be limited to one vehicle width in the northern wetlands. Contractor may construct access roads in the wetlands; however, the Contractor is responsible for removal of all materials and restoration of all vegetation at the completion of the project. Contractor shall utilize materials that will minimize the disturbance to the wetland species, subject to the approval of the Engineer.

1.04 PERMANENT ACCESS ROADS

- A. The location and construction details for the permanent access road are shown on the drawings.
- B. Contractor may construct the permanent access roads at any time during the project sequence; however, the Contractor shall restore these roads to new condition at the end of the project if they become damaged during construction activities.
- C. Any restoration of permanent access roads required as a result of the Contractor's activities shall be performed at no additional cost to the Owner.

PART 2 – PRODUCTS

- A. Gravel for permanent access roads shall be as specified in Section 02225.
- B. Geotextiles for permanent access roads shall be as specified in Section 02275.

PART 3 – EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01560
TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes temporary controls that shall be implemented during the Work which include control of dust, traffic, erosion, noise, and pollution.
- B. The Contractor shall provide environmental protection to maintain the environment in its natural state to the greatest possible extent during the Work. Environmental protection shall include consideration of air and land protection, noise minimization, and management of trash and other pollutants. The Contractor shall comply with all applicable federal, state, and local laws, and the requirements specified herein.

1.02 SUBMITTALS

- A. In accordance with Section 01300, the Contractor shall submit the following:
 - 1. Product data for the silt fence in Paragraph 2.02
 - 2. A traffic control plan describing procedures to be performed in accordance with Paragraph 1.09.

1.03 PROTECTION OF VEGETATION AND WETLAND AREAS

- A. Except in areas of the Site to be cleared, the Contractor shall not deface, injure or destroy trees, shrubs or other vegetation, nor remove or cut them without the approval of the Engineer. Where the possibility exists that vegetation may be defaced or damaged, the Contractor shall adequately protect such areas. Contractor shall prevent employees from trampling over, and vehicles from being driven through, wooded or grassed lands unless necessary for the performance of the Work and approved by the Engineer.
- B. All materials and equipment shall be stored in cleared spaces away from all trees, shrubs and other vegetation.
- C. Any vegetation outside of the allowable limits of clearing and grubbing damaged by the Contractor's operations shall be restored or replaced as directed by the Engineer at the Contractor's expense.
- D. The Contractor shall take special precautions and comply with all applicable regulations when working in or near wetland areas. Clearing and grubbing shall be performed in accordance with Section 02110 and Section 02200, Paragraph 3.03.

1.04 PROTECTION OF SURFACE WATERS

- A. Site Water shall not be allowed to discharge directly to surface waters. Refer to Section 01562 for management of Site Water.

1.05 DUST CONTROL

- A. The Contractor is responsible for dust (particulate matter) control at the Site, in accordance with all Federal, State and local requirements. All dust monitoring and control, both at the work locations and at the perimeter of the Site, shall be performed by the Contractor at no additional cost to the Owner. The Contractor shall maintain all excavations, stockpiles, access roads, and all other Work areas to minimize dust which would cause a hazard or nuisance to others. The Contractor shall monitor dust in accordance with the requirements of the Contractor's HASP and the CQAP and shall notify Engineer of the results. Based on the results of the monitoring, the Contractor will implement necessary measures to control dust to levels indicated in the Contractor's HASP and CQAP, including but not limited to, one or more of the following measures:
1. applying water on the haul roads;
 2. misting equipment and excavation faces;
 3. spraying water (using atomizer) on buckets during excavation and dumping;
 4. hauling materials in tarped or watertight containers;
 5. covering excavated areas and material after excavation activity ceases; and
 6. stopping work.

1.06 EROSION CONTROL

- A. The Contractor shall take all necessary measures to temporarily control erosion and shall comply with all requirements specified herein, requirements in the New York Guidelines for Urban Erosion and Sediment Control, and as shown on the Drawings.
- B. Perimeter silt fence locations are shown on the Drawings. The Contractor shall install perimeter silt fence prior to commencement of construction activities. Additional silt fence and haybales shall be placed by the Contractor to control storm runoff from entering or exiting excavations and shall install this remaining silt fence and haybales as soon as practicable.
- C. In addition to silt fence and haybales, temporary diversion swales and berms shall also be created as necessary to control storm runoff from entering or exiting excavations, with locations and methods subject to the approval of Engineer. These additional measures will be provided at no additional cost to the Owner.
- D. The need for any additional erosion control measures as a result of Contractor operations shall be determined by the Engineer during construction on an as-needed basis, and shall be implemented and maintained by the Contractor at no additional cost to the Owner. Inspection of temporary erosion control measures by the Contractor shall be frequent and repair or replacement shall be made promptly, as needed or as directed by Engineer.
- E. Disturbed Work areas shall be graded to control erosion, and the exposed area of bare soil shall be minimized.

- F. The Contractor shall remove erosion control devices once vegetation has been suitably established, as defined in Specification Section 02900.
- G. Erosion control upgradient of remediated wetland areas is essential to prevent recontamination. If remediated wetlands become recontaminated with surface water runoff, the area shall be excavated to limits determined by the Engineer and in accordance with Section 01562, Paragraph 1.01.

1.07 NOISE CONTROL

- A. The Contractor shall conduct all operations for the execution of the Work in compliance with the applicable local regulations controlling maximum noise levels, and shall take appropriate noise abatement measures necessary to comply with the local regulations. All outside Work involving heavy machinery shall be performed during daylight hours.

1.08 TRAFFIC CONTROL

- A. The Contractor shall be responsible for the provision of personnel and materials (i.e., traffic lanes, safety costs) as necessary to control traffic entering and exiting the Site.
- B. Traffic control requirements shall be coordinated with the local police department and documentation of such coordination shall be provided to the Engineer before the start of the Work.

PART 2 - PRODUCTS

2.01 HAYBALES

- A. Haybales shall be of standard size as shown on the Drawings.

2.02 SILT FENCE

- A. Silt fence shall be Mirafi 100x woven geotextile, or Engineer's-approved equal, and shall be installed as shown on the Drawings.

PART 3 - EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01562
MANAGEMENT OF SITE WATER

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor is responsible for the proper management of Site water, including approximately 600,000 gallons per day from facility wastewater operations, plus instantaneous hourly peak, stormwater flows from the facility of up to 7,500 gallons per minute (accommodating a 10-year storm flow), which shall be treated in the existing treatment facility and then through the new treatment facility once its construction is complete. Construction-related Site water generated by the Contractor, including but not limited to, dust suppression, dewatering operations, decontamination activities, stormwater runoff from areas disturbed during construction, and stockpile leachate generation shall be treated in a separate treatment facility provided by the Contractor. Construction of the new treatment facility shall be completed before excavation activities are performed in the existing treatment facility.
- B. The Contractor shall minimize the generation of construction-related Site water, and shall manage this water at no additional cost to the Owner. All construction-related Site water shall be collected and stored in a minimum of one 20,000-gallon storage tank as specified in Section 01520 throughout the duration of the project. This water shall be treated using bag filters and other methods approved by the Engineer to meet the discharge criteria in the NYSDEC memorandum attached at the end of these Specifications, and sampled in accordance with the Sampling and Analysis Plan. Construction-related Site water shall not be discharged until initial samples indicate that the construction-related Site water meets the limits of the SPDES permit in accordance with the Sampling and Analysis Plan. Construction-related Site water shall be diverted around the northern wetland and discharged to the culvert which flows under Factory Avenue. Construction-related Site water will not be allowed to be discharged along with stormwater or effluent from facility wastewater operations through the ponds at any time, unless otherwise directed in writing by the Engineer. Facility wastewater shall not be discharged from the new treatment facility until initial samples indicate that the facility wastewater meets the limits of the SPDES permit in accordance with the SAP.

During the period that the existing wastewater ponds are out of service, and until the construction of the new treatment facilities has been completed, all Site water generated from facility wastewater discharge shall be treated as necessary to meet SPDES discharge criteria in the SPDES permit attached at the end of these Specifications, and sampled in accordance with the Sampling and Analysis Plan.

- C. Once construction of the new permanent facility wastewater treatment facilities is complete, the Contractor shall direct the facility wastewater to discharge to the new treatment facilities, and the Contractor shall sample the effluent in accordance with the

SAP. Facility wastewater shall not be discharged from the treatment facility until initial samples indicate that the facility wastewater meets the limits of the SPDES permit in accordance with the SAP. The Contractor shall not initiate treatment of facility wastewater in the new permanent facilities unless directed by the Engineer.

- D. The results of all analysis collected as part of the work specified in this section shall be submitted to the Engineer, who will review and evaluate the data in accordance with the CQAP.
- E. The Contractor shall be responsible for all necessary equipment, piping and appurtenances required to manage the Site water in accordance with this section.
- F. Soils which become re-contaminated due to the improper management of Site water will be excavated to limits determined by the Engineer and placed in the landfill at the Contractor's expense. The excavated area shall be restored to proper grade to the satisfaction of the Engineer in accordance with Section 01520.

1.02 SUBMITTALS

- A. In accordance with Section 01300, the Contractor shall submit the following:
 - 1. Equipment, methods and location of the Site water management systems identified above. The submittal shall include detailed descriptions of all proposed temporary Site water collection, storage, treatment and discharge systems.
 - 2. Results of all Site water sampling activities.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01565
EQUIPMENT DECONTAMINATION REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work covered by this section consists of the decontamination of equipment. Personnel decontamination shall be addressed in the Contractor's HASP (refer to Section 01517).
- B. Contractor shall minimize its use of water for decontamination purposes to the extent practicable.
- C. An equipment decontamination area shall be established at the Site in the area of the stabilized construction entrance, as shown on the Drawings.
- D. Decontamination waters shall be collected and managed as Site Water in accordance with Section 01562.

1.02 SUBMITTALS

- A. In accordance with Section 01300, the Contractor shall submit the following:
 - 1. A description of decontamination methods consisting of:
 - a. A description of the proposed equipment and methods to be used in the equipment decontamination procedures including dusting, brushing, water use, power requirements, and detergents to be used.
 - b. A description and drawings (as applicable) showing construction details of the decontamination pad, spill prevention methods and required storage volumes to be used for the decontamination of equipment.
 - c. Procedures for decontamination of the temporary water storage tanks specified in Section 01520.
 - 2. A certificate signed by the Contractor stating that each vehicle entering the Site is not contaminated.
 - 3. A decontamination certificate, signed by the Contractor, for each construction vehicle leaving the Site, stating that no soil or other material is adhering to the vehicle body or undercarriage and the vehicle is not leaking or dripping liquids.

PART 2 - PRODUCTS

2.01 EQUIPMENT/MATERIALS

- A. All decontamination equipment and materials necessary for the performance of the Work shall be supplied by the Contractor.
- B. Decontamination pads shall be constructed as necessary to support equipment loads in a manner that shall not compromise the impermeability of the pad. The decontamination pad shall be impermeable and sloped in such a way that decontamination water collects in a sump as shown on the Drawings. Decontamination water collected in the sump shall be removed as necessary so that overflow is prevented. Water collected in the sump shall be transferred to storage tanks and handled in accordance with Section 01562.

PART 3 - EXECUTION

(Not Used)

(END OF SECTION)

SECTION 01700
CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section describes the procedures that the Contractor shall follow in order to obtain contract closeout.

1.02 SUBSTANTIAL COMPLETION

- A. When the Contractor considers the Work to be approximately 95 percent complete, the Contractor will notify the Engineer in writing, and the Engineer will develop a punch list. This punch list will identify all deficiencies in items which must be corrected or completed by the Contractor before the project is considered to be complete and final payment can be made to the Contractor. When the Engineer considers the Work to be substantially complete, the Engineer will issue to the Contractor a certificate of substantial completion.
- B. The Owner may request the Contractor to permit the use of a portion of the project prior to substantial completion of the entire project. In this event, the Contractor shall certify that that portion alone is substantially complete, and shall be treated separately from substantial completion of the remaining portions of the project.

1.03 FINAL COMPLETION

- A. The Contractor will receive final payment from the Owner once final completion has been achieved at the Site. The Engineer will give written notice to the Contractor when the Work is acceptable and fully performed. The following project closeout procedures shall be performed by the Contractor to achieve final completion:
1. Notify the Engineer that the punch list items have been corrected or completed, the Engineer will inspect the Work, and if the items are acceptable, the Engineer will consider the Work complete. If there are still items outstanding, an updated punch list will be generated by the Engineer and the process repeated until all items are completed.
 2. Perform final cleaning of the Site, which includes removal of construction-generated waste, surplus materials, and temporary facilities.
 3. Submit to the Engineer written certification that Work has been performed in accordance with the Contract Documents

4. Submit to the Engineer the following documents:
 - a. As-built drawings
 - b. Specifications legibly marked with the actual products installed
 - c. Reviewed shop drawings, product data and samples
 - d. Copies of all inspections and tests
 - e. Addenda
 - f. Change orders
 - g. Equipment and material warranties
 5. Submit final request for payment to the Engineer identifying total adjusted contract sum, previous payments and sum remaining due.
- B. Once the Engineer finds the Work acceptable and fully performed, the Engineer will issue a Final Certificate for Payment to the Owner.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 SCOPE OF WORK

- A. Work activities shall include the following:
1. Decontamination of all Contractor equipment, tools and materials which have come in contact with contaminated ground water or soil.
 2. Collection and off-site disposal of all Contractor generated contaminated materials (both solids and liquids) and equipment for which decontamination and/or on-site disposal is inappropriate.
 3. Collection of sediments and liquids from troughs and sumps. Liquids may be treated onsite or disposed offsite.
 4. Repair of site fences, site roads and public roads damaged during the performance of the work and providing new master keyed locks and keys for all gates and wells.
 5. Disconnection and removal of temporary utilities (water, sanitary waste system, electric power, etc.) from the site.

6. Decontamination and removal of temporary facilities.

7. Provision of "As Built" Drawings.

B. All materials to be disposed of offsite shall be the responsibility of the Contractor and shall be classified through sampling as hazardous or nonhazardous by the Contractor. All materials to be disposed offsite shall be handled in conformance with all regulatory requirements.

3.02 DECONTAMINATION

A. Without exception, all equipment and materials shall be decontaminated prior to removal from the site. This includes waste and material transport vehicles and all site equipment. Decontamination shall take place on the equipment decontamination pad and shall consist of degreasing (if required) followed by high pressure water and/or steam cleaning supplemented by detergents or solvents as appropriate. Special attention shall be paid to removal of material on and within the tracks and sprockets of crawler equipment, and the tires and axles of trucks and rubber mounted equipment.

B. Prior to removal from the site, all decontaminated equipment and materials shall be inspected and approved by the Engineer.

3.03 EQUIPMENT AND PERSONNEL DECONTAMINATION PADS

A. Sediments and liquids removed from decontamination pads shall be disposed of at an approved off-site facility.

3.04 SITE ROADS

A. Prior to final close out, the Contractor shall regrade and resurface as necessary all permanent access roads to a condition suitable for vehicular traffic as approved by the Engineer.

3.05 PUBLIC ROADS

A. The Contractor shall return any public or private roads or drives disturbed during construction to their original condition.

3.06 AS-BUILT DRAWINGS

A. Contractor shall provide final as-built drawings for the project and other required project documents.

(END OF SECTION)

SECTION 02110
CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish all labor, services, materials, and equipment necessary for clearing and grubbing within the Site. Clearing and grubbing shall be minimized to the limit of disturbance shown on the Drawings. The Contractor shall not clear and grub beyond these limits and shall be responsible for replacing any damage outside of these limits at no additional cost to the Owner.
- B. Clearing shall include cutting, chipping and on-site placement within the landfill of all above-grade vegetation.
- C. Grubbing shall consist of the removal, chipping and on-site placement within the landfill of all perishable subgrade materials such as stumps and roots.

1.02 SUBMITTALS

- A. In accordance with Section 01300, Contractor shall submit a description of the Contractor's equipment and methods to be used for clearing and grubbing.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

3.01 GENERAL

- A. The Contractor shall clear and grub areas with minimal disturbance to the subsoil.
- B. The Contractor shall only clear and grub areas in which construction activities will take place within a one month time frame. The Contractor shall not clear and grub the entire Site at one time.
- C. Low ground pressure equipment shall be used to minimize wetland disturbance. This may require wide-track equipment, the use of crane mats, or other approved methods. Rutting greater than 2 inches and excessive mixing of the soil due to the improper use of equipment shall not be permitted. If excessive rutting or mixing of the wetlands soil occurs, the Contractor shall overexcavate in these areas and restore these areas to the identified grades at no additional cost to the Owner.
- D. Wetlands are ecologically sensitive areas. All Work in or around wetlands must be performed in strict accordance with these Specifications and State requirements. The Contractor shall disturb only the wetland areas specified and shall not disturb beyond these

limits. The Contractor shall mark the limits of excavation as specified in Section 01080 and maintain all fencing until construction is complete. The Contractor shall bear all costs associated with diverging in any way from the Work specified in the Specifications and Drawings. These costs include but are not limited to fines, restoration, professional fees and reimbursement of related expenses. Corrective measures associated with diverging from these requirements will be performed at the discretion of the Owner and the regulatory agency.

3.02 PREPARATION

- A. The Contractor shall verify that all vegetation designated to remain, are tagged or identified and protected. In areas where wetlands are to be remediated, the Contractor shall set observable limits with markers such as flags or tapes between areas to be excavated and areas to remain intact.
- B. In the wetland area of the Site, clearing and grubbing shall only be performed after inspection and staking of wetlands soils by the Engineer in coordination with the NYSDEC and in accordance with Section 02200.

3.03 DISPOSAL

- A. All cleared and grubbed materials shall be chipped and placed in the landfill under the cap along with the excavated waste, or at a location on the Site designated by the Engineer.
- B. The cleared and grubbed materials shall, after being chipped, be mixed in with the waste in thin layers to prevent any settlement. Under no circumstances shall the Contractor be permitted to place cleared and grubbed material in discrete layers.
- C. The cleared and grubbed material shall not be placed outside the boundaries of the Site or burned.

(END OF SECTION)

SECTION 02140
POND REMEDIATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for sludge removal and dewatering activities during the performance of the Work related to the remediation of the process wastewater and sludge ponds. The limits of work in the areas of the wastewater ponds are shown on the Drawings. The related Work includes:
 - 1. Dewatering of the wastewater ponds prior to sludge removal operations, as the Contractor deems necessary;
 - 2. Excavation of pond sludges from the wastewater ponds; and
 - 3. Dewatering of excavated pond sludges prior to consolidation beneath landfill cap.
- B. During excavation work, the Contractor shall divert and treat water flowing to the ponds, to the Contractor's temporary treatment facilities.
- C. The Contractor shall be responsible to determine the nature of the sludge to properly institute the dewatering process. All costs for testing, if any, shall be at the Contractor's cost. Contractor shall not use bulking/solidification agents without prior approval from the Engineer.
- D. All liquids generated from the dewatering operations shall be managed in accordance with Section 01562.
- E. Under no circumstances shall water from unremediated areas be pumped into remediated areas.

1.02 SUBMITTALS

- A. In accordance with Section 01300, Contractor shall submit the following:
 - 1. A description of the Contractor's equipment and Work methods to be used for pond dewatering and excavation, sludge dewatering and temporary water storage and treatment.
 - 2. Results of sludge dewatering tests required by the CQAP.

PART 2 - PRODUCTS

(Not used)

PART 3 - EXECUTION

3.01 DEWATERING OF THE PROCESS WASTEWATER PONDS PRIOR TO SLUDGE REMOVAL

- A. The Contractor shall completely dewater the ponds to the extent feasible.
- B. The Contractor shall anticipate removing sludges from the ponds in wet conditions since water in the ponds is believed to be an expression of the ground water table.
- C. The Contractor shall implement the following measures prior to sludge removal operations from the process wastewater settling ponds:
 - 1. Stormwater run-on controls shall be implemented in accordance with Section 01560.
 - 2. The new facility process wastewater treatment system shall be completed and placed into operation prior to excavation of the wastewater settling ponds and all other sludge removal activities. Work in the existing ponds shall not be permitted until the new treatment system is operating successfully in accordance with Section 01562 and as approved by the Engineer.
 - 3. The wastewater ponds shall be dewatered if the Contractor deems these measures to be necessary to conduct sludge removal activities (i.e., the Work area does not drain sufficiently). Dewatering equipment, if used, shall be properly installed and approved by the Engineer.

3.02 POND SLUDGE EXCAVATION

- A. The ponds shall be excavated in a manner consistent with that specified in Section 02200 Excavation, except as described herein.
- B. The ponds shall be excavated initially to the areal extent shown on the Drawings, and the depths as follows:
 - Pond 1: 10 feet of material located below approximately 1.5 feet of standing water.
 - Pond 2: 8 feet of material located below approximately 5.5 feet of standing water.
 - Pond 3: 7 feet of material located below approximately 3.5 feet of standing water.
 - Pond 4: 12 feet of material located below approximately 6.5 feet of standing water.
 - Sludge Pond: 10 feet of material located below approximately 0.5 feet of standing water.
- C. Following initial excavation, the Engineer will use visual observation in accordance with the CQAP to determine if excavation activities should continue.

3.03 DEWATERING OF EXCAVATED SLUDGES

- A. The Contractor shall select and provide the dewatering equipment, labor and materials to be used for the Work. In all cases, independent of the system selected and the conditions encountered, the Contractor shall be responsible for adequately and properly dewatering the excavated sludges and collecting and managing fluids in accordance with Sections 01520 and 01562.
- B. Dewatering activities shall be performed in the staging area shown on the Drawings.
- C. All sludges shall be dewatered until the Contractor demonstrates that the sludge passes the paint filter test in accordance with the requirements of the CQAP.
- D. The Contractor shall construct a dewatering area for excavated sludges. The dewatering area must include the elements shown on Sheet 14 of the Design Drawings for the Equipment Decontamination Area. These elements include but are not limited to a 40 mil LLDPE, geotextile and a collection sump. The design for the sludge dewatering area must be submitted to the Engineer for approval prior to sludge excavation activities. Sludge shall be staged until dewatering is complete. Dewatered sludges shall be protected from precipitation.
- E. The excavated sludge, dewatered as necessary, will be consolidated under the proposed cap in accordance with Section 02205 and the Drawings.

(END OF SECTION)

SECTION 02200

EXCAVATION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This section describes the requirements for excavation required for the following materials and areas as shown on the Drawings:
 - 1. Landfill waste;
 - 2. Northern wetland soils;
 - 3. Eastern portion subgrade soil; and
 - 4. Other areas requiring excavation to complete the Work.
- B. All soils shall be removed to the limits and depths required by the Drawings and Specifications, in accordance with all federal, state and local laws and regulations.
- C. All existing underground and aboveground utilities, including the existing sanitary sewer and sanitary sewer right of way, and utility poles shall remain intact during the performance of the Work and shall be located, identified and protected by the Contractor prior to the commencement of the Work. In addition, the Contractor shall coordinate his activities in these areas with the respective utilities. Any damage to utilities caused by the Contractor shall be repaired at no additional cost to the Owner. The locations, elevations and depths of any and all utilities shown on the Drawings are approximate and shall be confirmed by the Contractor.
- D. The Contractor shall be responsible for confirming the depth of the existing sanitary sewer by positive means prior to initiating any excavation within ten feet of the sanitary sewer easement. This shall include, but not be limited to, the excavation of test pits and hand excavation to positively establish the sewer location.
- E. If temporary staging of excavated materials becomes necessary, staging shall be in accordance with the requirements for temporary staging and storage as specified in Section 01520.
- F. Based on site data, soils from the northern wetlands and below the china in the eastern portion are not anticipated to be saturated and, therefore, are not anticipated to require the Paint Filter Test. If the Contractor chooses to excavate soils from the northern wetland or below the china in the eastern portion in the presence of standing water, dewatering of the excavation and the Paint Filter Test will be required. All water generated from dewatering of the excavated soils and the excavations shall be handled in accordance with requirements for temporary staging and storage as specified in Section 01520 and management of site water as specified in Section 01562.

- G. The Contractor shall clear and grub areas that can be excavated and backfilled within the five-day work week (ending on Friday).
- H. Soils which become re-contaminated due to the improper management of Site water or contaminated soils will be excavated to limits determined by the Engineer and placed in the landfill at the Contractor's expense. The excavated area shall be restored to proper grade to the satisfaction of the Engineer in accordance with Section 01520.

1.02 SUBMITTAL

- A. In accordance with Section 01300, Contractor shall submit the following:
 - 1. Submittal describing excavation methods in wetland areas.
 - 2. The Equipment Specifications for dewatering equipment, "crane mats" and other equipment to be used in the remediation of the northern wetland.
 - 3. Proposed methods and materials (including manufacturer's information) for the sheeting installation, if required for the Work.
 - 4. Calculations, sealed by a New York State licensed Professional Engineer, documenting the selection and design of the intended sheeting and shoring for excavations, if required for the Work.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.01 SHEETING AND BRACING

- A. Contractor shall furnish and install temporary sheeting as necessary to perform excavation work in accordance with OSHA requirements. In addition, the Contractor shall install sheeting near Conrail property or other utilities, if required by the various utilities. All work performed on Conrail property shall be performed in accordance with Conrail's requirements attached at the end of these Specifications.
- B. Sheeting shall extend to a minimum depth equal to the bottom of the excavation but must be installed to a depth necessary to provide stability and prevent failure during all of Contractor's Work.
- C. Sheet piles shall be maintained in the correct horizontal and vertical alignment during installation. Lateral drift shall be prevented.

- D. The Contractor shall carefully remove all temporary bracing and sheeting upon completion of the Work, so as not to endanger the installed Work, and immediately backfill all voids left or caused by withdrawal of bracing or sheeting with common fill material. Compaction requirements for this material shall be in accordance with Section 02205.
- E. All temporary sheeting shall be decontaminated in accordance with Section 01565 following removal from the ground and prior to leaving the Site.

3.02 EXCAVATION OUTSIDE OF THE CAP LIMITS

- A. Contaminated soil and waste located outside the identified cap limits shall be excavated, and consolidated beneath the landfill cap in accordance with Section 02205.
- B. The soil excavation limits for the remediation of the Site indicated on the Drawings are preliminary, and may be modified based on inspections performed by the Engineer in accordance with the CQAP.
- C. Excavations on CSX's Right of Way shall be in accordance with CSX requirements attached at the end of these Specifications.
- D. If utilized by the Contractor as clean common fill, Eastern Borrow Area shall be excavated within the limits shown on the Drawings and in strict accordance with the requirements of the Town of Salina and all other local agencies. Compliance with these requirements shall include the payment of any fees associated with obtaining local permits.
- E. The Contractor shall excavate waste in the eastern portion and perform visual and chemical confirmatory sampling in accordance with the CQAP.

3.03 MATERIAL EXCAVATION FROM NORTHERN WETLANDS

- A. Wetlands soils, by their nature, are soft and wet. The wetlands are also prone to flooding. Accordingly, all Work must be performed under soft and wet conditions in areas which may be flooded. The Contractor shall use and include the costs in his bid for all necessary materials, labor, equipment and supervision necessary to perform the Work under these conditions.
- B. Wetlands are ecologically sensitive areas. All Work in or around wetlands must be performed in strict accordance with these Specifications and State requirements. The Contractor shall disturb only the wetland areas specified and shall not disturb beyond these limits. The Contractor shall mark the limits of excavation as specified in Section 01080 and maintain all fencing until construction is complete. The Contractor shall bear all costs associated with diverging in any way from the Work specified in the Specifications and Drawings. These costs include but are not limited to fines, restoration, professional fees and reimbursement of related expenses. Corrective measures associated with diverging from these requirements will be performed at the discretion of the Owner and the regulatory agency.

- C. Excavation of the soil from the northern wetland shall be to the minimum depths shown on the Drawings with a tolerance of +2 inches. The vertical limits of excavation shall be confirmed by installing grade stakes in a 100-foot grid pattern in the wetlands. The upper limit of excavation shall be at the bottom of the surface vegetation and shall be surveyed. The lower limit of the excavation shall also be surveyed at each stake location. The vertical limits of excavation will be coordinated with the NYSDEC. Surveying shall be performed in accordance with Section 01050. Soil removed from the northern wetland area shall be removed in a maximum of 6-inch lifts. Large stones greater than 6 inches and debris shall be removed from the wetland soils and placed in a layer on the landfill, under the wetland soil as directed by the Engineer.
- D. Low ground pressure equipment shall be used to minimize wetland disturbance. This may require wide-track equipment, the use of crane mats, or other approved methods. Rutting greater than 2 inches and excessive mixing of the soil due to the improper use of equipment shall not be permitted. If excessive rutting or mixing of the wetlands soil occurs, the Contractor shall overexcavate in these areas and restore these areas to the identified grades at no additional cost to the Owner.
- E. Excavation of wetland soils shall be performed in a localized dewatered condition which isolates the excavation from unremediated areas. Any water generated during wetland remediation activities shall be handled and treated in accordance with Section 01562.
- F. The area of the wetland in which 18 inches of soil are removed shall be backfilled within 24 hours of completion of the excavation.
- G. Excavation and construction water management must be performed in a manner that prevents redeposition of contamination in the wetland. Soils which become re-contaminated shall be excavated to limits determined by the Engineer and in accordance with Paragraph 1.01.

3.04 DEWATERING OF EXCAVATED SOILS

- A. The Contractor shall select and provide the dewatering equipment, labor and materials to be used for the Work. In all cases, independent of the system is selected and the conditions encountered, the Contractor shall be responsible for adequately and properly dewatering the excavated soils and treating the dewatering water.
- B. Dewatering activities shall be performed in the staging area shown on the drawings.
- C. All soils shall be dewatered until the Contractor demonstrates that the soils pass the paint filter test in accordance with the requirements of the CQAP.
- D. A staging area for the dewatering of excavated soils will be constructed in accordance with Section 01520. Excavated soils shall be staged until dewatering is complete. Dewatered soils shall be protected from precipitation.

- E. The excavated soils, dewatered as necessary, will be consolidated under the proposed cap in accordance with Section 02205 and the Drawings.

3.05 MATERIAL EXCAVATION NEAR EXISTING STRUCTURES

- A. The Contractor shall perform the Work and excavation in such a manner as to eliminate the possibility of undermining or disturbing existing foundations or structures that are to be left in place. All structures, utilities or other items left in place are defined on the Drawings and shall be carefully supported and protected from damage by the Contractor. Any items damaged by the Contractor shall be restored to original condition or replaced as approved by the Engineer at no additional cost to the owner.
- B. Excavation by machinery shall be discontinued when excavation approaches pipes, wells, conduits, or other above or below ground structures or utilities. The Contractor shall perform all excavation near such structures and utilities by the use of hand tools.
- C. The Contractor shall excavate test pits by machine, and continue by hand, if necessary when determination of exact location of pipes or other underground utilities, structures or items is necessary for performing Work properly, at no additional costs to the Owner.

3.06 UNAUTHORIZED EXCAVATION

- A. When the excavation of an area is performed beyond the limits indicated on the Drawings or identified by the Engineer, the Contractor shall backfill the additional excavation with approved common fill, and compact the material, as necessary, at no additional cost to the Owner. The Contractor shall receive no compensation for excavation of soil for which the excavation was unauthorized.

3.07 SPILLS OF EXCAVATED MATERIALS

The requirements for excavation of "spilled" materials are detailed in Section 01520 and shall be addressed by the Contractor's Contingency Plan.

(END OF SECTION)

SECTION 02205

MATERIAL CONSOLIDATION AND COMPACTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the Work required for the consolidation, beneath the cap, of the following excavated materials from the areas shown on the Drawings:
 - 1. Waste materials including china and sludge from the wastewater treatment ponds
 - 2. Northern wetland soil and excavated soil from areas beneath the waste outside of the cap footprint
 - 3. Clearing and grubbing materials
- B. This section describes the Work required for consolidation above the cap of soil for use as the barrier protection layer.
- C. All materials shall be excavated and dewatered (Section 02200) and staged (Section 01520), as necessary, in accordance with these Specifications, and placed within the cap footprint shown on the Drawings

1.02 SUBMITTALS

- A. Contractor shall submit compaction testing and optimum moisture content (OMC) testing of all consolidated materials
- B. The Contractor shall perform gradation testing and submit testing results and certification that all fill materials to be used at the Site meet the requirements of this Specification. Certification must be received and approved prior to utilization of fill materials at the Site.
- C. Catalog cut sheets and other information on all equipment to be utilized for placement and compaction of materials.

PART 2 - PRODUCTS

(not applicable)

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall place vegetation from clearing and grubbing activities and sludge from the wastewater treatment ponds as the first layer on top of the landfill. Excavated china from the eastern portion and outside the cap limits shall be placed on top of the vegetation and sludge to serve as a gas vent layer. The northern wetland soils shall be mixed with over

excavated soils from below the waste in the eastern portion and placed above the china layer to form the cushion layer. All consolidated waste and sludge material shall be placed below the geosynthetic membrane within cap limits in 12-inch lifts and compacted with a 10-ton vibratory roller.

- B. Within the cap limits, all other consolidated materials placed below the geosynthetic membrane and the materials used in the barrier protection layer placed above the geosynthetic membrane shall be placed in six-inch lifts and compacted to 90 percent of the Standard Proctor Density. All materials shall be tested in a qualified, independent laboratory in accordance with the Construction Quality Assurance Plan. These results shall then be used to perform in-place density testing in the field as required by the CQAP.
- C. The Contractor shall submit the name of the independent laboratory to the Engineer for approval and shall pay all costs associated with the testing work.
- D. In-place density testing shall be performed by nuclear methods in accordance with the Construction Quality Assurance Plan. The Contractor shall thoroughly compact the consolidated materials by means of suitable power-driven equipment.
- E. Unless otherwise specified, or approved by the Engineer, the moisture content of fill material as it is being placed shall be within plus four or minus two percent of the OMC as determined by the field and laboratory tests.
- F. The compaction requirements of this section are expected to minimize the amount of settlement of the cap, however if significant settlement does occur following compaction, the Engineer may direct the Contractor to employ settlement monitoring by topographical survey methods. The Contractor may be instructed to stop adding any additional waste to the landfill until settlement has ceased.
- G. During the progress of the Work, the Contractor shall conduct its operations so as to minimize the wind dispersal of contaminated matter, soil and sludges. If the Engineer determines that it is necessary to use more effective dust control based on the limits described in the Site Health and Safety Plan, the Contractor shall furnish all equipment and material required to minimize airborne particulates, as directed by the Engineer.
- H. Compaction of fill material shall be discontinued when the temperature is below freezing long enough to create ice in the fill material or during weather that the Engineer determines is too wet to achieve compaction requirements.
- I. Common Fill shall be placed as shown on the Drawings to the specified contours and elevations.

3.02 WASTE MATERIALS

- A. Prior to installation of the liner cushion layer, the material from the areas outside of the cap footprint, and the sludge from wastewater treatment ponds shall be consolidated along with cleared and grubbed material in the following manner to achieve the desired grades:
1. All excavated material shall be consolidated with the cap footprint, sloped and graded as shown on the Drawings.
 2. Compaction of the waste, sludge and vegetation from clearing and grubbing activities shall be in twelve-inch lifts and shall utilize a vibratory roller which shall pass over the waste a minimum of three passes prior to placing additional waste material.
 3. Following consolidation, if additional excavated volumes of material are generated, the Contractor shall increase the height of the waste while holding the required footprint at the cap perimeter.
 4. After increasing the height of the waste, should the volume of materials still surpass the capacity of the cap at the designed slope, the Engineer will direct the Contractor to either increase the slope of the consolidated materials, or expand the cap limits. Increasing the slopes or expanding the cap limits shall only occur with NYSDEC concurrence.

3.03 NORTHERN WETLAND SOIL

- A. Mineral soil from the northern wetland shall be mixed with mineral soil from the eastern portion and placed in accordance with the remainder of this section.
- B. As the soil from the northern wetland is placed and compacted, the material shall be worked into the waste and visually checked for pumping, excessive moisture or any other indications that the material is unsuitable. If it is determined to be unsuitable by the Engineer, the Contractor shall mix the material with the six-inch layer of soil from below the waste or provide additional sand to stabilize the material.
- C. Vegetation from the northern wetland shall be spread in thin layers within the waste and sludge as described in Section 02110.

3.04 OVEREXCAVATED SOIL FROM BELOW THE WASTE

- A. Mineral soil from the six-inch layer of overexcavation from below the waste shall be mixed with mineral soil from the northern wetland and placed in accordance with the remainder of this section.

3.05 EASTERN BORROW AREA SOIL

- A. Preliminary geotechnical testing of soils from the eastern borrow area has been performed and this information will be provided to the Contractor. During performance of the Work, additional geotechnical testing of soils shall be performed in accordance with the Sampling and Analysis Plan and the CQAP, which includes the requirement for compaction testing.

The results of the analysis required in the plan will determine whether this soil is suitable for use as the barrier protection layer.

- B. If the material is suitable, it will be consolidated within the cap footprint in accordance with this Specification. If additional material is required to achieve the required thickness for the barrier protection layer, the Contractor shall supply and place suitable materials as specified in Specification section 02225. The barrier protection layer materials will be consolidated in accordance with the requirements of this section.

(END OF SECTION)

SECTION 02210
MONITORING WELLS AND GAS VENTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the Work required to perform all miscellaneous monitoring well, and gas vent work, including necessary earthwork shown on the Drawings but not specified elsewhere, including but not limited to:
1. Protection of monitoring wells.
 2. Abandonment of monitoring wells.
 3. Installation of permanent gas vents.

1.02 SUBMITTALS

- A. In accordance with Section 01300, Contractor shall submit the details of materials and methods used to:
1. Protect monitoring wells.
 2. Abandon monitoring wells.
 3. Install gas vents for landfill cap.

PART 2 - PRODUCTS

- A. The Contractor shall provide and install all materials as necessary to perform the Work described in Part 3.

PART 3 - EXECUTION

3.01 PROTECTION OF MONITORING WELLS

- A. The Contractor shall protect all existing monitoring wells on the Site, that are not to be abandoned, as indicated in the Drawings. The locations of all monitoring wells are shown on the Drawings.
- B. All earthwork performed near monitoring wells shall be by hand.

- C. The Contractor shall be responsible for the repair of all monitoring wells disturbed by the Work, to the monitoring well's original condition as approved by the Engineer at no additional cost to the Owner.
- D. In the event a monitoring well is damaged by the Contractor such that it cannot be repaired, the Contractor shall be responsible for the installation of a replacement well equal in all respects to the damaged well at a location selected by Engineer. The Contractor shall also be responsible for abandoning the damaged well in place in accordance with all applicable NYSDEC requirements. All Work identified in this paragraph shall be performed at no additional cost to the Owner.
- E. The Contractor shall install all risers and standpipes as necessary to raise existing wells to higher elevations anywhere on the site where new grade is higher than existing grade.
- F. The Contractor shall cut down or otherwise modify all wells as necessary anywhere on the site where new grade is lower than existing grade.
- G. After modification, the Contractor shall have all wells onsite surveyed in accordance with Section 01050.
- H. If, in the opinion of the Contractor, a monitoring well cannot be adequately protected from damage due to the performance of the Work, the Engineer shall be immediately informed. If the Engineer concurs, the well in questions will be abandoned in place in accordance with all applicable requirements at the expense of the Owner.

3.02 ABANDONMENT OF MONITORING WELLS

- A. The Contractor shall abandon the monitoring wells designated MW-3, MW-4, MW-4I, MW-7 and MW-9. Abandonment shall be performed by a New York State licensed driller in strict accordance with NYSDEC requirements, which includes but is not limited to over boring of the wells and removing them prior to grouting of the borehole to grade.
- B. The Contractor shall be responsible for any repairs or adjustments needed after sealing of any wells in order that the abandoned wells meet the above requirements to the satisfaction of the Engineer.

3.03 INSTALLATION OF PERMANENT GAS VENTS

- A. Permanent gas vents shall be installed as shown on the Drawings.

(END OF SECTION)

SECTION 02223
ON-SITE FILL MATERIALS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section describes the Work activities related to the selection of contaminated/ uncontaminated fill materials obtained from on-site sources as shown on the Drawings, and as specified herein, in the following locations:
 - 1. Construction areas for the landfill cap
 - a. Contaminated fill materials from on-site soil sources may be used under the synthetic geomembrane only.
 - b. Uncontaminated fill materials from on-site soil sources may be used in the cap both above and below the geosynthetic membrane.
- B. The Contractor shall excavate, stage and utilize uncontaminated soil from on-site sources, to the greatest extent practicable, as common fill. The Engineer will direct the Contractor regarding acceptable uncontaminated fill materials. The acceptable on-site source for uncontaminated soil includes the Eastern Borrow Area.
- C. Uncontaminated soil staged from on-site sources may be utilized as fill in the following locations during construction of the landfill cap:
 - 1. Barrier Protection layer;
 - 2. Topsoil layer;
 - 3. Berms and Swales; and
 - 4. Landfill Cap Liner Cushion Layer.
- D. The Contractor shall excavate, stage and utilize contaminated soil, to the greatest extent practicable, in the construction of the landfill cap liner cushion layer. The Engineer will direct the Contractor regarding acceptable contaminated fill materials. The source area for contaminated soil fill includes the northern wetland area and overexcavated soil beneath the waste.

1.02 SUBMITTALS

- A. The Contractor shall submit the results of all laboratory Proctor testing results and all field compaction tests.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

- A. Contaminated native fill shall be used in accordance with Section 1.01D. Uncontaminated native fill can be taken at the Contractor's discretion from the Eastern Borrow Area in accordance with the Drawings. Common fill shall be well-graded granular material from fine to coarse, containing not more than 50 percent material passing a 200 sieve, with a maximum size of two (2) inches, obtained from approved on-site locations and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted. It shall be substantially free from loam and other organic matter, trash, debris, and other fine or harmful substances. Vegetation, masses of roots or individual roots more than 18 inches long or more than 1/2 inch in diameter shall not be permitted.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Any temporarily staged common fill materials shall be covered with polyethylene sheeting in the areas identified on the Drawings or as approved by the Engineer in accordance with Section 01500.

3.02 QUALITY CONTROL

- A. Field inspection and testing will be performed in accordance with the CQAP.

3.03 SCHEDULE

- A. Contaminated and uncontaminated soil obtained from on-site source areas to be utilized by the Contractor as common fill within the designated construction areas described above shall be properly staged, tested and classified by the Contractor. The Contractor shall not use staged on-site soil as fill material until the above criteria has been met and the Contractor has received final approval from the Engineer.

END OF SECTION

**SECTION 02225
OFF-SITE FILL MATERIALS**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section describes the Work activities related to the selection and use of fill materials obtained from off-site sources. In the event fill material from on-site sources are not acceptable for use as fill material or if fill material, in addition to on-site soil is required to perform the Work, fill materials from off-site sources may be utilized. Fill material from on-site sources are described in Section 02223. Off-site fill material shall meet any requirements specified in Section 02223 for on-site fill material in addition to the requirements specified herein. All fill materials shall be placed to the specified limits and grades as shown on the Drawings.
- B. All off-site fill materials shall be staged (Section 01500), as necessary, in accordance with these Specifications and Section 02223, and placed as shown on the Drawings.
- C. *Off-Site fill materials include the following:*
 - 1. common fill;
 - 2. crushed stone;
 - 3. riprap;
 - 4. pea gravel; and
 - 5. sand.

1.02 SUBMITTALS

- A. In accordance with Section 01300, Contractor shall submit the following:
 - 1. Gradation test results and certification from suppliers, that all off-Site fill materials meet the requirements of this Specification, and that they are free from contaminants. Certification must be received and approved prior to delivery of off-Site fill materials.
 - 2. Three five-pound samples of all off-Site fill materials, if requested by the Engineer.
 - 3. The Contractor shall submit the results of all testing required by the CQAP prior to proceeding with subsequent work.

PART 2 - PRODUCTS

2.01 COMMON FILL

- A. Common fill shall be well-graded granular material from fine to coarse, containing not more than 50 percent material passing a 200 sieve, with a maximum size of two (2) inches, obtained from approved natural deposits and unprocessed except for the removal of unacceptable material and stones larger than the maximum size permitted. It shall be substantially free from loam and other organic matter, trash, debris, and other fine substances. Vegetation, masses of roots, or individual roots debris, and other fine substances. Vegetation, masses of roots, or individual roots more than 18 inches long or more than 1/2 inch in diameter shall not be permitted.
- B. Common fill shall be used for backfill in excavated areas and the landfill cap barrier protection layer as shown on the Drawings.
- C. Common fill used in the landfill cap barrier protection layer shall have a permeability of less than 10^{-5} cm/sec

2.02 CRUSHED STONE

- A. Crushed stone shall be angular stone ranging from 1 to 3 inches in size. The stone shall consist of clean, hard and durable particles free from dirt, vegetable, or other objectionable matter, and free from an excess of soft, thin elongated, laminated or disintegrated pieces.
- B. Crushed stone shall be used for the construction of the permanent access roads as shown on the Drawings.

2.03 RIPRAP

- A. Riprap shall have a mean spherical diameter of 4.8 inches, with stone sizes ranging from one (1) inch to 7.2 inches.
- B. Riprap shall consist of field stone, recycled concrete or rough unhewn quarry stone of approximately rectangular shape. The stone shall be hard and angular, of such quality that it will not disintegrate on exposure to water or weathering, and free from dirt, sand, clay and rock fines. The specific gravity of the individual stones shall be at least 2.5.
- C. Riprap shall be reasonably well-graded stone composed primarily of the larger stone sizes specified above, but shall have a sufficient mixture of the smaller specified sizes to fill the progressively smaller voids between stones.
- D. Riprap shall be used for the construction of drainage energy dissipation areas, drainage swales and in the Gabions installed as part of the cap drainage chute as shown on the Drawings.

2.04 PEA GRAVEL

- A. Pea gravel for pipe bedding shall be 3/8 inch nominal diameter, naturally rounded aggregate as follows:

<u>Standard Sieve Opening</u>	<u>Percent Passing by Weight</u>
1/2"	100
1/4"	0-15
No. 200	0-1

The gravel shall consist of clean, hard, and durable particles free from dirt, vegetable, or other objectionable matter, and free from an excess of soft, thin elongated, laminated or disintegrated pieces.

- B. The pea gravel shall be installed as bedding for the corrugated drainage piping beneath the Site entrance to Factory Avenue as shown on the Drawings.

2.05 SAND

- A. Sand: Natural river or bank sand; washed, free of silt, clay, loam, friable or soluble materials, or organic matter; graded in accordance with ANSI / ASTM C136, within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4	100
No. 14	10 to 100
No 50	5 to 90
No 100	4 to 30
No. 200	0 to 1

- B. Sand shall be used in the barrier protection layer and shall have a permeability of greater than 10^{-2} centimeters/second when used as the cap drainage layer shown on the Drawings.

PART 3 - EXECUTION

3.01 OFF-SITE FILL MATERIALS

- A. All off-site fill materials shall be placed as shown on the Drawings and tested in a qualified independent laboratory in accordance with the CQAP Test results shall then be used to perform in-place density testing in the field.
- B. All off-site fill materials shall be consolidated, sloped and graded within the cap footprint as specified herein and as shown on the Drawings.
- C. All off-site fill material used outside of the cap limits shall be placed in 12-inch lifts and compacted to 90 percent of the Standard Proctor Density.

- D. The compaction requirements of this section are expected to minimize the amount of settlement that occurs; however, if significant settlement does occur following compaction, the Engineer may direct the Contractor to employ settlement monitoring by topographical survey methods. Refer to Section 01050 for survey requirements.
- E. In accordance with the CQAP and the SAP, any fill material provided from off-Site sources shall be analyzed to certify that the materials are free from contaminants.

3.02 FINAL GRADING

- A. Final grading shall be performed as indicated on the Drawings, to the lines, and grades shown or as modified during placement of the waste within $\pm 2/10$ of a foot. The tolerance for cap thickness above the geomembrane shall be $\pm 1/10$ of a foot. The grading shown in the Drawings is based upon current estimations of waste removal depths and areas. Final grading may be altered based on actual conditions encountered during remedial activities. During the process of grading, the subgrades shall be maintained in such condition that the subgrade will be well drained at all times.

(END OF SECTION)

SECTION 02275

GEOTEXTILES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall furnish all labor, equipment and materials necessary for installation of geotextiles for use in silt fences, erosion control, and reinforcement/protection of various parts of the Work including:

1. Geomembrane cushion layer;
2. Wastepiles;
3. Stabilized construction entrance;
4. Equipment decontamination pad;
5. Permanent access road; and
6. Drainage swales.

1.02 QUALITY ASSURANCE

A. Each roll of geotextile shall be labeled by the manufacturer with the following information:

1. Manufacturer's name;
2. Product identification;
3. Lot number;
4. Roll number; and
5. Roll dimensions.

- B. A competent laboratory shall be maintained by the producer of the fabric at the point of manufacture to ensure quality control for all products identified in this specification. That laboratory/manufacturer shall maintain records of its quality control results and provide, prior to shipment, a manufacturer's certificate which lists the guaranteed "minimum average roll value" properties as defined by the Federal Highway Administration and in the CQAP, for the type of geotextile to be delivered and shall provide written certification signed by a responsible party that the materials actually delivered have property "minimum average roll values" which meet or exceed all property values guaranteed for that type of geotextile. The certificate shall also include:
1. Name of manufacturer;
 2. Chemical composition;
 3. Product identification/description;
 4. Statement of compliance to requirements of this specification section; and
 5. Signature of legally authorized official attesting to the information required.
- C. The Contractor shall be required to perform shear tests in accordance with the CQAP for the interface between the geotextile and the liner cushion layer soils which shall consist of northern wetland soil and overexcavated soil from beneath the waste. The minimum factor of safety resulting from these tests shall be 1.5.

1.03 SUBMITTALS:

- A. In accordance with Section 01300, Contractor shall submit the following:
1. Samples and manufacturer's product literature for all geotextiles.
 2. Complete written instructions for storage, handling, installation, and joining/seaming of all geotextiles.
 3. Manufacturer's Quality Control/Quality Assurance manuals for all products, and any other manufacturer's literature regarding testing protocols and procedures to be followed in the field.
 4. Manufacturer's Certificate as outlined in paragraph 1.02(B) of this section.
 5. Results of all testing as defined in the CQAP.

PART 2 - PRODUCTS

2.01 WOVEN AND NON-WOVEN GEOTEXTILES

- A. Six-ounce woven geotextile shall be provided for use in wastepiles, stabilized construction entrance, equipment decontamination pad, and permanent access road.
- B. Six-ounce non-woven geotextile shall be provided for use beneath drainage swales.
- C. 10-ounce non-woven geotextile shall be provided for use with the geomembrane cushion layer. The geotextile shall meet the following requirements:
 - 1. grab strength 257 lbs
 - 2. tear strength 120 lbs
 - 3. puncture strength 175 lbs
 - 4. burst strength 530 psi
 - 5. minimum mass per unit over 10 oz.
 - 6. apparent opening size 140 (U.S. Sieve)
- D. The properties of the geotextiles shall be established by testing as required by the CQAP.

PART 3 - EXECUTION

3.01 HANDLING AND INSTALLATION

- A. The Contractor shall handle all geotextiles in a manner that they are not damaged in any way.
- B. All geotextiles shall be provided in rolls wrapped with protective covering to protect from ultraviolet light, precipitation, dirt, puncture, cutting or any other damage. If any special handling of the geotextile is required, it shall be so marked on the top surface of the geotextile (e.g., "This Side Up").
- C. Geotextiles shall not be exposed to precipitation prior to installation.
- D. Erosion control and turf reinforcement blankets shall be installed in the ground with staples and in accordance with the manufacturer's printed installation instructions.
- E. All geotextiles shall be installed, overlapped and seamed in accordance with manufacturer's printed recommendations.
- F. No horizontal seams shall be allowed on side slopes (i.e., seams shall be along, not across, the slope), except as part of a patch. All sewing shall be performed using polymeric thread with chemical resistance properties equal to or exceeding those of the geotextile.

3.02 PLACEMENT OF MATERIALS OVER GEOTEXTILE

- A. The Contractor shall place all materials over geotextile to prevent damage to or slippage of the geotextiles.
- B. No traffic or construction equipment shall be allowed directly on the geotextiles. All machinery utilized in the placement shall be low ground pressure or otherwise specifically suited for the installation of these materials.
- C. During placement of the geomembrane cushion layer, a minimum thickness of one foot of material shall be placed between the geotextile materials and any construction equipment.

3.03 REPAIRS

- A. Geotextiles will be rejected at any time if they are determined by the Engineer to be defective, to have deteriorated, or if they are damaged.
- B. In the event that any damage occurs to the geotextiles at any time, the damaged portion shall either be repaired by methods approved by the Engineer or the geotextile replaced at no additional expense to the Owner.

(END OF SECTION)

SECTION 02277
GEOSYNTHETIC MEMBRANE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Work includes the manufacture, supply and installation of a textured linear low density polyethylene (LLDPE) geosynthetic membrane as part of the cap as shown on the Drawings.
- B. The Work includes furnishing all labor, materials, transportation, supervision, tools and construction machinery necessary to install and test the geosynthetic membrane as described in the Contract Documents. This shall include the retaining of independent QA/QC personnel.
- C. All procedures, operations, and methods shall be in strict accordance with the Contract Documents, unless otherwise authorized in writing by the Engineer.

1.02 DEFINITIONS

- A. The following definitions are defined and capitalized for the purposes of this section only, and shall have the meaning defined herein when used in the capitalized form only.

Geosynthetic Quality Assurance Laboratory (GQAL): The firm responsible for conducting tests on samples of the geosynthetic membrane taken from the Site. The GQAL will be an independent laboratory, approved by the Engineer and retained by the Contractor.

Installer: The individual or firm, retained by the Contractor, who shall be responsible for field handling, storing, placing, seaming and all other Site aspects of the geosynthetic membrane installation.

Manufacturer: The individual or firm, retained by the Contractor, who shall be responsible for production of geosynthetic membrane rolls from the geosynthetic resin.

1.03 MISCELLANEOUS REQUIREMENTS

- A. Installation shall be performed under the direction of a single field engineer, employed by the Installer, who shall remain on Site and be in responsible charge throughout the geosynthetic membrane installation (including subgrade acceptance, liner layout, seaming, testing and repairs) and all other activities contracted for with the Installer. This field engineer shall have installed or supervised the installation of a minimum of 1,000,000 square feet of geosynthetic membrane, and shall be in absolute charge of the installation. Actual seaming shall be performed under the direction of a "master

seamer" who may be the same person as the field engineer, and who has seamed a minimum of 1,000,000 square feet of geosynthetic membrane using the same type of seaming apparatus as that used for this Work.

- B. The field engineer and/or master seamer must be present at the Site whenever seaming is being performed, and shall provide direct supervision over less experienced seamers. At any time that the installer fails to provide a qualified field engineer or master seamer, the owner may do so at the contractor's expense, and such action on the part of the owner shall in no way diminish the installer's liability or responsibility. Any delays in the work due to contractor's inability to provide a qualified master seamer/field engineer, shall not be the basis for any claims against the owner.
- C. Quality assurance testing shall be carried out by the Manufacturer to demonstrate that the raw material, extrudate and geosynthetic membrane meet the criteria stated in Part 2 of this Section. Tests shall be performed on scrap pieces of geosynthetic membrane.
- D. The Contractor shall be required to perform shear tests in accordance with the CQAP for the interface between the geosynthetic membrane and the sand in the barrier protection layer. The minimum factor of safety resulting from these tests shall be 1.5.

1.04 SUBMITTALS

- A. In accordance with Section 01300, Contractor shall submit the following:
 - 1. Origin (resin supplier's name, resin production plant) and identification (brand name, number) of the geosynthetic resin.
 - 2. Reports on the tests conducted to verify the quality of the geosynthetic resin used to manufacture the geosynthetic membrane rolls delivered to the Site.
 - 3. A statement that no reclaimed polymer is added to the resin during the manufacture of the geosynthetic membrane delivered to the Site, (however, the use of polymer recycled during the manufacturing process may be permitted if done with appropriate cleanliness and if recycled polymer does not exceed 2% by weight).
 - 4. Copies of quality control certificates for each roll of geosynthetic membrane. The quality control certificate shall include:
 - a) Roll numbers and identification;
 - b) Certification that geosynthetic membrane properties conform to the properties listed in paragraph 2.03 of this section, as measured using the test method specified.
 - c) The signature of a responsible party employed by the geosynthetic membrane Manufacturer, such as the production manager.

5. Prior to installation, the Installer shall submit a panel and seam layout drawing. Each field panel and seam shall be given an identification code, agreed upon by the Installer and Engineer, that shall be as simple and logical as possible. The drawing shall show the location and number of all panels, expected seams and type of each seam. The Engineer shall review the seam layout drawing and verify that it is consistent with accepted state of practice. No panels may be seamed in the field without the Engineer's approval. In addition, Installer shall not deviate from the Engineer-approved plan without the Engineer's prior written approval.
6. Copies of the Manufacturer's "Quality Assurance" manual.
7. Qualifications and Work experience of:
 - Installer
 - Field engineer
 - Master seamer
8. Documentation that Installer is certified by the geosynthetic membrane Manufacturer.
9. All written results of testing as required by the CQAP.

PART 2 - PRODUCTS

2.01 RAW MATERIALS

- A. The raw material shall be first quality polyethylene resin containing no more than 2% clean recycled polymer by weight, and shall have a specific gravity (ASTM D1505) greater than 0.92.

2.02 GEOSYNTHETIC MEMBRANE

- A. The geosynthetic membrane shall be a nominal 40-mil textured linear low density and be manufactured by one of the following or approved equal:
 1. Gundle Lining Systems, Inc.
Houston, Texas
 2. Poly-Flex
Grand Prairie, Texas
 3. National Seal Company
Aurora, Illinois
- B. The Installer shall be certified by the Manufacturer for the installation of Manufacturer's geosynthetic membrane.

2.03 PERFORMANCE REQUIREMENTS

A. Geosynthetic membrane properties shall conform to the following:

Property	Test Method	Performance Requirements
Thickness, mils	ASTM D 5994	40 Nominal
Carbon Black Content (%)	ASTM D 4218 or ASTM D 1603	2.0 Minimum
Carbon Black Dispersion (rating)	ASTM D 5596 or ASTM D 3015	Category 1 or Category A2
Tensile strength at break (pound per inch width)	ASTM D 638	70 Minimum
Elongation at break (%) (2.0 inch gage)	ASTM D 638	450 Minimum
Puncture Resistance (pounds)	ASTM D 4833	68 Minimum
Tear Resistance Initiation (pounds)	ASTM D 1004	28 Minimum
Dimension Stability (% change) each direction	ASTM D 1204	±2.0 Maximum

2.04 EXTRUDATE

A. Extrudate shall be comprised of the same resin as the geosynthetic membrane. The Manufacturer shall certify that each batch of the extrudate meets the requirements of the geosynthetic membrane.

PART 3 - EXECUTION

3.01 UNLOADING, HANDLING AND STORAGE

- A. The Contractor shall unload the materials at the Site in accordance with the Manufacturers instructions, shall handle the material with care, shall use adequate equipment and shall take all precautions necessary to prevent damaging the geosynthetic membrane.
- B. Upon delivery at the Site, the Installer, in the presence of the Engineer, shall conduct a surface inspection of all rolls for defects and for damage in accordance with the Construction Quality Assurance Plan. This inspection shall be conducted without unrolling rolls unless, in the Engineer's opinion, defects or damages are found or suspected.
- C. All flaws in the materials shall be brought to the attention of the Engineer. Rolls which have severe flaws shall be rejected and shall be removed from the Site.

- D. Rolls which in the opinion of the Engineer have minor repairable flaws shall be repaired in accordance with paragraph 3.07 of this section.
- E. The installer shall provide a certification that the rolls have been inspected and that they have been accepted and will recertify rolls when they have been rejected or otherwise.

3.02 STORAGE

- A. The Contractor shall be responsible for ensuring that the material is protected from dirt, shock, theft, vandalism, passage of vehicles, and all other sources of damage.

3.03 GENERAL INSTALLATION REQUIREMENTS

- A. The Contractor shall layout and install the geosynthetic membrane in accordance with the Specifications and Drawings, and shall ensure that the Installer supervises all portions of the installation.
- B. Prior to placing the geosynthetic membrane, as shown on the Drawings, the Contractor shall inspect the underlying surface for any objects which may damage the geosynthetic membrane - specifically, items which may puncture the geosynthetic membrane - remove all such objects, and leave the surface in a smooth condition acceptable to the Installer and the Engineer.
- C. All Work shall be performed in accordance with the Manufacturer's "Quality Assurance" manual.
- D. The installer shall provide a certification that the subgrade is suitable prior to geosynthetic membrane installation.

3.04 FIELD PANEL PLACEMENT

- A. The Installer shall ensure that each field panel is given an identification code consistent with the layout plan.
- B. Unless otherwise authorized by the Engineer, geosynthetic membrane placement shall not proceed during any precipitation, in the presence of excessive moisture (e.g., fog, dew), *in an area of ponded water, in the presence of excessive winds, or at an ambient temperature below or above manufacturer's Recommended Specifications.*
- C. Placement of the geosynthetic membrane around pipe in the pond and the gas vent wells on the cap shall be performed as shown on the Drawings.
- D. The Contractor is responsible for ensuring the following:
 - 1. Any equipment used does not damage the geosynthetic membrane by handling, trafficking, excessive heat, leakage of hydrocarbons or other means.

2. The prepared surface underlying the geosynthetic membrane has not deteriorated since previous acceptance, and is still acceptable immediately prior to geosynthetic membrane placement.
3. The surface immediately underlying the geosynthetic membrane is clean and free of debris.
4. All personnel working on the geosynthetic membrane do not smoke, wear damaging shoes, or engage in other activities which could damage the geosynthetic membrane.
5. The method used to unroll the panels does not cause scratches or crimps in the geosynthetic membrane.
6. The method used to place the panels minimizes wrinkles (especially differential wrinkles between adjacent panels).
7. Adequate temporary loading and/or anchoring, not likely to damage the geosynthetic membrane, has been placed to prevent uplift by wind.
8. Direct contact with the geosynthetic membrane is minimized.

3.05 SEAMING

A. Seaming Methods and Apparatus:

1. The installer shall select seaming methods consistent with the manufacturer's printed installation instructions.
2. Contractor shall maintain at the Site, one spare operable seaming apparatus for each type of seam.
3. Equipment used for seaming shall be handled so as to avoid damaging the geosynthetic membrane.

B. Weather Conditions:

1. No seaming shall be attempted at ambient temperatures below or above manufacturer's Recommended Specifications.
2. If the Installer wishes to use methods which allow seaming at ambient temperatures below manufacturer's Recommended Specifications, the proposed methods shall be approved by the Engineer prior to implementation. The use and implementation of these methods shall be at no additional cost to the Owner.

C. Seam Layout:

1. The placement of all panels shall conform to the seam layout drawing approved by the Engineer.

2. In general, seams shall be oriented along the line of maximum slope, (i.e., oriented up and down, not across, the slope). In comers and odd-shaped geometric locations, the number of seams shall be minimized. No horizontal seam shall be less than 5 ft. from the toe of the slope, or areas of potential stress concentrations, unless otherwise authorized.

D. Overlapping:

1. Panels of geosynthetic membrane shall be overlapped in accordance with Manufacturer's printed installation instructions (as recommended by the Manufacturer and Installer).
2. The procedure used to temporarily bond adjacent panels together shall not damage the geosynthetic membrane.

E. General Seaming Procedures:

1. Prior to seaming, the seam area shall be clean and free of moisture, dust, dirt, debris of any kind, and foreign material.
2. For welds which are to be extruded, and as necessary for fusion welds, the seam overlap shall be ground in accordance with the Manufacturer's instructions within one hour of the seaming operation, and in a way that does not damage the geosynthetic membrane.

3.06 SEAM TESTING

- A. Seams shall be tested by the Installer in accordance with the CQAP.
- B. Trial Seams shall be performed in accordance with the CQAP.

3.07 DEFECTS AND REPAIRS

- A. All areas of the geosynthetic membrane shall be visually examined by the Engineer in accordance with the Construction Quality Assurance Plan. Because light reflected by the geosynthetic membrane helps to detect defects, the surface of the geosynthetic membrane shall be clean at the time of examination. The geosynthetic membrane surface shall be broomed or washed by the Installer if the amount of dust or mud inhibits examination.
- B. Each repair shall be nondestructively tested in accordance with the Construction Quality Assurance Plan
- C. All penetrations and local defects shall be repaired/installed with oval or round patches, rather than square or rectangular patches.

3.08 SYSTEM ACCEPTANCE

- A. The Installer, Manufacturer and Contractor shall retain all ownership and responsibility for the geomembrane until acceptance by the Owner. The geosynthetic membrane shall be accepted by the Owner when:
 - 1. The installation is completed.
 - 2. Verification of the adequacy of all seams and repairs, including associated testing, is complete.
 - 3. Cover materials have been placed over the geosynthetic membrane in the cap.

3.09 PROTECTION OF GEOSYNTHETIC MEMBRANE

- A. To ensure that the geosynthetic membrane is not damaged during construction, the following requirements shall be adhered to until the installation is completed to the satisfaction of the Engineer.
 - 1. Equipment used for placing soil shall not be driven directly on the geosynthetic membrane.
 - 2. A minimum thickness of one (1) foot of cover material shall be installed prior to any equipment traffic between a light dozer (such as a wide pad Caterpillar D-3 or lighter) and the geosynthetic membrane.

3.10 GUARANTEE

- A. Manufacturer shall guarantee the materials supplied for the installation of the geosynthetic membrane for a period of twenty years from the date of final installation, and shall be responsible to replace any materials which are defective during this period.
- B. Installer shall guarantee the installation of the geosynthetic membrane for a period of ten years from the date of installation. Installer shall be responsible for the repair and installation of any defects which occur during this period.

(END OF SECTION)

SECTION 02623

HIGH DENSITY POLYETHYLENE (HDPE) PIPING AND ACCESSORIES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, equipment materials and appurtenances necessary to install and test piping as shown on the Drawings, and specified herein. Piping consists of corrugated single-walled high density polyethylene (HDPE) pipe and flared end outlets.
- B. The Contractor shall be responsible for the proper connection of pipes to existing pipes, and to connecting all sections of supplied pipe.

1.02 SUBMITTALS

- A. In accordance with Section 01300, Contractor shall submit information showing that the pipe and accessories to be supplied are in conformance with this Specification.

PART 2 – PRODUCTS

2.01 GENERAL

- A. All pipe and fittings shall be marked with the manufacturer's name or trademark, size, class, and the date of manufacture.
- B. All pipe shall be made from high density polyethylene resin compound qualified as Type III, Grade P33, Category 4, Class C by ASTM D1248 with a minimum density of 0.947 grams per cubic centimeter. The pipe shall have a long-term hydrostatic strength of 1,600 psi when tested and analyzed by ASTM D-2837. These requirements shall be certified by the pipe manufacturer.
- C. The corrugated HDPE pipe shall be model number CPP-AASHTO-M-294-S single-walled 12-inch diameter pipe as manufactured by Advanced Drainage Systems, London, Ohio or Engineer's-approved equal. Minimum wall thickness shall be 0.020 inches.
- D. Flared end outlets shall be model number 1810NP as manufactured by Advanced Drainage Systems, London, Ohio or Engineer's-approved equal. It shall fit an 18-inch diameter corrugated HDPE pipe, be 42 inches wide at the mouth and 25 inches long from the pipe connection to the mouth end.

PART 3 – EXECUTION

3.01 GENERAL HANDLING

- A. Special care in handling shall be exercised during delivery, storage and installation of pipe to avoid cutting, kinking or other damage. Damaged pipe will be rejected and shall be replaced at the Contractor's expense.
- B. Ropes, fabric or rubber protected clings and straps shall be used when handling pipes. Chains, cables or hooks inserted into the pipe ends shall not be used. Two slings spread apart shall be used for lifting each length of pipe. Pipe shall not be dropped onto rocky or unprepared ground. Other proper tools and methods such as filled cutting shall be used for the handling of pipe and in accordance with manufacturer's printed installation instructions.

3.02 STORAGE OF PIPE

- A. Stacking of pipe shall be limited to a height that will not cause excessive deformation of the bottom layer of pipes under anticipated temperature conditions.
- B. Pipe shall be stored in such a manner as to keep the interior free from dirt, and in a location away from heavy machinery and trucks.

3.03 PLACEMENT OF PIPE

- A. Placement of pipe shall be performed in accordance with the manufacturer's printed information to the lines and grades shown on the Drawings.
- B. At the time of pipe placement, the pipe shall be examined carefully for defects, and should any pipe be discovered to be defective after being placed, it shall be removed and replaced with new pipe at the Contractor's expense.
- C. All pipe shall be carefully lowered into the trench so as to prevent dirt and other foreign substances from entering the pipe.
- D. All pipes shall be protected from ultraviolet light and from freezing conditions during placement.
- E. Whenever pipe placement is stopped at the end of the day, or for any other reason, the end of the pipe shall be securely closed to prevent entrance of water or any foreign matter.
- F. Piping shall be tested in accordance with Paragraph 3.01 prior to placing the backfill around the pipe unless otherwise permitted by the Engineer.

- G. The Contractor shall place backfill around the pipe in a manner that will not compromise the integrity of the pipe, and the pipe shall be secured to prevent displacement of the pipe any movement of the pea gravel placement. Pipe backfill shall be in accordance with the Drawings and Section 0225 of the Specifications.
- H. Underground warning tape shall read "Caution Pipeline Buried Below," and shall be buried shallow, approximately eighteen inches under final grade in all trenches where pipes have been buried.

3.04 JOINING METHODS

- A. Lengths of pipe shall be assembled into suitable installation lengths with soil and water tight split couplers. This process shall be performed in accordance with the procedures recommended by the manufacturer, by qualified personnel.

3.05 FLUSHING AND TESTING

- A. Following installation of a section of pipe, the Contractor shall thoroughly clean all pipe by flushing with water or other means to remove all dirt and other obstructions which may have entered the pipe during the construction. Pipelines shall be flushed at a rate of at least 2.5 feet per second until water runs clear, and no obstructions remain. All pipes shall be secured as necessary so that pipe movement does not occur during the flushing activities.
- B. After flushing is complete, in order to test the pipe to verify that no obstructions remain and also to determine that the pipe has not been crushed, the Contractor shall place a spherical object with a diameter equal to at least ninety percent of the inside diameter of the pipe, at the upgradient end of the pipe and pull the object through the length of the pipe. If the object does not exit the downgradient end of the pipe, the Contractor shall either remove the obstructions or replace the pipe at no additional cost to the Owner.
- C. A pressure test shall be performed as specific in AWWA C600. The pressure shall be maintained at 80 psi for 12 hours. Any discrepancies to the manufacturer's recommendations on test pressures shall be brought to the attention of the Engineer. Any material showing seepage or the slightest leakage shall be repaired and/or replaced as directed by the Engineer and retested at no additional expense to the Owner.

(END OF SECTION)



SECTION 02900
LOAMING, HYDROSEEDING
AND NORTHERN WETLANDS RESTORATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required, place topsoil, finish grade, apply lime and fertilizer, hydraulically apply seed and mulch and maintain all seeded areas as shown on the Drawings and as specified herein. The areas of Site to be vegetated include the following, as shown on the Drawings:
 - 1. disturbed areas of the eastern portion of the landfill and the eastern borrow area;
 - 2. cap surface; and
 - 3. swales.
- B. Furnish all labor, materials, equipment and incidentals required, place compost material, finish grade, hydraulically apply seed and maintain all wetland areas as shown on the Drawings and as specified herein. The areas of Site to be vegetated with wetland species include the following, as shown on the Drawings:
 - 1. the Northern Wetland area

1.02 QUALITY ASSURANCE:

- A. The Contractor shall notify the Engineer at least one week in advance of all planned seeding operations.
- B. Permanent seeding operation shall be carried out between March 15 and May 15 or between August 15 and October 1, unless otherwise specifically permitted or required by the Engineer. If permanent seeding cannot take place during these periods, a turf reinforcement blanket shall be installed and kept in place until the next possible seeding season begins. The turf reinforcement blanket shall be North American Green P300 erosion control blanket or approved equal.
- C. Samples from topsoil and compost sources shall be analyzed as specified herein and as required in the CQAP.
- D. The Contractor shall identify the location(s) of proposed topsoil borrow sources and compost suppliers for approval prior to providing samples for analysis.

1.03 SAMPLES AND APPROVAL OF MATERIAL

- A. In accordance with Section 01300, Contractor shall submit the following:
 - 1. Name and location of each proposed topsoil source.

2. Name and location of each proposed compost source.
 3. Topsoil and compost test results required by the CQAP.
 4. Schedules for loaming, placement of compost, seeding and fertilizing.
 5. Certification of seed mixture, purity, germinating value, and crop year identification for each seed mixture furnished.
 6. Product data for all soil supplements, mulch, binders, or any other products proposed for the Work.
 7. Hydroseeding mixture and rate of application.
 8. Samples of all seed mixtures utilized.
- B. Samples of all materials shall be submitted for inspection and acceptance upon Engineer's request.

PART 2 - PRODUCTS

2.01 NON-WETLAND MATERIALS

- A. Topsoil shall be fertile, friable, natural topsoil typical of topsoil of the locality, and shall be obtained from a well drained site that is free of flooding. It shall be without admixture of subsoil or slag and free of stones, lumps, plants or their roots, sticks, clay, peat and other extraneous matter and shall not be delivered to the site or used while in a frozen or muddy condition. Topsoil as delivered to the site or stockpiled shall have pH between 6.0 and 7.0 and shall contain not less than 3 percent or more than 10 percent organic matter as determined by loss of ignition of moisture - free samples dried at 100 degrees Celsius. The topsoil shall meet the following mechanical analysis:

	<u>Percentage Finer</u>
1-in screen opening	100
No. 10 mesh	95-100
No. 270 mesh	35-75
0.002 mm*	5-25

*Clay size fraction determined by pipette or hydrometer analysis.

At least 10 days prior to anticipated start of topsoiling operations a one pint sample of topsoil material shall be delivered to an independent laboratory for testing and approval. Based on the test results, the topsoil shall be identified as acceptable, acceptable with certain fertilizer and limestone applications or unacceptable by the Engineer. If the topsoil is found acceptable, the fertilizer and lime requirements will be as specified. If the topsoil is found unacceptable, the Contractor shall be responsible for identifying another source of topsoil and shall incur all expenses associated with testing additional samples. All topsoil incorporated into the site work shall match the sample provided.

- B. Fertilizer shall be commercial mixed free flowing granules or pelleted fertilizer, 10-20-10 (N-P205-K20) grade for lawn and naturalized areas. Fertilizer shall be delivered to the site in original unopened containers each showing the manufacturer's guaranteed analysis conforming to applicable state fertilizer laws. At least 40 percent of the nitrogen in the fertilizer used shall be in slowly available (organic) form.
- C. Lime shall be ground limestone containing not less than 85 percent calcium and magnesium carbonates and be ground to such fineness that at least 50 percent shall pass a 100-mesh sieve and at least 90 percent shall pass a 20-mesh sieve.
- D. Seed shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable State seed laws. Seed shall be furnished in sealed bags or containers bearing the dealer's guaranteed analysis. The containers shall also bear the date of the last germination, which date shall be within a period of 6 months prior to commencement of planting operations. Seed shall be from same or previous year's crop; each variety of seed shall have a purity of not less than 85 percent, a percentage of germination not less than 90 percent, shall have a weed content of not more than 1 percent and contain no noxious weeds. The seed mixtures shall consist of seed proportioned by weight as follows:

<u>Name</u>	<u>Proportion by Weight</u>
Clemfine Tall Fescue (Clemfine)	50%
Perennial Ryegrass	15%
Creeping Red Fescue	15%
Kentucky Bluegrass	10%

- E. The seed shall be furnished and delivered premixed in the proportions specified above. A manufacturer's certificate of compliance to the specified mixes shall be submitted by the manufacturers for each seed type. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates.
- F. Mulch shall be a specially processed cellulose fiber containing no growth or germination-inhibiting factors. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content and not contain in excess of 10 percent moisture.

2.02 WETLAND MATERIALS

- A. Topsoil shall be as specified in Section 2.01.

B. Compost shall be yard compost material and shall be mixed with topsoil as necessary to achieve the following planting substrate characteristics:

- | | |
|-----------------------------|------------------------------|
| 1. Organic Content | 20 – 35 percent |
| 2. Organic Carbon | 12 – 20 percent |
| 3. pH | 5.5 - 7 |
| 4. Bulk Density | 1,100 – 1,600 lbs/cy |
| 5. Porosity | 45 – 65 percent |
| 6. Hydraulic Conductivity | >5 x 10 ⁻⁴ cm/sec |
| 7. Water Holding Capacity | high |
| 8. Nutrient Availability | medium to low |
| 9. Cation Exchange Capacity | high |

Compost shall be tested for the above characteristics in accordance with the CQAP. All compost incorporated into the work shall match the sample provided.

C. Wetland seed shall be labeled in accordance with USDA Rules and Regulations under the Federal Seed Act and applicable State seed laws. Seed shall be furnished in sealed bags or containers bearing the dealer's guaranteed analysis. The containers shall also bear the date of the last germination, which date shall be within a period of 6 months prior to commencement of planting operations. Seed shall be from same or previous year's crop; each variety of seed shall have a purity of not less than 85 percent, a percentage of germination not less than 90 percent, shall have a weed content of not more than 1 percent and contain no noxious weeds. The seed mixtures shall consist of an 8 to 1 ratio of the two distinct mixes of seed proportioned by weight as follows:

1. Type A Seed (8 parts)

<u>Name</u>	<u>Proportion</u>
Tioga Deertongue (<i>Panicum clandestinum</i>)	25%
Rough Bluegrass (<i>Poa trivialis</i>)	15%
Creeping Red Fescue (<i>Festuca rubra</i>)	15%
Switchgrass (<i>Panicum virgatum</i>)	10%
Creeping Bentgrass (<i>Agrostis stolonifera</i>)	7.5%
Fowl Bluegrass (<i>Poa palustris</i>)	5%
Partridge Pea (<i>Chamaecrista fasciculata</i>)	5%
Eastern Gama-grass (<i>Tripsacum dactyloides</i>)	4%
Fox Sedge (<i>Carex vulpinoidea</i>)	3%
Virginia Wild-rye (<i>Elymus virginicus</i>)	3%
Canada Wild-rye (<i>Elymus canadensis</i>)	2.5%

2. Type B Seed (1 part)

<u>Name</u>	<u>Proportion</u>
Fringed Sedge (<i>Carex crinita</i>)	55%
Bearded Sedge (<i>Carex comosa</i>)	15%
Canada Manna Grass (<i>Glyceria canadensis</i>)	15%
Lurid Sedge (<i>Carex lurida</i>)	5%
Blue Vervain (<i>Verbena hastata</i>)	3%
Green Bulrush (<i>Scirpus atrovirens</i>)	2%

C. The seed shall be furnished and delivered in the proportions specified above and mixed prior to application. A manufacturer's certificate of compliance to the specified mixes shall be submitted by the manufacturers for each seed type. These certificates shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates.

PART 3 - EXECUTION

3.01 APPLICATION

A. Non-Wetland Areas

1. Unless otherwise shown on the Drawings, topsoil shall be placed to a minimum compacted depth of 6-inches on all areas of the Work not identified as wetlands areas or covered with structures or pavement.
2. For all areas to be seeded:
 - a. Lime shall be applied at the rate of fifty pounds per 1,000 square feet or as determined by the soil test to bring topsoil pH to a range of 6.0 to 7.0.
 - b. Fertilizer (10-20-10) shall be applied at the rate of thirty pounds per 1,000 square feet or as determined by the soil test.
 - c. Seed shall be applied at the rate of five pounds per 1,000 square feet.
 - d. Fiber mulch shall be applied at the rate of forty pounds per 1,000 square feet.
3. If possible, limestone shall be applied two to three months before the application of fertilizer. Limestone may not be mixed with fertilizer for application and shall be applied a minimum of two weeks prior to fertilizer application.
4. After the topsoil is placed and before it is raked to true lines and rolled, limestone shall be spread evenly over the loam surface and thoroughly incorporated by heavy raking to at least one half the depth of topsoil.

5. The application of fertilizer may be performed hydraulically in one operation with hydroseeding and fiber mulching. The Contractor is responsible for cleaning all structures and pavement of unwanted deposits of the hydroseeded mixture.

B. Wetland Areas

1. Unless otherwise shown on the Drawings, compost shall be placed to a minimum depth of 4 to 6-inches on all areas of the Work identified as wetlands areas.
2. Wetlands seed shall be mixed in the ratio identified above and applied at the rate of 7.5 pounds per 5,000 square feet.
3. After the compost is placed it shall be raked to true lines and rolled and the application of fertilizer may be performed as necessary.
4. The application of fertilizer may be performed hydraulically in one operation with hydroseeding. The Contractor is responsible for cleaning all structures and pavement of unwanted deposits of the hydroseeded mixture.
5. The area of the wetland in which 18 inches of soil are removed, shall be backfilled within 24 hours of completion of the excavation.

3.02 INSTALLATION

A. Non-Wetland Area

1. Subgrade shall be prepared by tilling prior to placement of topsoil to obtain a more satisfactory bond between the two layers. Tillage operations shall be across the slope. Tillage shall not take, place on slopes steeper than 2 horizontal to 1 vertical or where tillage equipment cannot be operated. Tillage shall not be performed when the subgrade is frozen, excessively wet, extremely dry or in other conditions which would not permit tillage. The subgrade shall be raked and all rubbish, sticks, roots and stones larger than 2-in shall be removed. Subgrade surfaces shall be raked or otherwise loosened immediately prior to being covered with loam.
2. Topsoil shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling, the complete work will conform to the lines, grades, and elevations indicated. No loam shall be spread in water or while frozen or muddy.
3. After topsoil has been spread, it shall be carefully prepared by scarifying or harrowing and hand raking. All stiff clods, lumps, roots, litter and other foreign material shall be removed from the loamed area and disposed of by the Contractor. The areas shall also be free of smaller stones, in excessive quantities, as determine by the Engineer. The whole surface shall then be rolled with a roller weighing not more than 100 pounds per foot of width. During the rolling, all depressions caused by settlement of rolling shall be filled with additional loam and the surface shall be regraded and rolled until a smooth and even finished grade is created.

4. Seeding, mulching and conditioning shall only be performed during those periods within the seasons which are normal for such work as determined by the weather and locally accepted practice, as approved by the Engineer. The Contractor shall hydroseed only on a calm day.
5. Seeding shall be done within ten days following soil preparation. Seed shall be applied hydraulically at the rates and percentages indicated. The spraying equipment and mixture shall be so designed that when the mixture is sprayed over an area, the grass seed and mulch shall be equal in quantity to the specified rates. Prior to the start of work, the Contractor shall furnish the Engineer with a certified statement as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the Contractor's hydroseeder. Upon completion of seeding operations, the Contractor shall furnish the Engineer with a certified statement on the actual quantity of solution applied.
6. In order to prevent unnecessary erosion of newly topsoiled and graded areas the Contractor shall carry out seeding and mulching as soon as he has satisfactorily completed a unit or portion of the project. For the purpose of this project a unit is defined as 10,000 square feet. When protection of newly loamed and graded areas is necessary at a time which is outside of the normal seeding season, the Contractor shall protect those areas with a turf reinforcement blanket as specified in Section 1.02B and shall be responsible for prevention of siltation in the areas beyond the limit of work.
7. When newly graded subgrade areas cannot be topsoiled and seeded because of season or weather conditions and will remain exposed for more than 30 days, the Contractor shall protect those areas against erosion and washouts. Prior to application of topsoil, any such materials applied for erosion control shall be thoroughly incorporated into the subgrade by disking. Fertilizer shall be applied prior to spreading of topsoil.

B. Wetland Areas

1. Wetlands subgrade shall be prepared by tilling prior to placement of topsoil to obtain a more satisfactory bond between the two layers. Tillage shall not be performed when the subgrade is frozen, excessively wet, extremely dry or in other conditions which would not permit tillage. The subgrade shall be raked and all rubbish, sticks, roots and stones larger than 3-inch shall be removed. Subgrade surfaces shall be raked or otherwise loosened immediately prior to being covered with compost.
2. Compost shall be placed over approved areas to a depth sufficiently greater than required so that after natural settlement and light rolling, the complete work will conform to the lines, grades, and elevations indicated.
3. Seeding shall only be performed during those periods within the seasons which are normal for such work as determined by the weather and locally accepted practice, as approved by the Engineer. The Contractor shall hydroseed only on a calm day.
4. Seed shall be applied hydraulically at the rates and percentages indicated. The spraying equipment and mixture shall be so designed that when the mixture is sprayed over an area, the seed shall be equal in quantity to the specified rates. Prior to the start of work,

the Contractor shall furnish the Engineer with a certified statement as to the number of pounds of materials to be used per 100 gallons of water. This statement shall also specify the number of square feet of seeding that can be covered with the quantity of solution in the Contractor's hydroseeder.

5. In order to prevent unnecessary erosion, the Contractor shall carry out seeding as soon as he has satisfactorily completed a unit or portion of the project. For the purpose of this project a unit is defined as 10,000 square feet. When protection of work areas is necessary at a time which is outside of the normal seeding season, the Contractor shall protect those areas by what ever means necessary as approved by the Engineer and shall be responsible for prevention of siltation in the areas beyond the limit of work.
6. When newly graded subgrade areas cannot be seeded because of season or weather conditions and will remain exposed for more than 30 days, the Contractor shall protect those areas against erosion and washouts. Prior to application of compost, any such materials applied for erosion control shall be thoroughly incorporated into the subgrade by disking.

3.03 MAINTENANCE AND PROVISIONAL ACCEPTANCE

A. Non-Wetland Areas

1. The Contractor shall keep all seeded areas watered, mowed and in good condition, reseeding all seeded areas if and when necessary until a good, healthy, uniform growth is established over the entire area seeded, and shall maintain all seeded areas in an approved condition.
2. The Engineer will inspect all work for provisional acceptance at the end of the initial ten week maintenance period, upon the written request of the Contractor received at least ten days before the anticipated date of inspection. The maintenance period must occur during the growing season between March 15 and October 1 and shall include a minimum of three mowings.
3. A satisfactory stand will be defined as a section of turf of 5,000 square feet or larger that has:
 - a. No bare spots larger than two square feet.
 - b. No more than five percent of total area with bare spots larger than one square foot.
 - c. Not more than ten percent of total area with bare spots larger than 6 inches square.
4. After the inspection has occurred but prior to provisional acceptance, a soil test shall be performed to determine if additional soil fertilization should occur. If necessary additional fertilizer not to exceed 30 lbs per 1000 sq ft of 20-10-10 shall be applied as directed by the Engineer.
5. After all necessary corrective work and clean-up has been completed, the Engineer will certify in writing the provisional acceptance of the seeded areas. The Contractor shall continue to maintain responsibility for maintenance of seeded areas until receipt of final acceptance.

B. Wetlands Areas

1. The Contractor shall keep all seeded areas watered and in good condition, reseeding all seeded areas if and when necessary until a good, healthy, uniform growth is established over the entire area seeded, and shall maintain all seeded areas in an approved condition.
2. The Engineer will inspect all work for provisional acceptance at the end of the ten week maintenance period, upon the written request of the Contractor received at least ten days before the anticipated date of inspection. The maintenance period must occur during the growing season between March 15 and October 1.
3. A satisfactory stand will be defined as a section of turf of 5,000 square feet or larger that has:
 - a. No bare spots larger than three square feet.
 - b. No more than five percent of total area with bare spots larger than one square foot.
4. After all necessary corrective work has been completed, the Engineer will certify in writing the provisional acceptance of the seeded areas. The Contractor shall continue to maintain responsibility for maintenance of seeded areas until receipt of final acceptance.

3.04 GUARANTEE PERIOD AND FINAL ACCEPTANCE

- A. All seeded areas shall be guaranteed by the Contractor for not less than one full year from the time of provisional acceptance. Contractor shall be responsible for all maintenance of seeded areas until receipt of final acceptance.
- B. At the end of the guarantee period, inspection will be made by the Engineer upon written request submitted by the Contractor at least ten days before the anticipated date. Seeded areas not demonstrating satisfactory stands as outlined above, as determined by the Engineer, shall be renovated, reseeded, and maintained meeting all requirements as specified herein.
- C. After all necessary corrective work has been completed, the Engineer shall certify in writing the final acceptance of the seeded areas.

(END OF SECTION)

**SPECIFICATIONS, PROJECT PLANS AND
CONTRACT DOCUMENTS**

VOLUME II OF II

**Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
Town of Salina, Onondaga County, New York**

February 25, 2000

Prepared for:

**The Pfaltzgraff Co.
140 East Market Street
York, Pennsylvania 17401**

Prepared by:

**REMEDIAL ENGINEERING, P.C.
and
ROUX ASSOCIATES, INC.
1377 Motor Parkway
Islandia, New York 11788**



**SPECIFICATIONS, PROJECT PLANS
AND CONTRACT DOCUMENTS**

SPECIFICATIONS

Section	Title
<u>Division 0 – Contract Requirements</u>	
00010	Invitation to Bid
00100	Instruction to Bidders
00300	Bid Form
00310	Confidentiality Agreement
00500	Agreement
00700	General Conditions
00800	Supplementary Conditions
<u>Division 1 – General Requirements</u>	
01000	Measurement and Payment
01005	Definitions
01010	Summary of Work
01050	Surveys and As-Built Drawings
01060	Regulatory Requirements
01080	Fencing and Warning Signs
01200	Project Meetings
01300	Submittals
01400	Quality Control
01510	Temporary Construction Facilities and Utilities
01517	Health and Safety Requirements
01520	Temporary Staging and Storage Requirements
01550	Access Roads

**SPECIFICATIONS, PROJECT PLANS
AND CONTRACT DOCUMENTS**

SPECIFICATIONS

Section	Title
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01562	Management of Site Water
01565	Equipment Decontamination Requirements
01700	Contract Closeout
<u>Division 2 - Site Work</u>	
02110	Clearing and Grubbing
02140	Pond Remediation
02200	Excavation
02205	Material Consolidation and Compaction
02210	Monitoring Wells and Gas Vents
02223	On-Site Fill Materials
02225	Off-Site Fill Materials
02275	Geotextiles
02277	Geosynthetic Membrane
02623	High Density Polyethylene (HDPE) Piping and Accessories
02900	Loaming, Hydroseeding and Northern Wetlands Restoration

PROJECT PLANS

Title
Citizen Participation Plan
Construction Quality Assurance Plan
Contingency Plan
Health and Safety Plan
Scope of Work for Operation and Maintenance
Sampling and Analysis Plan

MISCELLANEOUS DOCUMENTS

Title

Specific Requirements of CSX for Work On Its Right Of Way
Facility SPDES Permit
Construction Wastewater Discharge Memorandum

CITIZEN PARTICIPATION PLAN

**Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
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February 25, 2000

Prepared for:

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1.0 INTRODUCTION

This Citizen Participation Plan (CPP) has been prepared by Remedial Engineering, P.C. (Remedial Engineering) on behalf of The Pfaltzgraff Co. (Pfaltzgraff) as an element of the Final Remedial Design for the Syracuse China site (the Site) in the Town of Salina, Onondaga County, New York. The Site is located to the north of the manufacturing facility on the Syracuse China Company, as is generally defined in the March 1996 Record of Decision (ROD) as the industrial landfill, the wastewater settling ponds, and the northern wetlands between the landfill and Factory Avenue. The Final Remedial Design includes a narrative, Drawings and Specifications, and a series of project plans and other supporting information which work collectively to detail necessary information to perform the defined Remedial Action. This CPP has been prepared to describe the citizen participation activities that will be implemented as part of the Remedial Action.

This document describes the citizen participation activities that will be used to promote public understanding of Pfaltzgraff's and the NYSDEC responsibilities, planning activities, and remedial activities at the Syracuse China Landfill Site. Through citizen participation, Pfaltzgraff and the NYSDEC will receive input from the public and other interested parties in the development of a comprehensive remedial program which protects both human health and the environment. This CPP has been prepared to update the New York State's Inactive Hazardous Waste Site Citizen Participation Plan for the Site, dated August 30, 1988, which is based on the requirements of 6 NYCRR Part 375.

2.0 SITE BACKGROUND INFORMATION

The following subsections briefly summarize the background information for the Site relating to elements of this report, including Site description, facility and Site history, Site environmental characteristics and current process wastewater settling pond operations.

2.1 Site Description

The Syracuse China facility, which manufactures china, is located in a highly urbanized area in the Town of Salina, Onondaga County, New York which is located north of the City of Syracuse. The Site is located north of the facility and consists of the industrial landfill, the wastewater settling ponds, and the northern wetlands. The Site is entirely located on the Syracuse China property, south of Factory Avenue. The Site is bounded by Conrail tracks to the south, Factory Avenue to the north and undeveloped Syracuse China property to the east and west.

The Site occupies an area of approximately 21 acres while the landfill within the Site occupies an area of approximately 13.6 acres. The landfill waste primarily consists of the relatively inert materials of scrap china and gypsum molds. Other miscellaneous materials may include *refractory materials, cinders, wood, and some fiberglass insulation*. The landfill can be divided into two general areas, namely, the eastern portion and the western portion. The eastern portion of the landfill contains waste and the wastewater settling ponds. The western portion of the landfill contains waste.

Wetlands are located north, west and northeast of the landfill. The northern wetlands are the subject of proposed remedial measures and comprise approximately 7.4 acres. Other key site features include Niagara-Mohawk high-tension lines which exist in an easement running east and west along the southern limit of the Site, an Onondaga County sanitary sewer which crosses the Site in an easement running north and south through the middle of the Site along the boundary of the western portion of the landfill and the eastern portion of the landfill, a Niagara-Mohawk overhead power line which exists in an easement running east and west along the northern Site boundary, a berm which exists along the eastern Site boundary which formerly supported a railroad spur (referred to as the trolley berm), and a berm which exists along the northwest limit of the landfill (referred to as the northern berm). Additionally, an underground communications

line owned by Sprint and an Onondaga County water line exist in an easement in the Conrail right-of-way to the south of the Site (in between the Conrail tracks and the southern limit of the Site). Additionally, a Niagara-Mohawk underground natural gas line exists in an easement in the Factory Avenue right-of-way.

2.2 Facility and Site History

The Syracuse China facility was constructed in the 1920's and has been manufacturing china since that time. The Pfaltzgraff Co. purchased the Syracuse China facility in 1989, and subsequently sold the property to a subsidiary of Libbey, Inc. in 1995.

Since approximately 1940, the Site has primarily been used as an industrial landfill for disposal of scrap china and molds. During late 1988, Syracuse China contacted the NYSDEC Region 7 office regarding upgrading or closure of the landfill in response to revised regulations governing solid waste management, specifically, 6 NYCRR Part 360. Pursuant to that contact, Syracuse China performed a Preliminary Hydrogeologic Site Assessment Report (O'Brien & Gere Engineers, Inc., 1990) which was submitted to the NYSDEC. Based on these data, the NYSDEC listed the Site on the *Registry of Inactive Hazardous Waste Disposal Sites* with a classification of 2 in March 1991.

Syracuse China ceased waste disposal operations in the landfill in approximately December 1994. Pursuant to NYSDEC requirements, a Remedial Investigation was performed in 1995, and a Focused Feasibility Study was performed in 1996. Based on the results of this RI/FS, a ROD for the Site was issued by the NYSDEC in March 1996.

A public meeting was held on February 28, 1996 in Syracuse to discuss the results of the Remedial Investigation/Feasibility Study and the proposed action to be taken as outlined in the Proposed Remedial Action Plan. In March 1996, a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period.

3.0 SCOPE OF THE REMEDIAL ACTION

This section presents a brief description of the proposed remedial action. A more detailed presentation of the work to be performed is contained in the Final Remedial Design Report (Remedial Engineering, March 31, 1999).

A description of the Site remedy and a discussion of the project schedule are included in the following subsections.

3.1 Description of Site Remedy

Based on the results of the Site Remedial Investigation and the Focused Feasibility Study, the NYSDEC selected excavation and consolidation of landfill waste and northern wetland soil into the western landfill area, and capping of the landfill consistent with the requirement of Title 6 of the Official Compilation of New York State Codes, Rules and Regulations (6 NYCRR) Part 360 as the Site remedy. The Site remedy includes the following specific components.

- Excavation and consolidation of landfill waste and wastewater settling pond sludges currently located beyond the proposed cap boundary beneath the proposed cap.
- Excavation and consolidation under the cap of a portion of the landfill to restore the Class 2 wetlands to its original condition prior to encroachment by the landfill.
- Excavation and consolidation of northern wetland soils beneath the cap. Remediated wetland areas will be covered with a layer of topsoil with the appropriate organic content and the wetlands areas will be revegetated to control erosion.
- Installation of a multi-layer, impermeable cap, consistent with the applicable requirements of 6 NYCRR Part 360. The cap will be designed so that no additional encroachment on the wetland will result.
- Reconstruction of settling ponds as necessary to maintain the current wastewater discharge in accordance with State Pollutant Discharge Elimination System (SPDES) permit conditions.
- Development of a long-term monitoring program which will allow the effectiveness of the implemented remedy to be monitored as part of operations and maintenance activities for the Site.

3.2 Project Schedule

The current project schedule includes the following key milestone dates and other activities:

- December 31, 1999 – issuance of consent order;
- June 1, 1999 – mobilize for construction; and
- November 30, 1999 – complete construction.

4.0 DESCRIPTION OF CITIZEN PARTICIPATION ACTIVITIES

This section describes the specific citizen participation activities that will be performed during the Remedial Action for the Site. The objective of the activities will be to foster a spirit of mutual trust between the public, the Pfaltzgraff Company and involved governmental agencies.

The activities described in this section are designed to verify that:

- pertinent documents will be readily available to the public;
- information notices are mailed out and/or made accessible to the public, as necessary; and
- interested parties are identified and suitably notified.

4.1 Document Repository

A Site document repository was established during the RI/FS process at the Salina Free Library, 100 Belmont Street, Mattydale, New York 13211. In order to make additional pertinent documents readily available to the public, the *Final Remedial Design* will also be added to the repository.

At the completion of the construction activities, a Final Remedial Program Report will be developed which will summarize Site activities and allow closure of the Site. The Report will also be submitted to the document repository. The documents will be available for review during normal working hours of the library, and the public will be made aware of their availability. At the appropriate time, throughout the project, those on the contact list will be notified of the documents placed in the repositories.

4.2 Contact List

To facilitate communication effectively with those interested in the remediation, a contact list has been developed. The Contact List includes the following:

- Federal Elected Officials;
- State Elected Officials;
- Onondaga County Officials;
- Local newspapers;
- NYSDEC contacts; and

- Local agencies and groups (including civic and environmental) with potential interest in activities at the Site.

The contact list will be used to notify the individuals on the list of the availability of documents placed in the repositories, upcoming public meetings and other relevant notices.

These project contacts have been updated from our contact list developed in the previous CPP and is included in Section 5.0.

4.3 Fact Sheets

Two fact sheets will be issued by NYSDEC. One fact sheet will announce the approval of the design and a second fact sheet will announce the substantial completion of construction. The fact sheets will be mailed to those individuals on the contact list. It is not anticipated that a public meeting will be required prior to initiating the remedial action.

5.0 PROJECT CONTACTS.

This section contains the names, addresses and telephone numbers of project contacts.

Federal Elected Officials

Honorable Charles Schumer (202) 224-6542
U.S. Senator
520 Hart Senate Office Building
Washington, DC 20510

Honorable Daniel Patrick Moynihan (202) 224-4451
U.S. Senator
464 Russell Senate Office Building
Washington, DC 20510

State Office: (315) 423-5471
1259 Federal Building
Post Office Box 7216
Syracuse, New York 13261

Honorable James Walsh (202) 225-7896
U.S. Representative
1330 Longworth House Office Building
Washington, DC 10515

District Office: (315) 423-5657
100 S. Clinton Street
Post Office Box 7306
Syracuse, New York 13261

State Elected Officials

Honorable George E. Pataki (518) 474-8218
Governor, State of New York
State Capitol
Albany, New York 12224

Honorable Nancy Lorriane Hoffman (518) 455-2800
NYS Senator
606 Legislative Office Building
Albany, New York 12248

Honorable Michael J. Bragman (518) 455-4567
New York State Assemblyman
830 Legislative Office Building
Albany, New York 12248

District Office: (315) 435-3312
305 South Main Street
North Syracuse, New York 13212

Onondaga County Officials

Nicholas Pirro (315) 435-3516
Onondaga County Executive
County Office Building
421 Montgomery Street
Syracuse, New York 13202

Executive Director (315) 435-2640
Onondaga County Environmental Management
Council
County Office Building
421 Montgomery Street
Syracuse, New York 13202

Dr. Lloyd Novick (315) 435-3252
Commissioner
Onondaga County Health Department
County Office Building
421 Montgomery Street
Syracuse, New York 13202

Newspapers

The Syracuse Newspapers (315) 470-0011
Post Office Box 4915
Syracuse, New York 13221-4915

Citizens and Other Interested Parties

Town of Salina Conservation Council
Conservation Secretary
444 Delmar Avenue
Syracuse, New York 13208

New York State Department of Environmental Conservation Contacts

Susan Miller (315) 426-7400
Citizen Participation Specialist
NYS Department of Environmental Conservation,
Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2400

Wayne Mizerak
Project Manager (518) 457-5861
Division of Hazardous Waste Remediation
NYS Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

Robert Schick
Branch Chief (518) 357-2234
Division of Environmental Enforcement
NYS Department of Environmental Conservation
1150 North Wescott Road
Schenectady, New York 12306

SUGGESTED DOCUMENT REPOSITORY LOCATION

Liverpool Public Library (315) 457-0310
310 Tulip Street
Liverpool, New York 13088/130990

or

Salina Free Library (315) 454-4524
100 Belmont Street
Mattydale, New York 13211

**CONSTRUCTION
QUALITY ASSURANCE PLAN**

**Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
Town of Salina, Onondaga County, New York**

February 25, 2000

Prepared for:

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- 4C. Construction Quality Assurance Methods for HDPE Piping Materials. Pfaltzgraff Co.; Syracuse, New York.
- 5A. Source Quality Assurance Methods for Site Water. Pfaltzgraff Co.; Syracuse, New York.
- 5B. Conformance Quality Assurance Methods for Site Water. Pfaltzgraff Co.; Syracuse, New York.
- 5C. Construction Quality Assurance Methods for Site Water. Pfaltzgraff Co.; Syracuse, New York.
- 6A. Source Quality Assurance Methods for Excavation and Remediation. Pfaltzgraff Co.; Syracuse, New York.
- 6B. Conformance Quality Assurance Methods for Excavation and Remediation. Pfaltzgraff Co.; Syracuse, New York.
- 6C. Construction Quality Assurance Methods for Excavation and Remediation. Pfaltzgraff Co.; Syracuse, New York.
- 7. Abbreviations Used in Tables 1A through 6C. Pfaltzgraff Co.; Syracuse, New York.

FIGURE

- 1. Project Organization Chart

1.0 INTRODUCTION

This Construction Quality Assurance Plan (CQAP) has been prepared by Remedial Engineering P.C. (Remedial Engineering) on behalf of the Pfaltzgraff Co. (Pfaltzgraff), as an element of the Final Remedial Design for the Syracuse China Site (the Site) in the Town of Salina, Onondaga County, New York. The Site is located to the north of the manufacturing facility on the Syracuse China Company property, and is generally defined in the March 1996 Record of Decision (ROD) as the industrial landfill, the wastewater settling ponds, and the northern wetlands between the landfill and Factory Avenue. A complete Site description can be found in the Final Remedial Design Report (Remedial Engineering, March 1998). The Final Remedial Design includes a narrative, Drawings and Specifications, and a series of project plans and other supporting information which work collectively to detail information necessary to perform the Remedial Action. This CQAP describes the approach to quality assurance requirements for the Remedial Action. *Due to the nature of these requirements, this CQAP must be used integrally with the Final Remedial Design and must be specifically coordinated with the Specifications, the Contingency Plan (CP), the Health and Safety Plan (HASP) and the Sampling and Analysis Plan (SAP).*

This CQAP has been developed in accordance with Title 6 of the Official Compilation of New York State Codes, Rules and Regulations (6 NYCRR) Part 360-2.8, "Construction Quality Assurance/Quality Control Plan," and the United States Environmental Protection Agency's "Remedial Design/Remedial Action Handbook" (June, 1995).

This CQAP describes the approach to quality assurance for the proposed Remedial Action including product and material manufacturing, field activities, and laboratory analysis. The quality assurance goals are twofold:

1. To verify that construction activities are implemented in accordance with quality assurance measures required by the ROD, and the Final Remedial Design. These measures include, but are not limited to:
 - the use of appropriate construction practices, means and methods;
 - the use of materials of construction as required by the Specifications and Drawings;
 - the use of specified or approved testing methods to verify that earthwork activities are performed and/or installed as required by the Final Remedial Design;

- the use of specified or approved sampling and analytical methods and procedures, and quality assurance protocols, as required by the Final Remedial Design; and
 - the preparation of documentation to track and verify that activities related to the Remedial Action were conducted in accordance with the Final Remedial Design.
2. To verify that Site activities are implemented safely, in accordance with the ROD, and the Final Remedial Design. These activities include, but are not limited to:
- the implementation of appropriate Occupational Safety and Health Act (OSHA) requirements during the Remedial Action;
 - the implementation of applicable federal, state, local and facility requirements when personnel are working on-Site in areas of potential exposure to the chemical of concern; and
 - the execution of proper Site-specific health and safety measures to prevent the injury of individuals at or near the Site who are not directly involved with the construction activities being conducted.

In accordance with 6 NYCRR Part 360-2.8 and 6 NYCRR Part 360-2.10(a), the following quality assurance objectives will be addressed: personnel responsibilities, authorities and qualifications; inspection and testing activities; damaged construction materials and equipment; malfunctioning or unavailable equipment; unavailability of approved construction materials and subcontractors; dust control; sampling strategies; and documentation requirements.

Personnel responsibilities, authorities, and qualifications are discussed in Section 2.0, inspection and testing activities are discussed in Section 3.0. Damaged construction materials and equipment are discussed in Section 4.0. Malfunctioning or unavailable equipment is discussed in Section 5.0. Unavailability of approved construction materials and subcontractors are discussed in Section 6.0.

Sampling strategies for chemical analysis are addressed in the SAP. Dust control is discussed in the specifications and the HASP. Documentation requirements are discussed in Section 7.0.

2.0 PROJECT PERSONNEL RESPONSIBILITIES, AUTHORITIES, AND QUALIFICATIONS

Personnel involved in implementation of the Remedial Action will include Pfaltzgraff, a Remedial Contractor to perform construction, and the Engineer to coordinate during construction quality assurance activities and to certify that provisions of the Final Remedial Design are enforced. The organization chart depicting the relationship between Pfaltzgraff, the Contractor and the Engineer is shown on Figure 1.

The responsibilities, authorities, and qualifications of the Owner, the Engineer, and the Contractor are discussed in the following subsections.

2.1 Owner

Pfaltzgraff maintains the responsibility to satisfy the requirements of the ROD in part by performing the Remedial Action. Pfaltzgraff will contract the Engineer and Contractor to perform their respective responsibilities for the Remedial Action. Pfaltzgraff maintains the authority over the Engineer and Contractor and will direct both to conform to the Final Remedial Design. Pfaltzgraff will provide information, as necessary, for NYSDEC with assistance from the Engineer.

2.2 Engineer

The Certifying Engineer will be primarily responsible for verifying compliance with the Final Remedial Design. The Engineer will not have control of, and will not be responsible for, Contractor's construction means, methods, sequences, or safety precautions and programs in connection with the work, for the omissions of the Contractor, or for the failure of the Contractor to carry out work in accordance with the Remedial Design documents. The Quality Assurance/Quality Control (QA/QC) Engineer is expected to be onsite full time during construction activities and will have the responsibility to observe and document quality assurance activities. The QA/QC Engineer will be responsible to report to the Certifying Engineer deviations from the Final Remedial Design by the Contractor, of which the Engineer becomes aware

Pfaltzgraff will maintain the authority to direct correct measures to rectify deviations and may utilize the Engineer to provide input. The Engineer will have the authority to stop work in either the event of a health and safety deviation potentially jeopardizing personnel or the environment or in the event major deviations are occurring in order to allow Pfaltzgraff to be advised and respond to the events.

Responsibilities of the QA/QC Engineer will include:

- observing Contractor's work to determine if the work is proceeding in accordance with the requirements of the Remedial Design documents;
- maintaining construction documentation files;
- reviewing shop drawings and other submittals to verify that materials and equipment to be provided by the Contractor meet the requirements of the Final Remedial Design documents and to determine the suitability of substitute materials proposed by the Contractor;
- maintaining a daily log;
- performing regular visual inspections and evaluations of all incoming materials/products to determine general conformance with the Contract Documents and material property requirements;
- reviewing laboratory data from test samples;
- monitoring and documenting in the installation of all work required by the Contract Documents;
- developing a photographic record of key components of the Work, and log field and test data onto the appropriate field data forms;
- identifying all problems during the Work, and bring them to the attention to the Certifying Engineer; and
- preparing daily logs of QA/QC work performed.

The Engineer will also have the responsibility to certify that the project was completed in accordance with the Final Remedial Design. The responsibility will be performed by the Engineer's *Certifying Engineer*. During construction, the *Certifying Engineer* will review information and documentation provided by the QA/QC Engineer. The *Certifying Engineer* may make periodic visits to the Site and will notify Pfaltzgraff of deviations to the Final Remedial

Design. The Certifying Engineer will be advised of correct measures to address deviations. At the completion of the construction, the Certifying Engineer will review and certify the Final Remedial Program Report.

Qualifications for the Certifying Engineer and the QA/QC Engineer are described below. Professional profiles of the Engineer's staff will be submitted to the NYSDEC prior to initiation of the Remedial Action. If the need arises for additional personnel to be added to perform the work, Pfaltzgraff will supplement the field staff as needed. The Engineer will notify the NYSDEC if it becomes necessary to change personnel.

The Certifying Engineer will have a Bachelors Degree in engineering and will be a New York State-registered professional engineer with a minimum of twelve years of experience in the field.

The QA/QC Engineer will have a Bachelors Degree in engineering and will have at least 5 years of experience in environmental engineering projects and construction management QA/QC activities.

2.3 Contractor

The Contractor will be responsible for performing the Remedial Action in accordance with the Final Remedial Design. The Contractor will be thoroughly familiar with methods of handling non-hazardous and hazardous soils and other materials, and will be familiar with and capable of complying with all federal, state and local regulatory requirements. The Contractor will conduct its operations in a safe manner, and will maintain work practices to minimize risk to personnel working on, or near, the Site.

The Contractor is responsible for the overall direction of the construction of the Remedial Design and is responsible for verifying that the finished work complies accurately and completely with the Final Remedial Design documents. The responsibilities of the Contractor generally include interaction with Pfaltzgraff and the Engineer, and overseeing the construction activities, schedule and budget maintenance. The Contractor will also be responsible for the contracting of an

independent engineer to perform the Contractor's QA/QC activities. Further, the Contractor will be responsible for full-time supervision of health and safety requirements, and for the oversight of its subcontractors, including material installers.

The Contractor will be required to submit to Pfaltzgraff proposed project personnel and qualifications, including but not limited to the independent Contractor's QA/QC engineer, for review and approval prior to initiation of construction activities. Pfaltzgraff and the Engineer will determine if the work force proposed by the Contractor is acceptable to perform the work,

3.0 INSPECTION AND TESTING ACTIVITIES

In accordance with the Final Remedial Design, quality assurance inspections and tests are required to be performed by the Contractor during the Remedial Action to verify the quality of the construction activities. The Drawings depict the required Work. The Specifications serve to detail the required Work and identify which Work activities require quality assurance testing consistent with this CQAP. A summary of the quality assurance requirements for each activity is provided in the following subsections. Tables 1 through 7 detail the necessary QA testing and inspections, including test methods, inspection methods, frequency, and test criteria.

3.1 Management of Site Waters

As stated in the Specifications, all construction-related site water will be treated as necessary, and sampled in accordance with the SAP. The results of the testing required by the SAP shall then be submitted to the Engineer for quality assurance review in accordance with Table 5.

3.2 Pond Sludge Remediation

As stated in the Specifications, excavation of sludge shall be performed. A confirmatory sampling program must be completed to verify the vertical limits of excavation. The following confirmatory sampling program shall be performed by the Contractor, as observed by the Engineer.

1. The Contractor shall remediate the ponds to the depths shown on the drawings and detailed in the Specifications.
2. Each pond excavation shall then be inspected visually at the frequency specified in Table 1.
3. If sludges are still observed, the appropriate areas shall be excavated six additional inches deep and additional areas shall be excavated and inspected, as appropriate.
4. When inspection of all excavations visually indicates that sludges have been removed, the excavation will no longer be continued in the remediated areas.
5. Once the excavation has been completed, the excavated area shall be sampled and analyzed for the presence of lead at the frequency specified in Table 6C.

In addition, quality assurance testing is required to verify that the wastewater treatment pond sludges have been sufficiently dewatered prior to their placement beneath the landfill cap in accordance with the requirements of Table 6.

In addition, quality assurance testing is required to verify that the wastewater treatment pond sludges have been sufficiently dewatered prior to their placement beneath the landfill cap in accordance with the requirements of Table 6.

3.3 Eastern Portion Soil Excavation

As stated in the Specifications, the excavation of soils in the eastern portion shall be performed. A confirmatory sampling program must be completed to verify the vertical limits of excavation. The following confirmatory sampling program shall be performed by the Contractor as observed by the Engineer.

1. The Contractor shall excavate the waste to the visual limits of China.
2. The Contractor shall excavate the hole with a hand shovel or auger at the frequency specified in Table 6 to a depth of six inches.
3. Each hole shall be inspected to visually verify that waste and white materials (landfill residuals) have been removed.
4. When inspection of the holes visually indicates that waste and residuals have been removed, the eastern portion area will be excavated an additional six inches as a factor of safety.
5. Once the excavation has been completed, the excavated area shall be sampled and analyzed for the presence of lead at the frequency specified in Table 6C.

3.4 Fill Materials

Quality assurance testing of waste materials, native subgrade soils, wetland soils and off-site fill materials shall be performed in accordance with the requirements of Table 1.

3.5 Geosynthetic Membrane

Quality assurance testing performed in the field under the supervision of the Contractor's Independent QA/QC Engineer must assure conformity of the geosynthetic installation with the Drawings and Specifications submitted in accordance with the following requirements.

1. During the construction phase, for each lot number of geomembrane material that arrives at the site, a sample should be taken for fingerprinting of the material. This sample should be archived at room temperature and in a light-free environment for possible future testing and analysis. The geosynthetic material must be visually inspected for uniformity, damage, and imperfections. The geomembrane must be inspected for tears, punctures, or blisters. Any imperfections must be immediately repaired and re-inspected.
2. The Independent QA/QC Engineer must certify that test seams are made at each start of work for each seaming crew, after every four hours of continuous seaming, every time seaming equipment is changed, when significant changes in geomembrane temperature are observed, or as additionally required in the approved Specifications.
3. All field seams must be nondestructively tested in accordance with the procedures listed below and in accordance with the manufacturer's printed installation instructions. The Independent QA/QC Engineer must:
 - a. monitor all nondestructive testing;
 - b. record the location, date, test unit number, name of tester, and results of all testing;
 - c. inform the installer of any required repairs; and
 - d. assure all seams are overlaid which cannot be nondestructively tested with the same geomembrane. The seaming and patching operation must be inspected by the Independent QA/QC Engineer for uniformity and completeness.
4. Destructive testing must be performed on the geomembrane liner seam sections in accordance with the requirements listed below, in Table 2 and in accordance with the manufacturer's printed installation instructions.
 - a. Seam sample test locations must be appropriately documented; additional test locations may be determined during seaming at the Engineer's discretion.
 - b. The Independent QA/QC Engineer must approve the sample size to be taken. The sample size must be large enough to perform the required testing.
 - c. An independent laboratory acceptable to the Engineer must perform the required testing.
 - d. If a sample fails destructive testing, the Independent QA/QC Engineer must insure that: the seam is reconstructed in each direction between the location of the sample that failed and the location of the next acceptable sample; or the welding path is retraced to intermediate locations at least 10 feet in each direction from the location of the sample which failed the test, and a second sample is taken for an additional field test. If this second sample passes, the seam must be reconstructed between the

location of the second test and the original sample location. If the second sample fails, this process must be repeated.

- e. All acceptable seams must lie between two locations where samples passed the test procedures described above and include one test location along the reconstructed seam.
5. Upon completion of geomembrane seaming, post-construction care of the installed geomembrane should commence and, at a minimum, include timely covering or temporary weighting using sandbags to prevent damage from wind uplift, construction, or other weather related damage.

Trial seams shall be performed as follows:

1. Trial seams shall be made on fragment pieces of geosynthetic membrane to verify that seaming conditions are adequate. Such trial seams shall be made at the beginning of each seaming period, and at least once every four (4) hours. Also, each seamer shall make at least one trial seam each day.
2. The trial seam sample shall be at least three (3) feet long by one (1) foot wide (after seaming) with the seam centered lengthwise. Seam overlap shall be as indicated in the Specifications.
3. Two adjoining specimens, each one (1) inch wide, shall be cut from the trial seam, tested in shear and peel, and shall not fail in the seam. If a specimen fails, the entire operation shall be repeated. If the additional specimen fails, the seaming apparatus (and seamer, if appropriate) shall not be accepted and shall not be used for seaming until the deficiencies are corrected and two consecutive successful trial seams are achieved.
4. The remainder of the successful trial seam sample shall be cut into two pieces, one to be given to the Installer, and one to be given to the Engineer for possible testing by the Geosynthetic Quality Assurance Laboratory (GQAL).
5. If a trial seam sample fails a test conducted by the GQAL, then a destructive test seam sample shall be taken from each of the seams completed by the seamer during the shift related to the failed seam test. These samples shall be forwarded to the GQAL and, if they fail the tests, the Installer shall reconstruct the seam between the nearest passed location on each side of the failed portion.

A summary of the quality assurance requirements for geosynthetic membrane is provided in Table 2.

3.6 Piping Installed

Corrugated piping used for the collection of water from surface runoff and subsurface drainage shall be tested in accordance with Table 4.

3.7 Topsoil, Soil Supplement and Seed Installation

The new topsoil shall be tested in accordance with Table 3 to determine the necessary soil supplements for optimizing Site revegetation. The topsoil shall be of good quality and approved by the Engineer. The additional topsoil shall conform with the following.

1. Be relatively free from subsoil or slag, stones larger than 1 inch in diameter, lumps, plants or their roots, sticks, clay, peat or other extraneous matter. It shall be a loamy mixture having at least 95 percent passing the No. 10 sieve.
2. It shall not be in a frozen or muddy condition.
3. It shall contain not less than 3 percent or more than 10 percent organic matter as determined by the test for organic matter.
4. It shall contain not less than 5 percent or more than 25 percent clay.
5. The pH shall be between 6.0 and 7.0.

In addition, the Engineer will grant approval for Site restoration activities in accordance with the requirements of Table 3. The inspections will determine whether maintenance shall continue in any area or manner.

4.0 DAMAGED CONSTRUCTION MATERIALS AND EQUIPMENT

The Contractor is responsible for all construction materials and equipment. The Contractor will take necessary measures to transport, receive, and store materials and equipment by means and methods which protect the materials and equipment. Should the materials or equipment become damaged, the Contractor will replace or repair any damaged materials in accordance with the Specifications and this CQAP at the Owner's direction. The Owner may choose to provide new materials, at the cost of the Contractor, at the Owner's discretion.

5.0 MALFUNCTIONING OR UNAVAILABLE EQUIPMENT

In order to perform the Remedial Action a variety of equipment will be necessary such as earth-moving equipment, geomembrane handling/seaming equipment, and various hand tasks. The Contractor is required to provide the necessary equipment in a timely fashion and properly store and maintain all equipment. If any of the equipment necessary to perform the Work malfunctions, the Contractor shall repair or replace the malfunctioning equipment in a timely manner so as to not cause delays. The Contractor will provide additional sources of backup equipment necessary to perform the Work in case of an unforeseen equipment malfunction.

6.0 UNAVAILABILITY OF MATERIALS AND SUBCONTRACTORS

In order to perform the Remedial Action a variety of materials will be used such as crushed stone, rip rap, common fill, geomembrane, geotextile, etc. The Contractor is required to provide the necessary materials in a timely fashion and properly store and maintain all materials. If any of these materials do not meet the requirements of this CQAP or are unavailable, the Contractor shall furnish or replace these materials in a timely manner so as to not cause delays. The Contractor will provide additional sources of backup materials necessary to perform the Work in case of unforeseen unavailabilities of materials.

7.0 PREPARATION OF DOCUMENTATION

This section identifies both records which will be collected and maintained during construction activities and the related documentation which will be prepared and submitted to the NYSDEC. The records will describe essential work elements such as methods of construction, daily activities and the quality and quantity of materials handled, and the work performed. The specific types of records which will be prepared and/or maintained and the related documentation submitted to the NYSDEC include the following:

- submittal log;
- daily logs;
- material delivery records;
- survey records;
- progress reports;
- emergency response notification; and
- Final Remedial Program Report.

These items are discussed in the following subsections. The Contractor will prepare logs, submitted logs, material delivery records, survey records, and progress reports and submit them to the Engineer. The notification and the Final Remedial Program Report will be prepared by the Engineer. Records will be available onsite for review by the NYSDEC during Remedial Actions.

7.1 Submittal Log

A submittal log will be established and maintained by the Contractor at the commencement of the project using a spreadsheet format, and will be available for review at the Site. The Engineer will have the responsibility of performing and coordinating the review of all submittals. The Engineer will review the submittal log at the commencement of the project and weekly, throughout construction activities and will receive, log, review, and distribute all contractor submittals required by the Specifications.

7.2 Daily Logs

The daily log will be established and maintained by the Engineer and will include the following information:

- conditions at the Site;
- a list of all personnel at the Site, including employees of the Contractor, subcontractors, Engineer, and the NYSDEC;
- a list of visitors to the Site;
- all equipment on-Site and equipment used that day;
- all materials or equipment delivered to the Site;
- references to and documentation of surveys and field tests made that day;
- instructions given to the Contractor;
- summary of work performed by the Contractor;
- approximate quantities of pay items (e.g., volume of excavated materials);
- identification of any materials or work which does not conform to requirements of the Final Remedial Design;
- unusual occurrences, accidents and other events that have an impact on the performance of the work;
- field problems encountered and resolution;
- results of follow-up inspections of previously reported deficiencies; and
- summary of upcoming schedule of work to be performed by the Contractor.

The daily logs will be completed each work day and will be kept in the field office/trailer and will be available for review by the NYSDEC at the Site. At the completion of the construction phase, the logs will be incorporated into the project files.

7.3 Material Delivery Records

The Contractor will be required to maintain copies of material delivery records for all materials delivered to the Site. The Contractor will maintain a file of these records, which will be reviewed regularly by the Engineer. If the Specifications require that the material undergo supplier testing, the Contractor will be required to submit this certification to the Engineer for review before the materials are delivered to the Site.

7.4 Survey Records

Use of a New York State-licensed surveyor will verify that the Contractor has conducted all work items to the limits established on the Drawings, and will be used to determine Contractor payment quantities and final limits for certain portions of the Contractor's work. All surveys will be the responsibility of the Contractor, who will be required to submit this information at specified periods throughout the project and on the record drawings to be submitted at the end of the project.

7.5 Progress Reports

Written progress reports to the Engineer will be submitted on a monthly basis by the Contractor during construction activities. The monthly progress reports include:

- progress toward achieving completion of remediation;
- sampling and other data received or generated during the reporting period;
- required deliverables submitted during the reporting period;
- actions planned for the next reporting period;
- percentage of work completed;
- any delays; and
- modifications to the Remedial Design documents.

7.6 Emergency Response Notification

Certain events which may occur at the Site during construction of the Final Remedial Design necessitate verbal and written emergency response notification and will be reported to the NYSDEC. Refer to the Health and Safety Plan for further information.

7.7 Final Remedial Program Report

Following completion of construction of the Final Remedial Design, a Final Remedial Program Report will be prepared by the Engineer and submitted to the NYSDEC. The purpose of this report is to document the activities that occurred during the implementation of the Remedial Action. Key elements of the report that will be included are:

- summary of construction activities;
- construction quality control activities;
- certification by a New York State-registered Professional Engineer that the remedy has been performed in accordance with the ROD;
- monthly progress reports;
- minutes of project progress meetings;
- key project memoranda;
- results of sampling activities performed during the construction; and
- as-built drawings.

As-built drawings will be signed and stamped by a New York State-registered Professional Engineer. They will contain all recorded construction information and will reflect changes to the final Specifications and Drawings that were made to respond to the actual field conditions, or other modifications which were made during the remediation phase of the project.

Table 1A. Source Quality Assurance Methods for Fill Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
<i>Imported Fill Materials</i>							
Drainage Layer Sand							
Section 02225	Clean Fill	Clean fill certification from the source	Review clean fill certification	One certification per fill source	Engineer will review certification	Source cannot produce a clean fill certification	Alternative source must be located which can produce certification
Barrier Protection Layer Fill							
Section 02225	Clean Fill	Clean fill certification from the source	Review clean fill certification	One certification per fill source	Engineer will review certification	Source cannot produce a clean fill certification	Alternative source must be located which can produce certification
Crushed Stone							
Section 02225	Clean Fill	Clean fill certification from the source	Review clean fill certification	One certification per fill source	Engineer will review certification	Source cannot produce a clean fill certification	Alternative source must be located which can produce certification
Pea Gravel							
Section 02225	Clean Fill	Clean fill certification from the source	Review clean fill certification	One certification per fill source	Engineer will review certification	Source cannot produce a clean fill certification	Alternative source must be located which can produce certification
<i>On-Site Fill Materials</i>							
Eastern Portion Subgrade Soil							
Section 02223	NA	NA	NA	NA	NA	NA	NA
Northern Wetland Soils							
Section 02223	NA	NA	NA	NA	NA	NA	NA

Table 1B. Conformance Quality Assurance Methods for Fill Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Imported Fill Materials							
Drainage Layer Sand							
Section 02225	Sieve	ASTM D422	Review laboratory	1 per 2,500 cy	Contractor shall have test performed by independent certified lab.	Sand does not meet Specification requirements.	Alternative source of sand must be located and tests performed again.
	Proctor	ASTM D698	test data	1 per 5,000 cy			
	Permeability	ASTM D2434		1 per 5,000 cy			
	Chemical analysis	See SAP	Review laboratory	1 per 5,000 cy			
			test data				
Barrier Protection Layer Fill							
Section 02225	Sieve/Hydrometer	ASTM D422	Review laboratory	1 per 2,500 cy	Contractor shall have test performed by independent certified lab.	Fill does not meet Specification requirements.	Alternative source of fill must be located and tests performed again.
	Proctor	ASTM D698		1 per 5,000 cy			
	Permeability	ASTM D5084		1 per 5,000 cy			
	Chemical analysis	See SAP	Review laboratory	1 per 5,000 cy			
			test data				
Crushed Stone							
Section 02225	Sieve	ASTM D422	Review laboratory	1 per 2,500 cy (min. one test)	Contractor shall have test performed by independent certified lab.	Crushed stone does not meet specification requirements.	Alternative source of crushed stone must be located and tests performed again.
Pea Gravel							
Section 02225	Sieve	ASTM D422	Review Laboratory	1 per 2,500 cy (min. one test)	Contractor shall have test performed by independent certified lab.	Pea gravel does not meet specification requirements	Alternative source of pea gravel must be located and test performed again
On-Site Fill Materials							
Eastern Portion Subgrade Soil							
Section 02223	Proctor	ASTM D698	NA	1 test for relocated soils	Contractor shall have test performed by independent certified lab.	NA	NA
Northern Wetland Soils							

Table 1B. Conformance Quality Assurance Methods for Fill Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Section 02223	Proctor	ASTM D698	NA	3 tests for relocated soils	Contractor shall have test performed by independent certified lab.	NA	NA
Blended Fill Materials Sections 02205, 02223, 02225	Proctor	ASTM D698	NA	1 test for blended soils	Contractor shall have test performed by independent certified lab.	NA	NA

Table 1C. Construction Quality Assurance Methods for Fill Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
<i>Imported Fill Materials</i>							
Drainage Layer Sand							
Section 02225	In-Place Field Density	Nuclear Density Testing ASTM D 2922/D 3017	Review Results	1 test per 6-inch lift per 1/2 acre	Contractor shall have test performed by person certified to use a nuclear density gauge	Does not meet requirements in Specifications	Fill must be replaced, dried, misted or re-compacted as directed by Engineer
Barrier Protection Layer Fill							
Section 02225	In-Place Field Density	Nuclear Density Testing ASTM D 2922/D 3017	Review Results	1 test per 6-inch lift per 1/2 acre	Contractor shall have test performed by person certified to use a nuclear density gauge	Does not meet requirements in Specifications	Fill must be replaced, dried, misted or re-compacted as directed by Engineer
<i>On-Site Fill Materials</i>							
Eastern Portion Subgrade Soil							
Section 02223	In-Place Field Density	Nuclear Density Testing ASTM D 2922/D 3017	Review Results	1 test per 6-inch lift per 1/2 acre	Contractor shall have test performed by person certified to use a nuclear density gauge	Does not meet requirements in Specifications	Fill must be replaced, dried, misted or re-compacted as directed by Engineer
Northern Wetland Soils							
Section 02223	In-Place Field Density	Nuclear Density Testing ASTM D 2922/D 3017	Review Results	1 test per 6-inch lift per 1/2 acre	Contractor shall have test performed by person certified to use a nuclear density gauge	Does not meet requirements in Specifications	Fill must be replaced, dried, misted or re-compacted as directed by Engineer
	General Condition	Visual observation for excessive moisture or pumping		NA	Engineer	Engineer determines material unsuitable	

See Table 7 for explanation of abbreviations.

Table 2A. Source Quality Assurance Methods for Geosynthetic Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Geomembrane							
Section 02277	Thickness	ASTM D 5994	Review factory certification	Not less than 1 per 50,000 sf	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Carbon Black Content	ASTM D 4218 or ASTM D 1603	Review factory certification	Not less than 1 per 50,000 sf	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Carbon Black Dispersion (rating)	ASTM D 5596 or ASTM D 3015	Review factory certification	Not less than 1 per 50,000 sf	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Tensile Strength at Break	ASTM D 638	Review factory certification	Not less than 1 per 50,000 sf	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Elongation at Break	ASTM D 638	Review factory certification	Not less than 1 per 50,000 sf	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Puncture Resistance	ASTM D 4833	Review factory certification	Not less than 1 per 50,000 sf	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Tear Resistance Initiation	ASTM D 1004	Review factory certification	Not less than 1 per 50,000 sf	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Dimension Stability (each direction)	ASTM D 1204	Review factory certification	1 per resin lot	Manufacturer	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided

Table 2A. Source Quality Assurance Methods for Geosynthetic Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
10-Ounce Non-Woven Geotextile							
Section 02275	Polymer Composition	NA	Review factory certification	1 per lot	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Construction	NA	Review factory certification	1 per lot	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Grab Strength	ASTM D 4632	Review factory certification	1 per lot	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Tear Strength	ASTM D 4533	Review factory certification	1 per lot	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Puncture Strength	ASTM D 4833	Review factory certification	1 per lot	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Burst Strength	ASTM D 4786	Review factory certification	1 per lot	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Mass per Unit Area	ASTM D 3776	Review factory certification	1 per lot	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Apparent Opening Size	ASTM D 4751	Review factory certification	Not less than 1 per 100,000 sf	Manufacturer	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided

Table 2B. Conformance Quality Assurance Methods for Geosynthetic Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Geomembrane							
Section 02277	Thickness	ASTM D 5994	Review results	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Tensile Strength at Break	ASTM D 638	Review results	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Elongation at Break	ASTM D 638	Review results	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Carbon Black Content	ASTM D 4218 or ASTM D 1603	Review results	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Carbon Black Dispersion (rating)	ASTM D 5596 or ASTM D 3015	Review results	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geomembrane located and proper certification provided
	Interface Friction for Textured LLDPE/Sand	GRI-GS6 or ASTM D 5321	Review results	1 per design requirements	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	NA
	Finger Print	DSC and TGA	Review results	1 required if requested by NYSDEC- Archive Sample	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	NA

Table 2B. Conformance Quality Assurance Methods for Geosynthetic Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
10-Ounce Non-Woven Geotextile (Geomembrane Cushion Layer Only)							
Section 02275	Grab Strength	ASTM D 4632	Review factory certification	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Tear Strength	ASTM D 4533	Review factory certification	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Puncture Strength	ASTM D 4833	Review factory certification	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Burst Strength	ASTM D 4786	Review factory certification	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Mass per Unit Area	ASTM D 3776	Review factory certification	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located and proper certification provided
	Apparent Opening Size	ASTM D 4751	Review factory certification	Not less than 1 per 100,000 sf	Contractor shall have test performed by certified lab	Geotextile does not meet Specification requirements	Manufacturer must provide a new lot which meets Specifications or an alternative source for geotextile located
	Interface Friction for 10-oz Non-Woven Geotextile/Northern wetland soils	GRI-GS6 or ASTM D 5321	Review results	1 per design requirements	Contractor shall have test performed by certified lab	Geomembrane does not meet Specification requirements	NA

Table 2C. Construction Quality Assurance Methods for Geosynthetic Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Geomembrane							
Section 02277	Thickness	NA	Review results	1 per 500 feet max, minimum 1 per machine per day	Geomembrane Installer	Geomembrane does not meet Specification requirements	Manufacturer must provide new lots of Geomembrane which meet Specifications or Installer must re-install as applicable
	Bonded Shear Strength	ASTM D-4437	Review results	1 per 500 feet max, minimum 1 per machine per day	Geomembrane Installer	Geomembrane does not meet Specification requirements	Manufacturer must provide new lots of Geomembrane which meet Specifications or Installer must re-install as applicable
	Peel Adhesion/ Separation	ASTM D-4437	Review results	1 per 500 feet max, minimum 1 per machine per day	Geomembrane Installer	Geomembrane does not meet Specification requirements	Manufacturer must provide new lots of Geomembrane which meet Specifications or Installer must re-install as applicable
	Seam Continuity	Air Pressure Testing GRI Test Method GM-6	Review Results	All seams (as appropriate)	Installer	Seam test fails	Seams must be reconstructed in accordance with specifications.
10-Ounce Non-Woven Geotextile (Geomembrane Cushion Layer Only)							
Section 02275	NA	NA	NA	NA	NA	NA	NA

Table 3A. Source Quality Assurance Methods for Site Restoration Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Topsoil							
Section 02900	Clean Fill Certification	Clean fill certification from the source	Review clean fill certification	1 per source	Engineer will review certification	Source cannot produce a clean fill certification	Alternative source must be located which can produce certification
Fertilizer							
Section 02900	Certification for grade and slowly available nitrogen content	Product data certification from the source	Review product data certification	1 per source	Engineer will review certification	Source cannot produce proper certification which meets Specifications	Alternative source must be located which can produce certification to meet Specifications
Lime							
Section 02900	Certification for calcium and magnesium content and particle size	Product data certification from the source	Review product data certification	1 per source	Engineer will review certification	Source cannot produce proper certification which meets Specifications	Alternative source must be located which can produce certification to meet Specifications
Seed							
Section 02900	Certification for seed purity, germination percentage, weed content, net weight, and shipment date	Product data certification from the source	Review product data certification	1 per source	Engineer will review certification	Source cannot produce proper certification which meets Specifications	Alternative source must be located which can produce certification to meet Specifications

Table 3B. Conformance Quality Assurance Methods for Site Restoration Materials. Pfaltzgraff Co., Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Topsoil							
Section 02900	pH	ASTM D 4972	Review lab results	1 test per 1500 cy	Contractor shall have test performed by certified lab	Topsoil does not meet Specification requirements	Alternative source of topsoil must be located and tests performed again
	Organic Content	ASTM D 2974	Review lab results	1 test per 1500 cy	Contractor shall have test performed by certified lab	Topsoil does not meet Specification requirements	Alternative source of topsoil must be located and tests performed again
	Sieve	ASTM D 422	Review lab results	1 test per 1500 cy	Contractor shall have test performed by certified lab	Topsoil does not meet Specification requirements	Alternative source of topsoil must be located and tests performed again
	Chemical Analysis	See SAP	Review lab results	1 test per 5000 cy	Contractor shall have test performed by certified lab	Topsoil does not meet Specification requirements	Alternative source of topsoil must be located and tests performed again
	General Condition (foreign materials, frozen, muddy, etc.)	Visual observation	Visually inspected for stones, plants and clay or frozen or muddy condition		Engineer	Topsoil does not meet Specification requirements	Topsoil load must be rejected and replaced with topsoil meeting Specifications
Fertilizer							
Section 02900	NA	NA	NA	NA	NA	NA	NA
Lime							
Section 02900	NA	NA	NA	NA	NA	NA	NA
Seed							
Section 02900	NA	NA	NA	NA	NA	NA	NA

Table 3C. Construction Quality Assurance Methods for Site Restoration Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Topsoil							
Section 02900	NA	NA	NA	NA	NA	NA	NA
Fertilizer							
Section 02900	NA	NA	NA	NA	NA	NA	NA
Lime							
Section 02900	NA	NA	NA	NA	NA	NA	NA
Seed							
Section 02900	Germination	Visual observation	Visually inspected for bare spots in seeded areas.	Entire seeded area to be visually inspected	Engineer	Seeded areas do not meet Specification requirements	Corrective work such as reseeded or addition of fertilizer so seeded areas meet Specifications

Table 4A. Source Quality Assurance Methods for HDPE Piping Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Action Per QA/QC Engineer	Action Response
Corrugated HDPE Pipe							
Section 02623	Certification for material classifications, density and strength	Product data certification from manufacturer	Review product data certification	One certification per shipment	Engineer will review certification	Product data certification does not meet Specification requirements	Manufacturer must produce piping materials which meet Specifications or alternate source must be located
HDPE Flared End Outlet							
Section 02623	Certification for material classifications, density and strength	Product data certification from manufacturer	Review product data certification	One certification per shipment	Engineer will review certification	Product data certification does not meet Specification requirements	Manufacturer must produce piping materials which meet Specifications or alternate source must be located

Table 4B. Conformance Quality Assurance Methods for HDPE Piping Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Corrugated HDPE Pipe							
Section 02623	Damage	Visual observation	Visually inspected for damage	Each shipment which arrives at the site	Contractor	Piping product is damaged	Manufacturer must send a new shipment of piping products which are free from damage
HDPE Flared End Outlet							
Section 02623	Damage	Visual observation	Visually inspected for damage	Each shipment which arrives at the site	Contractor	Piping product is damaged	Manufacturer must send a new shipment of piping products which are free from damage

See Table 7 for explanation of abbreviations.

Table 4C. Construction Quality Assurance Methods for HDPE Piping Materials. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Corrugated HDPE Pipe							
Section 02623	Pressure Test	AWWA C600	80 psi maintained for 12 hours (in accordance with AWWA test methods)	One for corrugated pipe	Contractor	Corrugated piping does not pass pressure test in accordance with AWWA procedures	Corrugated piping shall be replaced, re-installed and re-tested
HDPE Flared End Outlet							
Section 02623	NA	NA	NA	NA	NA	NA	NA

Table 5A. Source Quality Assurance Methods for Site Water. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Site Water Section 01562	NA	NA	NA	NA	NA	NA	NA

Table 5B. Conformance Quality Assurance Methods for Site Water. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Site Water Section 01562	NA	NA	NA	NA	NA	NA	NA

Table 5C. Construction Quality Assurance Methods for Site Water. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Site Water Section 01562	Quality of Discharge from On-Site Treatment of Liquids Generated from Dewatering Activities and Diversion of Process Water	Testing parameters in accordance with SAP	Review lab results	Frequency in accordance with SAP and NYSDEC requirements	Contractor shall have tests performed by certified independent lab	Lab results do not meet SPDES limits	Alter treatment methods and re-sample

Table 6A. Source Quality Assurance Methods for Excavation and Remediation. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Pond Remediation Section 02140	NA	NA	NA	NA	NA	NA	NA
Waste Excavation Section 02200	NA	NA	NA	NA	NA	NA	NA

Table 6B. Conformance Quality Assurance Methods for Excavation and Remediation. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Pond Remediation							
Section 02140	NA	NA	NA	NA	NA	NA	NA
Waste Excavation							
Section 02200	NA	NA	NA	NA	NA	NA	NA

Table 6C. Construction Quality Assurance Methods for Excavation and Remediation. Pfaltzgraff Co.; Syracuse, New York.

Reference Specification(s)	Characteristic	Test Name/Method	Inspection Method	Frequency	Performed By	Requirements for Action Per QA/QC Engineer	Action Response
Pond Remediation							
Section 02140	Excavated Sludge Free Liquids Content	Paint Filter Test USEPA Method 9095-SW846	Review laboratory test data	One test every 50 in-place cubic yards	Contractor shall have test performed by certified lab	Sludge contains too much "free liquids" to pass paint filter test	Continue dewatering operations until the sludge passes the test
	Excavation Completion	Visual observation	Visually inspected for waste materials	Four holes per acre of pond remediation area	Engineer	Native fill not encountered	Continue excavation activities until native fill has been encountered
	Excavation Completion	Lead USEPA Method 6010	Review laboratory test data	1 per 200 feet of perimeter 1 per 2500 square feet of area	Contractor shall have test performed by certified lab	Lead results greater than 500 ppm	Continue excavation
Waste Excavation							
Section 02200	Excavation Completion	Visual observation	Visually inspected for waste materials	Four holes per acre of waste remediation area	Engineer	Native fill not encountered	Continue excavation activities until native fill has been encountered
	Excavation Completion	Lead USEPA Method 6010	Review laboratory test data	Four per acre	Contractor shall have test performed by certified lab	Lead results greater than 500 ppm	Continue excavation

See Table 7 for explanation of abbreviations.

Table 7. Abbreviations Used in Tables 1A through 6C. Pfaltzgraff Co.; Syracuse, New York.

NA = Not applicable.

ASTM = American Society for Testing and Materials

cy = Cubic yards.

sf = Square feet.

GRI = *Geosynthetics Research Institute.*

HDPE = High density poly-ethylene.

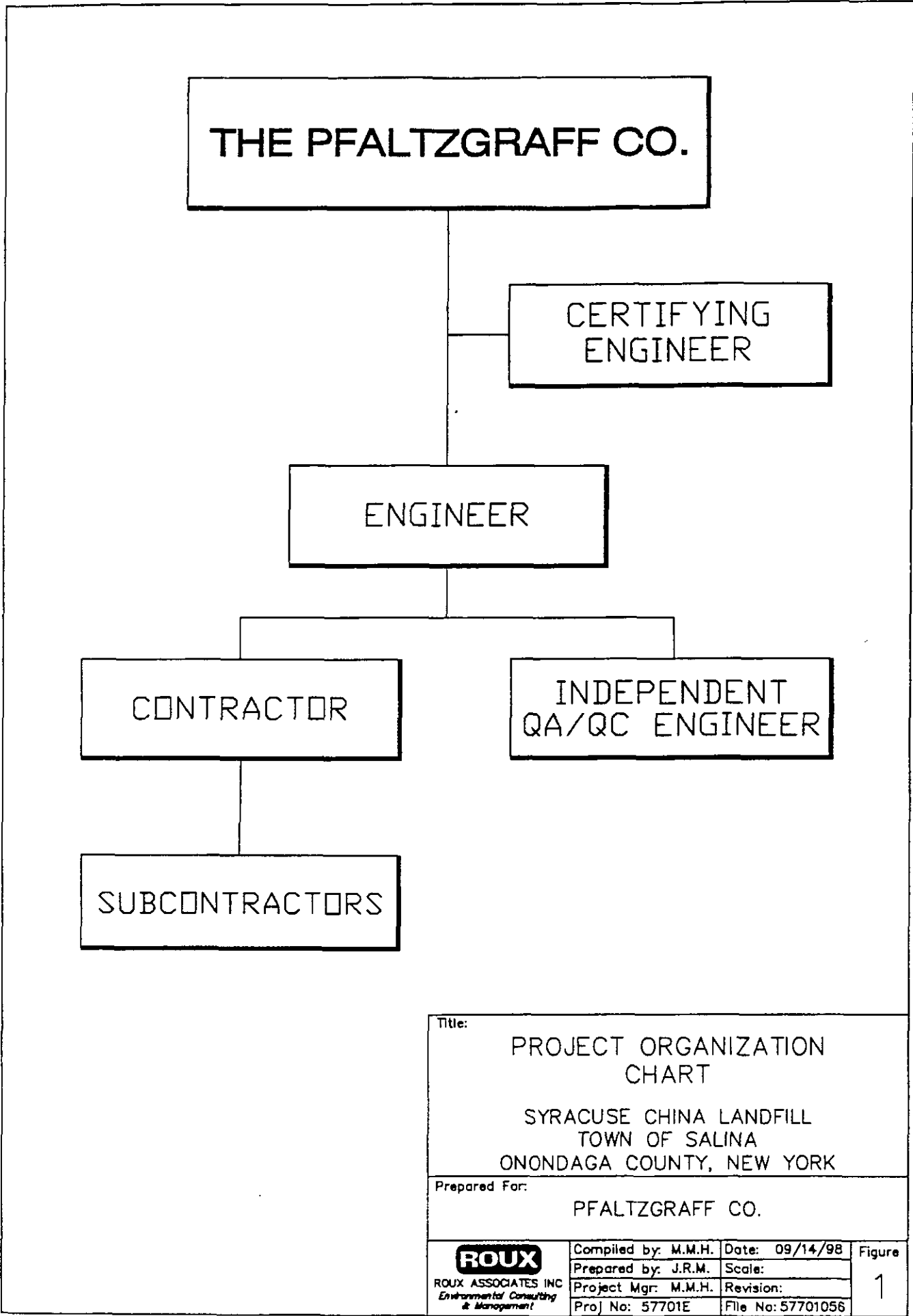
AWWA = American Water Works Association.

psi - Pounds per square inch.

SAP = Sampling and Analysis Plan.

SPDES = State Pollution Discharge Elimination System.

USEPA = United States Environmental Protection Agency



Title:
 PROJECT ORGANIZATION
 CHART
 SYRACUSE CHINA LANDFILL
 TOWN OF SALINA
 ONONDAGA COUNTY, NEW YORK

Prepared For:
 PFALTZGRAFF CO.

ROUX ROUX ASSOCIATES INC <i>Environmental Consulting & Management</i>	Compiled by: M.M.H.	Date: 09/14/98	Figure 1
	Prepared by: J.R.M.	Scale:	
	Project Mgr: M.M.H.	Revision:	
	Proj No: 57701E	File No: 57701056	

CONTINGENCY PLAN

**Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
Town of Salina, Onondaga County, New York**

February 24, 2000

Prepared for:

The Pfaltzgraff Co.
140 East Market Street
York, Pennsylvania 17401

Prepared by:

**REMEDIAL ENGINEERING, P.C.
AND
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1.0 INTRODUCTION

This Contingency Plan (CP) has been prepared by Remedial Engineering P.C. (Remedial Engineering) on behalf of The Pfaltzgraff Co. (Pfaltzgraff) as an element of the Final Remedial Design for the Syracuse China Site (the Site) in the Town of Salina, Onondaga County, New York. The Site is located to the north of the manufacturing facility on the Syracuse China Company property, and is generally defined in the March 1996 Record of Decision (ROD) as the industrial landfill, the wastewater settling ponds, and the northern wetlands between the landfill and Factory Avenue.

The Final Remedial Design includes a narrative, Drawings and Specifications, and a series of project plans and other supporting information which work collectively to detail necessary information to perform the detailed Remedial Action. This CP identifies potential unforeseen events and outlines necessary precautionary measures and response measures to address such events. Due to the nature of these events and related measures, this CP must be used in conjunction with the Final Remedial Design as a whole and must specifically be coordinated with the Specifications, Drawings Construction Quality Assurance Plan (CQAP), and Health and Safety Plan (HASP).

A complete Site description can be found in the Final Remedial Design Report (Remedial Engineering, March 31, 1999). Generally, the Remedial Action includes the following.

- Excavation and consolidation of landfill waste and wastewater settling pond sludges currently located beyond the proposed cap boundary beneath the proposed cap.
- Excavation and consolidation under the cap of a portion of the landfill to restore Class 2 wetlands to its original condition prior to encroachment by the landfill.
- Excavation and consolidation of northern wetland soils beneath the cap. Remediated wetland areas will be revegetated to control erosion.
- Installation of a multi-layer, impermeable cap, consistent with the applicable requirements of 6 NYCRR Part 360. The cap will be designed so that no additional encroachment on the wetland will result.
- Reconstruction of settling ponds, as necessary to maintain the current wastewater discharge in accordance with State Pollutant Discharge Elimination System (SPDES) permit conditions.

- Development of a long-term monitoring program which will allow the effectiveness of the implemented remedy to be monitored as part of operation and maintenance activities for the Site.

This CP has been developed in accordance with Title 6 of the Official Compilation of New York State Codes, Rules and Regulations (6NYCRR) Part 360-2.10, and the United States Environmental Protection Agency's "Remedial Design/Remedial Action Handbook" (June, 1995), and is included as part of the Final Remedial Design.

This CP describes the measures that will be implemented in the field to minimize and address unanticipated occurrences during remedial activities, as required in 6NYCRR Part 360-2.10(a), "Construction Related Contingency Plan." Since this project is not an operating landfill, the associated requirements of 6NYCRR Part 360-2.10 (b), "Operation Related Contingency Plan" do not apply. The contingency measures regarding post-closure care described in 6NYCRR Part 360-2.10(c), "Post-Closure Contingency Plan," are described in the project Operation and Maintenance Plan, which is included as a component of the Final Remedial Design.

The purpose of this CP is to:

- anticipate and identify unplanned events that may occur during construction of the Remedial Action; and
- develop appropriate precautionary measures and prepare a planned response to these unplanned events in order to protect human health and the environment should an unplanned event occur.

According to 6NYCRR Part 360-2.10(a), the following issues must be addressed:

- personnel injury;
- excessive noise;
- unusual traffic conditions;
- excessive dust;
- damaged construction materials and equipment;
- unavailability of approved construction materials and subcontractors;
- equipment breakdown or unavailability of equipment;

- uncontrolled releases of run-off to adjacent surface waters; and
- severe unexpected weather conditions.

The "Remedial Design/Remedial Action Handbook" requires some similar issues be included and adds the following issues:

- safety and emergency equipment and materials;
- on-site spills; and
- off-site spills.

Due to their nature, the issues of personnel injury, excessive noise, unusual traffic conditions, and safety equipment and materials, are addressed in the HASP, which is included in the Final Remedial Design. Safety and emergency equipment and materials to be supplied by the Contractor have been included in the Specifications. Addressing the issue of excessive dust requires proper development of construction activities (to minimize dust), dust monitoring procedures, and modifying construction activities, as necessary. Because these measures are integral to construction activities and quality assurance, they are addressed in the Specifications and the Construction Quality Assurance Plan (CQAP).

Similarly, the procedures required to avoid and address damaged construction materials and equipment, unavailability of approved construction materials and subcontractors, and equipment breakdown or unavailability of equipment are integral to the construction activities and are discussed in the Specifications and in the CQAP.

The remaining issues are discussed in this CP as follows:

- Section 2.0 discusses severe unexpected weather conditions;
- Section 3.0 addresses on-site spills; and
- Section 4.0 addresses off-site spills.

Uncontrolled releases of runoff to adjacent surface waters is addressed in Sections 3.0 and 4.0.

2.0 SEVERE UNEXPECTED WEATHER CONDITIONS

During Remedial Action, there is the possibility that severe weather conditions such as flooding, or a severe windstorm may occur at the Site. Weather variability is expected in this type of remediation project and has been incorporated into the design and schedule to the extent possible. The Contractor will be required to exercise best efforts to anticipate any potential severe conditions and to address their effects (1) as it is occurring; and (2) following the event, such that construction delays and damage to the equipment and completed work are minimized to the greatest extent possible.

Precautionary measures and response measures are discussed in the subsections below.

2.1 Precautionary Measures

There is little or no defense against severe weather conditions, however, the Contractor will be required to implement certain precautionary measures to minimize the impact of natural emergencies and facilitate and expedite appropriate response measures. Protective measures include installation of erosion control devices (e.g., silt fence) during construction activities. In the event that severe weather conditions are expected, additional measures will be performed including securing outside materials, equipment, and temporary facilities so that they are not blown away. Filled sandbags may be utilized as a measure to secure materials on the Site. Equipment and materials may also be moved to a sheltered area or higher ground for protection from flooding and other severe weather conditions.

2.2 Response Measures

In the event that storm water enters or accumulates in excavation areas, the water will be allowed to infiltrate or will be pumped from the excavation before activities are continued. All damage resulting from severe weather conditions will be repaired and any destroyed equipment or materials will be replaced once the severe weather conditions have passed. In the event of a severe weather condition warning, all work at the Site will be temporarily halted. The work will resume after the conditions have passed. Storm water will be managed in accordance with Section 01562 of the Specifications and the existing SPDES permit.

3.0 ON-SITE SPILLS

For the purpose of this Remedial Action, an on-site "spill" is defined as an unintentional release of potentially contaminated materials in an area within the Site which has already been remediated or does not require remediation. As stated in Section 1.0, the Site is defined as the industrial landfill, the wastewater settling ponds, and the northern wetlands located on the Syracuse China Company property. Because the Remedial Action involves extensive excavation and consolidation of Site constituents within the Site boundary, an on-site spill could only occur in either of two instances. First, an on-site spill of contaminated Site materials is possible. Second, an on-site spill of materials necessary for construction that are not Site constituents, such as fuel (for the construction equipment, etc.) or water treatment chemicals (potentially to be used during handling of Site wastewater) could occur.

The precautionary measures which will be implemented to minimize potential on-site spills and their impact, as well as response measures to be executed in the event of an accidental on-site spill, are outlined in the following subsections.

3.1 Precautionary Measures

The Contractor will employ spill-minimization work practices and make a concerted effort to minimize releases of potentially contaminated media. Precautionary measures are specified for solid materials and liquid materials in the subsections below.

3.1.1 Solid Materials

There are three primary mechanisms for potentially contaminated solid materials to enter "clean" areas of the Site namely, surface water runoff, adherence to construction vehicles, or dust migration. Dust migration is thoroughly addressed in the Specifications and the CQAP. During construction, measures will be implemented to minimize the transport of contaminated materials via surface water and will include installation of erosion/sedimentation controls such as silt fence around disturbed areas. Soil erosion control measures are described in detail in the Specifications and Drawings. If necessary, berms or dikes will be installed to prevent potentially impacted surface water runoff from entering "clean" areas of the site.

In order to avoid migration of solids adhering to construction equipment, proper decontamination of equipment used for excavation and other earthwork activities which comes into contact with potentially contaminated materials will be performed in accordance with the HASP and the Specifications. Decontamination will be performed in designated areas prior to crossing areas of the Site which do not require remediation or have already been remediated, or prior to handling clean backfill materials.

3.1.2 Liquid Materials

Potentially contaminated liquid materials which are expected to be handled during construction include wastewater from the settling ponds, liquids generated from the sludge dewatering process water pumped from the northern wetland, wastewater discharge from plant operations and liquid from decontamination activities. The Specifications and Drawings indicate that potential contaminated liquid material will be temporarily stored onsite, treated as necessary, sampled, and discharged via the State Pollution Discharge Elimination System (SPDES) Outfall 001. The liquid will be stored and treated in temporary tanks. During liquid storage, there is a potential for leakage from the temporary tanks and their associated hoses and piping. To minimize the leakage potential, the temporary tanks will be tested by the manufacturer prior to mobilization to the Site and all hoses and piping and connections will be inspected regularly for leaks or potential leaks.

Additionally, if tanks are located in non-contaminated areas, the tanks will be placed on a 40-mil impermeable liner to minimize contact with the underlying soil. The liner will be constructed so that leachate generated is collected in a sump and can be removed before overflow of the sump occurs.

3.2 Response Measures

In the event that an on-site spill does occur, the Contractor will be required to immediately clean the spill area using the appropriate tools and supplies that will be stored on the Site. Areas of the Site which experience a spill will be excavated and consolidated under the cap. All materials and tools used for the cleanup of the spill will be either decontaminated (i.e., shovels) or consolidated

under the cap (i.e., sorbent materials), as necessary. Post excavation sampling may be performed at the Engineer's direction based on the procedures specified in the SAP and CQAP.

In the event of leakage from the temporary storage tank or in tank transfer equipment, the source of the leak will be immediately identified and repaired. In the event that it is not possible to repair the leak without removing the water from the tank, the tank will be immediately drained into 55 gallon drums, and removed from service. Prior to reuse, the tank will be repaired and tested subject to the approval of the Engineer.

If a spill has occurred due to leakage from a temporary tank, the Contractor will be required to contain all leakage which has occurred, and take all measures to stop the leak, as directed by the Engineer.

4.0 OFF-SITE SPILLS

For the purpose of this Remedial Action, an off-site "spill" is defined as a unintentional release of potentially contaminated Site materials or controlled substances offsite. By intent, Site materials will not be transported offsite at any time. The intent of the remedy is to keep Site materials onsite. Accordingly, the risk of an off-site spill of Site materials is extremely limited.

The precautionary measures which will be implemented to further minimize potential off-site spills, as well as response measures to be executed in the event of an accidental off-site spill, are outlined in the subsections below.

4.1 Precautionary Measures

By implementing Precautionary measures to minimize on-Site spills, such as erosion control, dust control, and construction vehicle decontamination, the accidental occurrence of off-site spills of Site materials will be minimized. Additional precautionary measures to minimize off-site spills of controlled substances are described below.

In addition to any decontamination performed while construction equipment is on the Site, the exterior of all equipment leaving the Site will be decontaminated as necessary so that adhered soils and sludges do not contaminate off-site areas. This will be done through a gravel tracking pad to remove loose material from tires and power washing on the decontamination pad

Controlled materials such as fuel and water treatment chemicals are necessary to conduct construction activities. These materials will be transported to the Site via outside carriers. In order to avoid off-site spills of these controlled materials, the Contractor will employ suitably trained and licensed transporters with adequate safety records.

4.2 Response Measures

If an off-site spill of controlled materials occurs along public roads, response measures will be conducted in accordance with applicable local, state and federal requirements. If an off-site spill occurs on the Conrail property to the south, work will halt, and the spill will be cleaned up

immediately by the Contractor. An access agreement has already been negotiated between Pfaltzgraff and Conrail, therefore entry onto the Conrail right-of-way is acceptable. In the event that remediation of the spill could potentially compromise the integrity of the tracks, Pfaltzgraff will contact Conrail's construction division prior to proceeding with the spill cleanup. Following any spill, Conrail's environmental division will be notified within 24 hours of spill occurrence.

HEALTH AND SAFETY PLAN

Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
Town of Salina, Onondaga County, New York

December 1, 1999

Prepared for:

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ATTACHMENTS

1. Incident Report
2. Site Safety Follow-Up Report
3. Health and Safety Field Change Request Form

1.0 GENERAL

This site-specific Health and Safety Plan (HASP) has been prepared in accordance with 29 CFR 1910.120 Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations, and Roux Associates, Inc. (Roux Associates) Standard Operating Procedures (SOPs). It addresses activities to be performed during the Remedial Action and Operation and Maintenance at Syracuse China Company Landfill in Syracuse, New York (Site). The HASP will be implemented by the designated Site Health and Safety Officer (SHSO) during work at the Site.

Compliance with this HASP is required for all Roux Associates and Remedial Engineering, P.C. (Project Team) employees and third parties who enter this Site. Assistance in implementing this HASP can be obtained from Roux Associates' Health and Safety Manager (HSM). The content of this HASP may undergo revision based upon additional information made available. Any changes proposed must be reviewed and approved by Roux Associates' HSM or her designee.

Scope of Work

The Scope of Work for this remedial action will include implementation of the following tasks.

- Excavation and consolidation of landfill waste and wastewater settling pond sludges currently located beyond the proposed cap boundary beneath the proposed cap.
- Excavation and consolidation under the cap of a portion of the landfill to restore the Class 2 wetlands to its original condition prior to encroachment by the landfill.
- Excavation and consolidation of northern wetland soils beneath the cap. Remediated wetland areas will be revegetated to control erosion.
- Installation of multi-layer impermeable cap, consistent with the applicable requirements of 6 NYCRR Part 360. The cap will be designed so that no additional encroachment on the wetland will result.
- Reconstruction of settling ponds, as necessary, to maintain the current wastewater discharge in accordance with State Pollutant Discharge Elimination System (SPDES) permit conditions.

- Development of a long-term monitoring program which will allow the effectiveness of the implemented remedy to be monitored as part of operation and maintenance activities for the Site.

Associated with this scope of work, sampling activities will include collecting soil and fill samples, ground-water samples, and remediation wastewater and permitted wastewater samples. If necessary, methane gas monitoring will be performed.

2.0 EMERGENCY INFORMATION

Multiple emergency services may be obtained from 911. More specific numbers for local services are listed below.

Type	Name	Telephone Numbers
Police Sheriff		(315) 457-2600
Fire	Onondaga County Fire Control Center	(315) 425-3333
Hospital	St. Joseph's Hospital & Health Center 301 Prospect Avenue	(315) 448-5111
National Response Center		(800) 424-8802
Poison Control Center		(315) 476-4766
Roux Associates' Health and Safety Manager	Thomas Dwyer	(516) 232-2600

The route to St. Joseph's Hospital is shown in Figure 1.

3.0 HEALTH AND SAFETY PERSONNEL DESIGNATIONS

Roux Associates has designated health and safety personnel to be responsible for the implementation of this HASP for Project Team employees, and to provide assistance to the contractor for health and safety-related -issues.

Personnel Designation	Responsibilities
Health and Safety Manager (HSM)	Implementation and modification of the HASP. Will assign health and safety duties. Provides adequate resources for field health and safety personnel. Ensures that field personnel are trained and aware of Site conditions. Schedules adequate personnel and equipment to perform job safely.
Site Health and Safety Officer (SHSO)/ Site Emergency Coordinator	Conducts safety briefings and worker awareness meetings. Ensures compliance with HASP. Notifies HSM of accidents/ incidents. Coordinates health and safety activities. Makes contact with local emergency groups prior to beginning work on-site. Responsible for evacuation, emergency treatment, and emergency transport of personnel.
Field Crew Personnel	Report unsafe or hazardous conditions to SHSO. Understand the information contained in this HASP.

4.0 SITE HISTORY AND PHYSICAL DESCRIPTION

This section provides a brief summary of the history and physical description of the Site, as documented in part by the Record of Decision, March 1996.

4.1 Location

The Syracuse China facility, which manufactures china, is located in a highly urbanized area in the Town of Salina, Onondaga County, New York which is located north of the City of Syracuse. The Site is located north of the facility and consists of the industrial landfill, the wastewater settling ponds, and the northern wetlands. The Site is entirely located on the Syracuse China property, south of Factory Avenue. The Site is bounded by Conrail tracks to the south, Factory Avenue to the north and undeveloped Syracuse China property to the east and west.

The Site occupies an area of approximately 21 acres while the landfill within the Site occupies an area of approximately 13.6 acres. The landfill waste primarily consists of the relatively inert materials of scrap china and gypsum molds. Other miscellaneous materials may include refractory materials, cinders, wood, and some fiberglass insulation. The landfill can be divided into two general areas, namely, the eastern portion and the western portion. The eastern portion of the landfill contains waste and the wastewater settling ponds. The western portion of the landfill contains waste.

Wetlands are located north, west and northeast of the landfill. The northern wetlands are the subject of proposed remedial measures and comprise approximately 7.4 acres. Other key site features include Niagara-Mohawk high-tension lines which exist in an easement running east and west along the southern limit of the Site, an Onondaga County sanitary sewer which crosses the Site in an easement running north and south through the middle of the Site along the boundary of the western portion of the landfill and the eastern portion of the landfill, a Niagara-Mohawk overhead power line which exists in an easement running east and west along the northern Site boundary, a berm which exists along the eastern Site boundary which formerly supported a railroad spur (referred to as the trolley berm), and a berm which exists along the northwest limit of the landfill (referred to as the northern berm). Additionally, an underground communications line owned by Sprint and an Onondaga County water line exist in an easement in the Conrail

right-of-way to the south of the Site (in between the Conrail tracks and the southern limit of the Site). Additionally, a Niagara-Mohawk underground natural gas line exists in an easement in the Factory Avenue right-of-way.

4.2 Site History

The Syracuse China facility was constructed in the 1920's and has been manufacturing china since that time. The Pfaltzgraff Co. purchased the Syracuse China facility in 1989, and subsequently sold the property to a subsidiary of Libbey, Inc. in 1995.

Since approximately 1940, the Site has primarily been used as an industrial landfill for disposal of scrap china and molds. During late 1988, Syracuse China contacted the NYSDEC Region 7 office regarding upgrading or closure of the landfill in response to revised regulations governing solid waste management, specifically, 6 NYCRR Part 360. Pursuant to that contact, Syracuse China performed a Preliminary Hydrogeologic Site Assessment Report (O'Brien & Gere Engineers, Inc., 1990) which was submitted to the NYSDEC. Based on these data, the NYSDEC listed the Site on the Registry of Inactive Hazardous Waste Disposal Sites with a classification of 2 in March 1991.

Syracuse China ceased waste disposal operations in the landfill in approximately December 1994. Pursuant to NYSDEC requirements, a Remedial Investigation was performed in 1995, and a Focused Feasibility Study was performed in 1996. Based on the results of this RI/FS, a ROD for the Site was issued by the NYSDEC in March 1996.

5.0 HAZARD ASSESSMENT

The potential hazards associated with the anticipated Remedial Action include chemical and physical hazards. There is the potential for encountering biological hazards (i.e., rodents) due to the nature of the work location (landfill); however, based on the activities to be conducted, it is not expected to be an issue for these tasks.

5.1 Chemical Hazards

Previous investigations have shown the presence of metals in soil at the Site. The toxicological, physical, and chemical properties of these potential contaminants are presented in Table 1. This table includes action levels (permissible exposure levels) which will establish the level of protection. The potential for encountering these contaminants exists during intrusive activities such as excavation.

5.2 Physical Hazards

A variety of physical hazards may be present during Site activities. Most of these hazards are similar to those associated with any construction-type project. These physical hazards are due to motor vehicle and heavy equipment operation, the use of power and hand tools, hazardous working surfaces, and handling and storage of fuels. These hazards are not unique and are generally familiar to most field personnel.

There is an additional physical hazard at this Site not generally found at construction projects, namely the existence of mounds of broken china. This condition presents additional hazards with respect to skin and eye (i.e., projectiles of china generated by field activities) as well as creating uneven working surfaces.

All personnel involved in construction work performed in water more than four (4) feet deep shall be required to wear Coast Guard approved life jackets or approved diving suits as a safety flotation device, boots or boot covers with thick soles for adequate foot protection and to reduce the risk of slippage and approved hard hats. Underground utility markouts will be obtained prior to any excavation activities.

5.2.1 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps, and generators. High noise operations will be evaluated at the discretion of the SHSO. Personnel with 8-hour time-weighted-average exposures exceeding 85 dBA must be included in a hearing conservation program in accordance with 29 CFR 1910.95.

5.2.2 Heat Stress

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment (PPE) in hot weather environments.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps. The signs and symptoms of heat cramps are as follows:

- severe muscle cramps, usually in the legs and abdomen;
- exhaustion, often to the point of collapse; and
- dizziness or periods of faintness.

First aid treatment includes shade, rest and electrolyte fluid replacement therapy. Normally, the individual should recover within one-half hour. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to a hospital for medical attention.

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat while working. The circulatory system of the individual fails as blood collects near the skin in an effort to rid the body of excess heat. The signs and symptoms of heat exhaustion are as follows:

- rapid and shallow breathing;
- weak pulse;
- cold and clammy skin with heavy perspiration;
- skin appears pale;
- fatigue and weakness;

- dizziness; and
- elevated body temperature.

First aid treatment includes cooling the victim, elevating the feet, and replacing fluids and electrolytes. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to the hospital for medical attention.

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a **MEDICAL EMERGENCY**, requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- dry, hot, red skin;
- body temperature approaching or above 105°F;
- large (dilated) pupils; and
- loss of consciousness - the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility.

Heat stress (heat cramps, heat exhaustion, and heat stroke) is a significant hazard if any type of PPE (semipermeable or impermeable) which prevents evaporative cooling is worn in hot weather environments. Local weather conditions may require restricted work schedules in order to adequately protect personnel. The use of work/rest cycles (including working in the cooler periods of the day or evening) and training on the signs and symptoms of heat stress should help prevent heat-related illnesses from occurring. Work/rest cycles will depend on the work load required to perform each task, type of protective equipment, temperature, and humidity. In general, when the temperature exceeds 88°F, a 15 minute rest cycle will be initiated once every two hours. In addition, potable water and fluids containing electrolytes (e.g., Gatorade) will be available to replace lost body fluids.

5.2.3 Cold Stress

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole-body protection. Adequate insulating clothing must

be used when the air temperature is below 40°F. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. Training on the signs and symptoms of cold stress should prevent cold-related illnesses from occurring. The signs and symptoms of cold stress include the following:

- severe shivering;
- abnormal behavior;
- slowing;
- weakness;
- stumbling or repeated falling;
- inability to walk;
- collapse; and/or
- unconsciousness.

First aid requires removing the victim from the cold environment and seeking medical attention immediately. Also, prevent further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks, and encourage activity, such as walking wrapped in a blanket.

5.2.4 Track Safety

Conrail tracks separate the Syracuse China Facility from the landfill. Main access to the landfill is over the Conrail tracks; therefore, all employees must be aware of the inherent hazards associated with working around railroad tracks. The following procedures should be considered:

- expect movement at any time on any track in any direction;
- when around trains, you must NOT rely on others to notify you of the approach of a train;
- do not cross, step, sit on, or foul tracks;
- if you must be on the tracks working, face the flow of traffic and often look behind you. Be ready to clear the tracks; and
- when required to pass in front of or behind a standing train, always stay at least 10 feet from it.

5.2.5 Traffic Safety

The following procedures apply to this project when personnel need to conduct their activities in or near lanes of traffic, including streets, highways, and parking lots.

- Before starting activities involving exposure to traffic, the SHSO shall warn employees of the potential hazards. All employees, especially new employees, shall be instructed by their SHSO in the safe manner of performing their activities and in the proper use of warning signs and devices. During the course of the project, the SHSO shall require employees to conform to safety practices. All personnel working within traffic exposure areas shall wear fluorescent orange safety vests with reflectorized orange, white or yellow materials.
- Protection shall be provided for personnel performing such work in traffic exposure areas where the individual, while working, is unable to watch for traffic. In such instances, traffic cones, other warning devices, or flaggers should be used to direct traffic past the individual. A vehicle equipped with a rotating dome light, strobe light, and/or flashing arrow panels would provide valuable supplemental warning. If appropriate, the vehicle should be placed between the jobsite and oncoming traffic to serve as a warning barrier.
- Flags and traffic cones - Orange traffic cones, with orange flags, may be used in addition to the advance warning signs for the guidance of traffic where circumstances warrant. They should be arranged to define the work area and to direct the flow of traffic past it.
- Safety vests - Fluorescent orange vest with reflectorized trim attract the attention of the approaching motorists and thus afford additional protection to the employee. Such vests shall be used by flaggers and by other employees who are required to work in or adjacent to lanes carrying traffic.

6.0 TRAINING REQUIREMENTS

The Hazardous Waste Operations and Emergency Response Rule (29 CFR 1910.120) requires that all personnel be trained to recognize on-site hazards, understand the provisions of this HASP, and be made aware of the responsible health and safety personnel. This section discusses the means to meet these requirements.

6.1 Basic Training

All Site personnel who will perform work in areas where the potential for toxic exposure exists will be health and safety-trained prior to performing work on-site, per OSHA 29 CFR 1910.120(e)1926.65. Training records will be submitted to and maintained by the SHSO on-site, as described in Section 6.4.

6.2 Site-Specific Training

Health and safety-related training that will specifically address the activities, procedures, monitoring and equipment for the Site operations will be provided to all Site personnel and visitors by the SHSO. It will include Site and facility layout, hazards, emergency services at the Site and will detail all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand, and to reinforce their responsibilities regarding safety and operations for their particular activity. Site-specific training will be documented and kept as part of the project records.

6.3 Safety Briefings

Project personnel will be given briefings by the SHSO on an as-needed basis to further assist them in conducting their activities safely. Safety briefings will be held when new operations are to be conducted, whenever changes in work practices must be implemented, before work is begun at each location, and each Monday morning. Records of safety briefings will be kept as part of the project records.

6.4 Record Keeping Requirements

All record keeping requirements mandated by OSHA 29 CFR 1910.1201926.65 will be strictly followed. Specifically, all personnel training records, injury/incident reports, medical examination records and exposure monitoring records will be maintained by Roux Associates and each contractor for a period of at least thirty years after the employment termination date of each employee. Pertinent health and safety training and medical certifications will be kept onsite during the field operations. The SHSO shall maintain a daily written log of all health and safety monitoring activities, and monitoring results shall become part of the project records.

7.0 MONITORING PROCEDURES FOR SITE OPERATIONS

The SHSO will record wind direction and temperature in the logbook during most activities. All monitoring equipment will be calibrated per the owner's manual which will be kept onsite, or at least monthly according to Site inspection rules.

Data from previous investigations have identified the presence of metals at the Site. The concentrations of these metals (i.e., below the NYSDEC Recommended Soil Cleanup Objectives) are not likely to create a hazard; therefore, particulate emissions will not be continuously monitored. No volatile organic compounds were detected in ground-water or wastewater samples; therefore, no photoionization detector sampling will be performed.

Particulate monitoring and fugitive dust suppression will be employed to minimize the potential for off-site exposure, as necessary. Particulate monitoring will be performed by the Contractor prior to the initiation of intrusive activities to establish background conditions.

Particulates will be monitored upwind and downwind of the work area at the beginning of construction activities. The alarm for the particulate monitoring device will be set at 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). If the downwind particulate levels, integrated over a period of 15 minutes, is $150 \mu\text{g}/\text{m}^3$ greater than the upwind particulate level, or particulate measurements are greater than $100 \mu\text{g}/\text{m}^3$ above background levels, then dust suppression techniques will be employed, and monitoring will be performed continuously.

There may also be situations where the dust being generated is not detected by the monitoring equipment at or above the action level. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observations. Therefore, if dust is observed leaving the working area, additional dust suppression techniques will be employed. All readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

The following techniques may be employed to mitigate the generation and migration of fugitive dust during remediation activities:

- applying water on the haul roads;
- misting equipment and excavation faces;
- spraying water (using atomizer) on buckets during excavation and dumping;
- hauling materials in properly tarped or watertight containers; and
- covering excavated areas and material after excavation activity ceases.

If the dust suppression techniques do not lower particulates to below $150 \mu\text{g}/\text{m}^3$ and no visible dust is noted, work will be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

8.0 MEDICAL SURVEILLANCE REQUIREMENTS

Medical surveillance specifies any special medical monitoring and examination requirements as well as stipulates that all Roux Associates personnel and contractors are required to pass the medical surveillance examination or equivalent for hazardous waste work required by 29 CFR 1910.120. As a minimum, the examination will include:

- complete medical and work histories;
- EKG;
- urinalysis;
- physical exam;
- eye exam;
- blood chemistry;
- pulmonary function test; and
- audiometry.

The examination will be taken annually, at a minimum, and upon termination of employment with the company. Additional medical testing may be required by the HSM in consultation with the company physician and the SHSO if an overt exposure or accident occurs, or if other Site conditions warrant further medical surveillance.

9.0 ZONES, PROTECTION AND COMMUNICATIONS

Work zones, levels of personal protection, and means of communication are described below.

9.1 Site Zones

Roux Associates employs the following three zone approach to Site operations.

- the Work Zone;
- the Contamination Reduction Zone; and
- the Support Zone.

9.1.1 Work Zone

The Work Zone is the area where work will be conducted. The Work Zone will be designated by a temporary barrier consisting of red barricade tape. No personnel shall work in the Work Zone without a buddy. All workers within the Work Zone shall wear the proper PPE (see Section 9.2). No unauthorized persons will be allowed in the Work Zone during Site activities.

No personnel are allowed in the Work Zone without:

- a buddy;
- the proper PPE;
- medical authorization; and
- training certification.

9.1.2 Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) will be established between the Work Zone and the Support Zone. The CRZ will provide for full personnel and portable equipment decontamination (Section 9.3). The CRZ will also contain safety and emergency equipment such as first aid equipment (bandages, blankets, eye wash) and containment equipment (adsorbent, fire extinguisher).

9.1.3 Support Zone

The Support Zone is considered the uncontaminated area and will provide for team communications and emergency response. Appropriate safety and support equipment will be

located in this zone. The Support Zone will be located upwind of Site operations, if possible and may be used as a potential evacuation point. No potentially contaminated personnel or materials are allowed in this zone except appropriately packaged/ decontaminated and labeled samples, and drummed wastes.

9.2 Personal Protection

This section describes the levels of protection which will be required by on-site personnel during the remediation activities.

9.2.1 General

The level of protection to be worn by field personnel and visitors will be defined and controlled by the SHSO with approval of the HSM. Where more than one hazard area is indicated, further definition shall be provided by review of Site hazards, conditions, and operational requirements and by monitoring at the particular operation being conducted.

Protection may be upgraded or downgraded by the SHSO in conjunction with the HSM based upon Site conditions.

9.2.2 Respiratory Protection and Clothing

Three levels of protective equipment are discussed below including Level D, Level C, and Level B.

Level D Protection

1. PPE:
 - Cotton coveralls
 - Cotton gloves
 - Boots/shoes, leather or chemical-resistant, steel toe and shank
 - Boots (outer), chemical-resistant (disposable)
 - Safety glasses or chemical splash goggles
 - Hard hat
 - Escape mask

2. Criteria for selection

PID readings in the breathing zone are less than 5 ppm. Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals.

NOTE: Modifications of Level D will be used to increase the level of skin protection during activities which increase the degree of contact with physical hazards (i.e., broken china). These modifications include the use of gloves.

Level C Protection

1. PPE:

- Full face, air purifying, cartridge-equipped respirator (Mine Safety and Health Administration [MSHA]/National Institute for Occupational Safety and Health [NIOSH] approved)
- Chemical-resistant clothing (coverall; hooded, two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)
- Cotton or synthetic coveralls*
- Gloves (inner), chemical-resistant - latex
- Gloves (outer), chemical-resistant - nitriles
- Boots (inner), chemical-resistant, steel toe and shank
- Boots (outer), chemical-resistant (disposable)
- Hard hat (face shield)
- Escape mask
- 2-Way radio communications (intrinsically safe)*

*Optional

2. Criteria for selection

- Continuous total vapor readings register between 5 ppm and 25 ppm on PID.
- Measured air concentrations of identified substances (organic vapors) will be reduced by the respirator to at or below the substance's exposure limit, and the concentration is within the service limit of the canister.

- Atmospheric contaminant concentrations do not exceed Immediately Dangerous to Life and Health (IDLH) levels.
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.
- Job functions have been determined not to require self-contained breathing apparatus.

Level B Protection

1. PPE:

- Pressure-demand, self-contained breathing apparatus (MSHA/NIOSH approved)
- Chemical-resistant clothing (overall and long-sleeved jacket; coveralls; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant coveralls)
- Coveralls
- Gloves (inner), chemical-resistant - latex
- Gloves (outer), chemical-resistant - nitriles
- Boots (inner), chemical-resistant, steel toe and shank
- Boots (outer), chemical-resistant (disposable)
- Hard hat (face shield)
- 2-way radio communications (intrinsically safe)

2. Criteria for Selection

Meeting any one of these criteria warrants use of Level B protection:

- PID readings in the breathing zone are greater than 25 ppm and less than 500 ppm.
- The type(s) and atmospheric concentration(s) of toxic substance(s) have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection. These would be atmospheres:
 - with IDLH concentrations
 - or
 - exceeding limits of protection afforded by a full face, air purifying mask
 - or

- containing substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.
- The atmosphere contains less than 19.5% oxygen.
- Operations at the Site make it highly unlikely that the small, unprotected arc of the head or neck will be contacted by splashes of extremely hazardous substances.
- If work is performed in an enclosed space.

9.3 Decontamination Procedures

A steam cleaner will be utilized to decontaminate heavy equipment used in excavation. Personnel should exercise caution when using a steam cleaner. The high pressure steam can cause burns. Protective gloves, face shields, hard hats, steel-toed boots, and Tyvek suits or rain gear will be worn when using steam cleaners.

9.3.1 Contamination Prevention

Adequate contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include the following.

Personnel

- Do not walk through areas of obvious or known contamination unless necessary;
- Do not handle contaminated materials directly unless necessary;
- Make sure PPE has no cuts or tears prior to donning;
- Fasten all closures on suits, covering with tape, if necessary;
- Take particular care to protect skin injuries;
- Stay upwind of airborne contaminants;
- Do not carry cigarettes, gum, etc., into contaminated areas; and
- Use disposables to cover nondisposable equipment when contact is probable.

Sampling/Monitoring

- When required by the SHSO, cover instruments with clear plastic, leaving opening for sampling and exhaust ports; and
- Bag sample containers prior to the placement of sample material.

Heavy Equipment

- Care should be taken to limit the amount of contamination that comes in contact with heavy equipment;
- If contaminated tools are to be placed on non-contaminated equipment for transport to the decontamination pad, plastic should be used to keep the equipment clean; and
- Excavated soils should be contained and kept out of the way of workers.

9.3.2 Decontamination

All personnel and equipment exiting the Work Zone shall be thoroughly decontaminated. Figures 2, 3 and 4 illustrate decontamination procedures for Levels D, C and B, respectively. Safety briefings shall explain the decontamination procedures for personnel and portable equipment for the various levels of protection. Heavy equipment will be decontaminated with a steam cleaner.

9.3.3 Disposal Procedures

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left at the Site. All potentially contaminated materials (e.g., soil, clothing, gloves, etc.) will be bagged or drummed, as necessary, and segregated for disposal. All contaminated materials shall be disposed of in accordance with appropriate regulations. All non-contaminated materials shall be collected and bagged for appropriate disposal as normal domestic waste. All waste disposal operations conducted by Roux Associates will be monitored by the SHSO and carried out under the appropriate level of personal protection.

9.4 Standard Operating Procedures/Safe Work Practices

This section discusses safe work practices to be used during all activities. In addition, non-monitoring safety-related procedures are described.

9.4.1 Communications

- Telephones -- A telephone will be available for communication with emergency support services/facilities. Telephones are available inside the Syracuse China Facility.
- Hand Signals -- To be employed by personnel required to have Level C protection. They shall be known by the entire field team before operations commence and covered during Site-specific training.

The following hand signals will be used, if needed:

<u>Signal</u>	<u>Meaning</u>
Hand gripping throat	Out of air, can't breathe
Grip partner's wrist	Leave area immediately
Hands on top of head	Need assistance
Thumbs up	I'm all right, okay
Thumbs down	No, negative

9.4.2 General Safe Work Practices

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth contact and ingestion of material is prohibited onsite except in lunch room or designated office areas.
- Hands must be washed thoroughly upon leaving the Work Zone or before eating, drinking, or any other activities.
- Contaminated protective equipment shall not be removed from the Site until it has been decontaminated and properly packaged and labeled.
- Portable eyewash stations shall be located in the decontamination staging area in the Support Zone.
- No facial hair, which interferes with a satisfactory fit of respiratory equipment, will be allowed on personnel that may be required to wear respiratory protective equipment.
- An emergency first aid kit and fire extinguisher shall be onsite in the Support Zone at all times.
- All respiratory protection selected to be used onsite shall meet MSHA/NIOSH requirements for the existing contaminants.

- Any skin contact with surface and ground water shall be avoided.
- No contact lenses may be worn.

9.4.3 Waste Disposal

All waste disposal operations shall be monitored by the SHSO and performed using the appropriate level of personal protection. Personnel shall wear the prescribed clothing, especially eye protection and chemical resistant gloves, when handling or drumming waste materials. Contamination avoidance shall be practiced at all times.

9.4.4 Heavy Equipment and Excavation Safety

Typical machinery to be found at this site may include pumps, compressors, excavators, generators, portable lighting systems, fork lifts, trucks, dozers, backhoes, and/or drill rigs. From a safety standpoint, it is important for all site workers to be continually aware of the equipment around them. It poses a serious hazard if not operated properly, or if personnel near machinery cannot be seen by operators.

Excavating crews are confronted with all of these heavy equipment hazards. They must be responsible for housekeeping around the backhoe. Maintenance is a constant requirement. Overhead and buried utilities require special precautions because of electrical and natural gas hazards. Electrical storms may seek out standing equipment.

9.4.5 Excavation and Backfill Operations

The SHSO will be present on-site during excavation and backfill operations and will provide health and safety monitoring to ensure that appropriate levels of protection and safety procedures are utilized. The proximity of chemical, water, sewer, and electrical lines will be identified by the SHSO before substantial activity is attempted. The following safe work practices will be followed during these tasks:

- The proximity of chemical, water, sewer and electrical lines will be identified by a facility representative prior to any subsurface activity beginning.
- While excavating, stay out of the reach of the backhoe arm's swing by standing at the end of the excavation, not near the sides (sides have the potential to cave in).

Maximum Allowable Slopes

Soil or Rock Type	Maximum Allowable Slopes (H:V) ¹ for Excavations less than 20 Feet Deep ³
Stable Rock	Vertical (90°)
Type A ²	3/4 : 1 (53°)
Type B	1 : 1 (45°)
Type C	1 1/2 : 1 (34°)

OSHA (29 CFR 1926.652, Subpart P, Appendices A and B)

Notes:

- ¹ Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
- ² A short term maximum allowable slope of 1/2H : 1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H : 1V (53°).
- ³ Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

Proper containment and disposal practices will be utilized in regard to the potential amount of waste generated during operations. The location of safety equipment and excavation procedures will be established prior to initiation of operations according to this HASP. The use of hard hats, eye protection, ear protection, and steel-toed boots will be required during excavation or other heavy equipment operations.

9.4.6 Confined Space Entry

The scope of work does not require personnel to enter any confined space during the conduct of this project. Confined space is defined as having limited or restricted means of entry or exit, is large enough for an employee to enter and perform assigned work, and is not designed for continuous occupancy by the employee. These spaces include, but are not limited to, underground vaults, tanks, storage bins, pits and diked areas, vessels, and silos.

A permit-required confined space is one that meets the definition of confined space, and has one or more of the following characteristics:

- contains or has the potential to contain a hazardous atmosphere;
- contains a material that has the potential for engulfing an entrant;
- has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; and/or
- contains any other recognized serious safety or health hazards.

10.0 EMERGENCY PLAN

As a result of the hazards onsite and the conditions under which operations are conducted, the possibility of an emergency exists. An emergency plan is required by OSHA 29 CFR 1910.120 to be available for use and is included below. A copy of this plan shall be posted in the Support Zone at each work site.

10.1 Site Emergency Coordinator(s)

The SHSO shall act as the Site Emergency Coordinator to make contact with the local fire, police and other emergency units prior to beginning work onsite. In these contacts, the SHSO will inform the emergency units about the nature and duration of work expected at the Site and the type of contaminants and possible health or safety effects of emergencies involving these contaminants.

The SHSO or his designee shall implement this emergency plan whenever conditions at the Site warrant such action. The coordinator(s) will be responsible for assuring the evacuation, emergency treatment, emergency transport of Site personnel as necessary, and notification of emergency response units and the appropriate management staff.

10.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of particulates, etc., an air horn or other appropriate device will be sounded by the SHSO for approximately ten seconds indicating the initiation of evacuation procedures. All persons in both the restricted and non-restricted areas will evacuate and assemble near the Support Zone or other safe area as identified in advance by the SHSO. Under no circumstances will incoming personnel or visitors be allowed to proceed into the evacuated area once the emergency signal has been given. The SHSO must see that access for emergency equipment is provided and that all combustible apparatus has been shutdown once the alarm has been sounded. Once the safety of all personnel is established, the fire department and other emergency response groups will be notified by telephone of the emergency. The hospital route will be posted onsite (Figure 1). Any other evacuation routes will be specified by the appropriate emergency personnel.

10.3 Potential or Actual Fire or Explosion

If the potential for a fire exists or if an actual fire or explosion occurs, the following procedure will be implemented:

- immediately evacuate the Work Zone as described above (Section 10.2); and
- notify fire department and security.

10.4 Environmental Incident (Release or Spread of Contamination)

The SHSO shall instruct a person onsite to immediately contact police and fire authorities to inform them of the possible or immediate need for nearby evacuation. If a significant release (above the reportable quantity as described in 40 CFR 302) has occurred, the National Response Center and other appropriate groups should be contacted. Those groups will alert National or Regional Response Teams as necessary. The personnel listed below shall be notified as necessary.

Type	Name	Telephone #
Fire Department		(315) 425-3333
Hazardous Material Emergency Response		911
Police Department		(315) 457-2600
Ambulance		911
Poison Control Center		(315) 476-4766
Hospital	St. Joseph's Hospital and Health Center	(315) 448-5111
National Response Center (Release or Spill)		(800) 424-8802
Site Health and Safety Officer		On-Site
Health and Safety Manager	Thomas Dwyer	(516) 232-2600
Project Manager	Peter J. Gerbasi	(516) 232-2600

10.5 Personal Injury

Emergency first aid shall be applied onsite as deemed necessary to stabilize the patient. Notify the emergency units as deemed necessary.

10.6 Overt Personnel Exposure

If an overt exposure to toxic materials should occur, the exposed person shall be treated onsite as follows:

- Skin Contact: Wash/rinse affected area thoroughly with copious amounts of soap and water, then provide appropriate medical attention. An eyewash and/or emergency shower or drench system will be provided onsite at the CRZ and/or support zone, as appropriate. Eyes should be rinsed for at least fifteen (15) minutes upon chemical contamination.
- Inhalation: Move to fresh air and/or if necessary, decontaminate and transport to the hospital.
- Ingestion: Decontaminate and transport to emergency medical facility.
- Puncture Wound
or Laceration Decontaminate and transport to emergency medical facility. SHSO will provide medical data sheets to medical personnel as requested.

10.7 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO will determine if work can continue without sacrificing the health and safety of field workers. Some of the items to be considered prior to determining if work should continue are:

- heavy rainfall/snowfall;
- potential for heat stress;
- potential for cold stress and cold-related injuries;
- limited visibility;
- potential for electrical storms;
- potential for malfunction of health and safety monitoring equipment or gear; and
- potential for accidents.

11.0 AUTHORIZATIONS

Personnel authorized to enter the Site while operations are being conducted must be approved by the SHSO and the Project Manager. This document will be completed when the subcontractors have assigned trained personnel for the Site. Authorization will require completion of appropriate training courses, medical examination requirements as specified by OSHA 29 CFR 1910.120, and review and sign-off of this HASP.

The following Roux Associates personnel are authorized to perform work onsite:

- | | |
|---------------------|-----------------------|
| 1. Thomas Dwyer | 6. Jonathan McLelland |
| 2. Omar Ramotar | 7. |
| 3. Jeffrey Makowski | 8. |
| 4. Meredith Harris | 9. |
| 5. Peter Gerbasi | 10. |

Other personnel authorized to enter the Site are:

- | | |
|-------------------|-----|
| 1. Phil Harvard | 6. |
| 2. Elaine Bobletz | 7. |
| 3. Ed Jackson | 8. |
| 4. John Greenthal | 9. |
| 5. | 10. |

12.0 FIELD TEAM REVIEW

Each person entering the Site and each field member shall sign this section after site-specific training is completed and before being permitted to work onsite.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provision contained therein.

Site/Task: _____

Name Printed	Signature	Date
_____	_____	_____
_____	_____	_____
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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Syracuse China Site

Compound	CAS#	TLV (mg/m ³)	IDLH (ppm)	PEL (mg/m ³)	Routes of Exposure	Toxic Properties	Target Organs	Physical/ Chemical Properties
Arsenic	7440-38-2	0.2	None	0.5 organic 0.01 - inorganic	Dermal; inhalation; ingestion	Sensory irritant Lung & skin cancer Aplastic anemia Numbness	skin eyes lungs blood peripheral nervous system	Silver gray - tin white BP = sublimes
Cadmium (dust)	7440-43-9	0.05	40 mg/m ³	0.2	Inhalation; ingestion	Sensory irritant Lung injury Kidney disease Cancer	skin eyes kidneys bone	Silver-white/blue tinged BP = 1409°F Noncombustible
Chromium	7440-47-3	0.5	None	1	Dermal; inhalation; ingestion	Decreased pulmonary function Sensory irritant	lung skin eyes	Steel gray metal
Chromium (VI)	7440-47-3	0.05	None	None	Dermal; inhalation; ingestion	Nasal and lung tumors Sensory irritant	lungs eyes skin	Red, rhombic crystals
Copper (dusts and fumes)	7440-50-8	1	None	1	Dermal; inhalation; ingestion	Sensory irritant GI irritation CNS depressant	skin eyes GI tract CNS	Reddish metal BP = 4730°F Powdered form may ignite
Lead	7439-92-1	0.15	700	0.2	Dermal; inhalation; ingestion	Abdominal pain CNS depressant Anemia Nephropathy Reproductive effects	GI tract CNS blood kidneys	Metal - soft gray BP = 3164°F
Silver	7440-22-4	0.01	10 mg/m ³	0.01	Dermal; inhalation; ingestion	Blue-gray eyes Skin irritant GI irritation	nasal eyes skin	White lustrous metal BP = 3,632°F

Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Syracuse China Site

Compound	CAS#	TLV (mg/m ³)	IDLH (ppm)	PEL (mg/m ³)	Routes of Exposure	Toxic Properties	Target Organs	Physical/ Chemical Properties
Zinc Oxide (dust)	7440-66-6	10	None	10 5 resp.	Dermal; inhalation; ingestion	Skin irritant Cough	skin lungs	Bluish-white metallic element

- TLV - Threshold Limit Value - must not be exceeded over 8 hour shift
- IDLH - Immediately Dangerous to Life and Health - maximum concentration from which one could escape in 30 minutes without a respirator
- PEL - Permissible Exposure Limit - must not be exceeded over 8 hour shift
- mg/m³ - milligrams per cubic meter
- ppm - Part Per Million
- CNS - Central Nervous System
- CVS - Cardiovascular System
- GI tract - Gastrointestinal tract
- BP - Boiling Point
- FP - Flash Point
- UEL - Upper Explosive Limit
- LEL - Lower Explosive Limit
- °F - degrees Fahrenheit
- °C - degrees Celsius

References

U.S. Department of Labor. 1990. OSHA Regulated Hazardous Substances, Industrial Exposure and Control Technologies Government Institutes, Inc.
 Hawley's Condensed Chemical Dictionary, Sax, N. Van Nostrand and Reinhold Company, 11th Edition, 1987.
 Proctor, N.H., J.P. Hughes and M.L. Fischman. 1989. Chemical Hazards of the Workplace. Van Nostrand Reinhold. New York.
 Sax, N.I. and R.J. Lewis. 1989. Dangerous Properties of Industrial Materials. 7th Edition. Van Nostrand Reinhold. New York.
 Guide to Occupational Exposure Values. 1990. American Conference of Governmental Industrial Hygienists.

TYPICAL DECONTAMINATION LAYOUT
LEVEL D DECONTAMINATION PROCEDURES

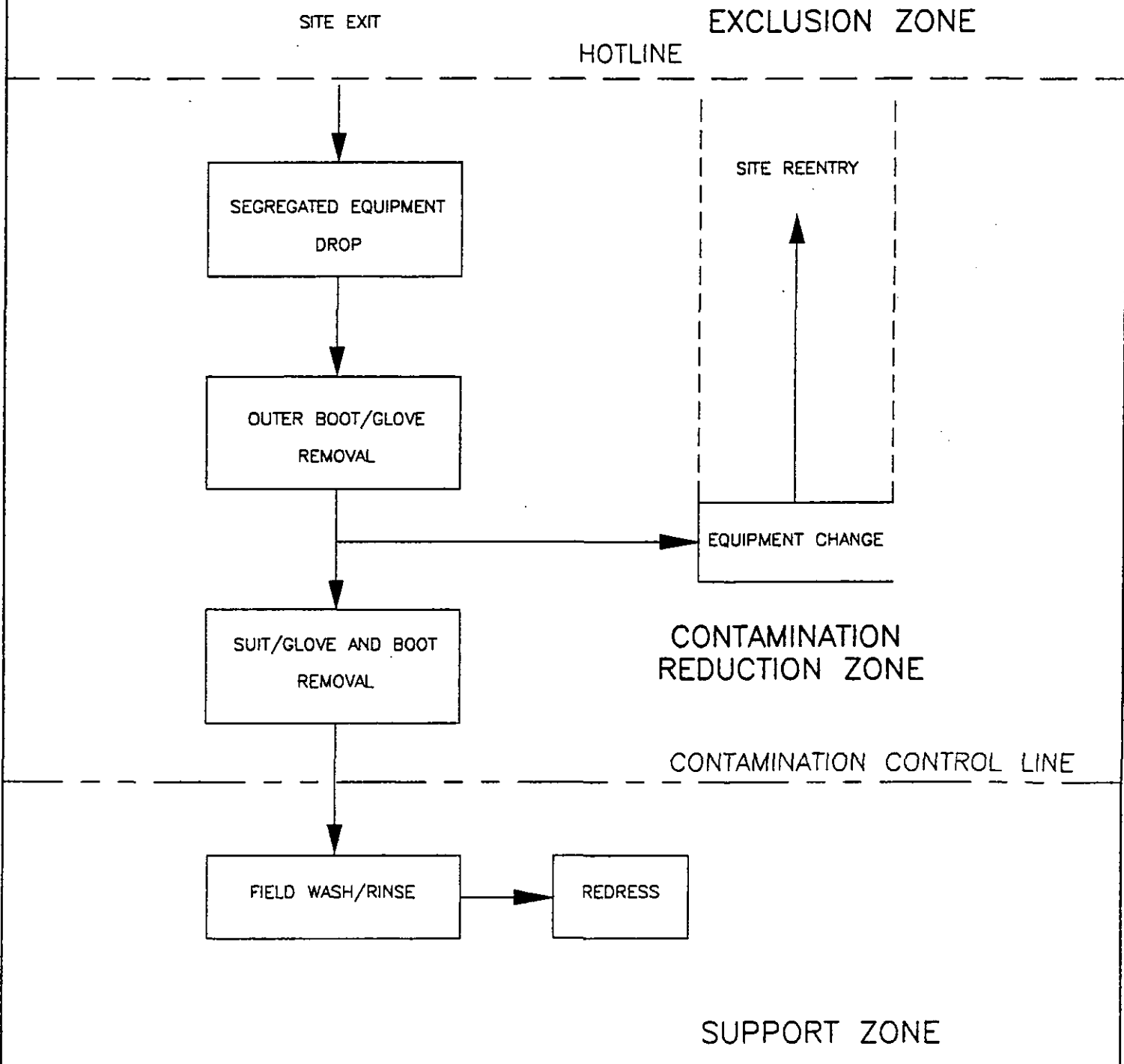


FIGURE - 2

TYPICAL DECONTAMINATION LAYOUT
LEVEL C PROTECTION

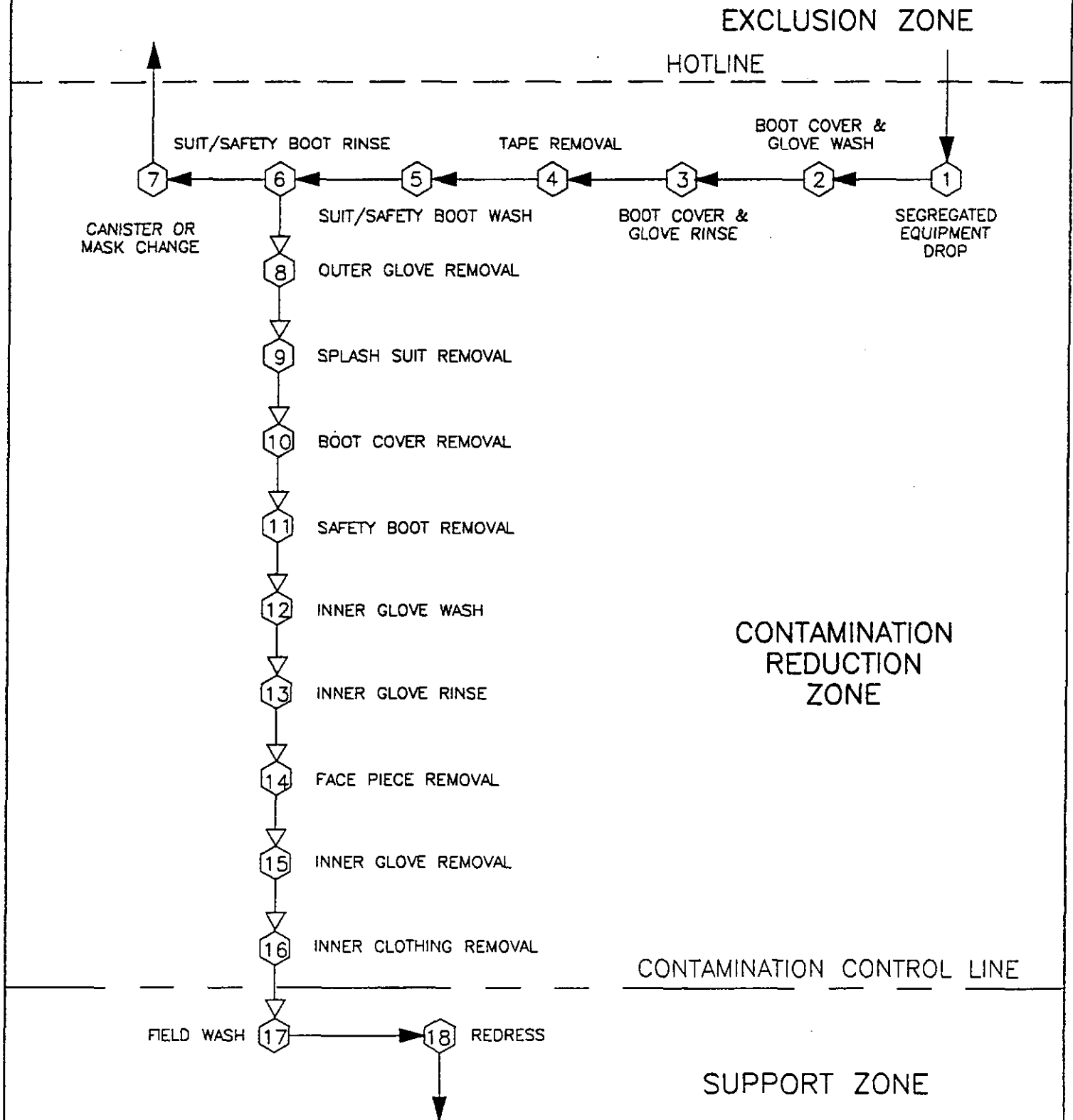


FIGURE - 3

TYPICAL DECONTAMINATION LAYOUT
LEVEL B PROTECTION

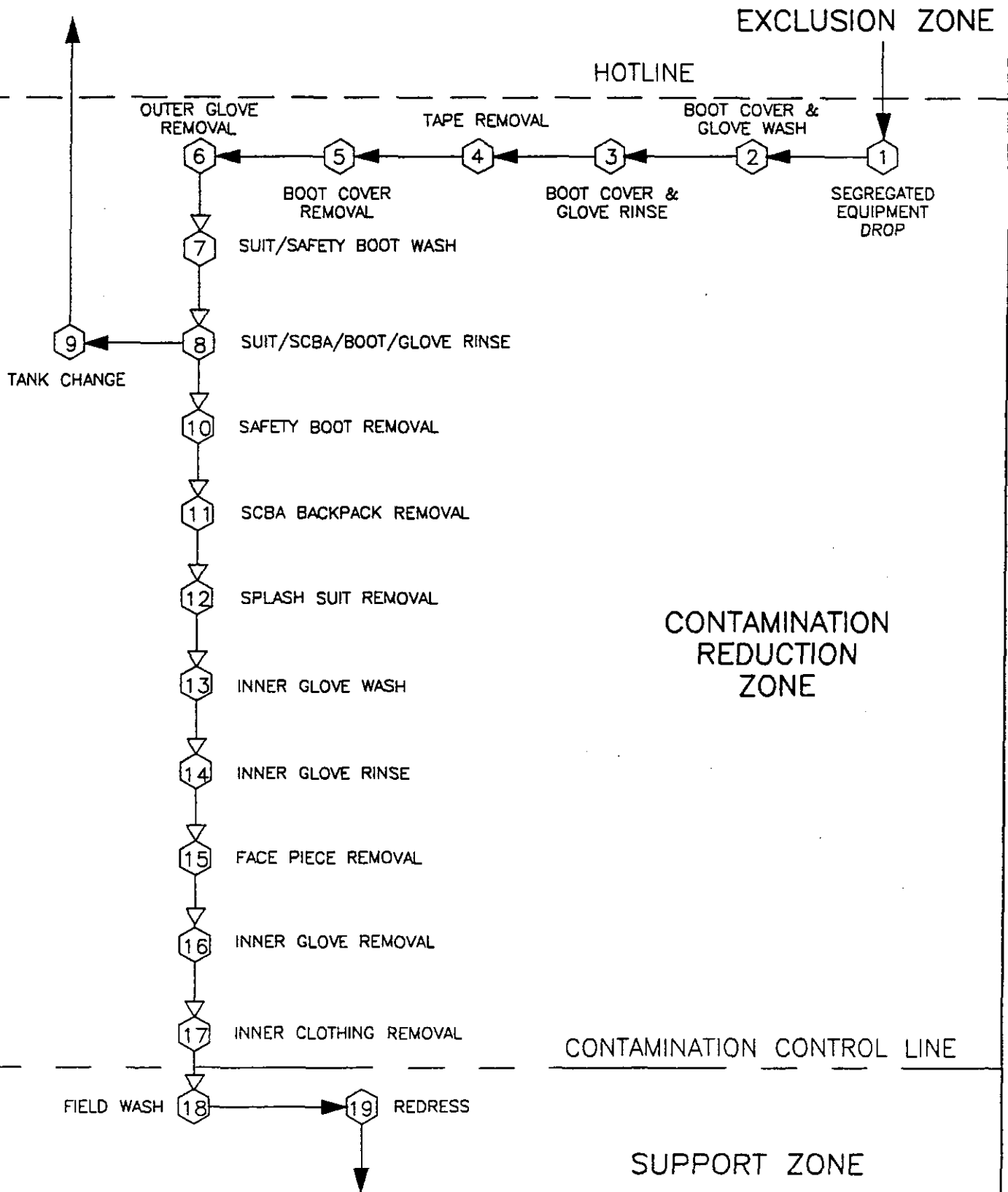


FIGURE - 4

ATTACHMENT 1

Incident Report

INCIDENT REPORT

Site _____

Site Location _____

Report Prepared By _____

Name Printed

Title

Incident Category (Check all that apply)

<input type="checkbox"/> Injury	<input type="checkbox"/> Illness	<input type="checkbox"/> Property Damage
<input type="checkbox"/> Near Miss	<input type="checkbox"/> On-Site Equipment	<input type="checkbox"/> Chemical Exposure
<input type="checkbox"/> Motor Vehicle	<input type="checkbox"/> Fire	<input type="checkbox"/> Electrical
<input type="checkbox"/> Mechanical	<input type="checkbox"/> Other	

Date and Time of Incident _____

Names of Persons Injured (see end of report for details)

NARRATIVE REPORT OF INCIDENT

(Provide sufficient detail so that the reader may fully understand the actions leading to or contributing to the incident, the incident occurrence, and actions following the incident. Append additional sheets of paper if necessary.)

Project # _____
Project Name: _____
Location: _____
Date: _____

WITNESSES TO INCIDENT

1. Name _____ Company _____
Address _____
Telephone No. _____

2. Name _____ Company _____
Address _____
Telephone No. _____

PROPERTY DAMAGE

Brief Description of Property Damage _____

Estimate of Damage _____

INCIDENT LOCATION

INCIDENT ANALYSIS

Causative agent most directly related to accident (object, substance, material, machinery, equipment, conditions): _____

Project # _____
Project Name: _____
Location: _____
Date: _____

Was weather a factor? _____

Unsafe mechanical/physical/environmental condition at time of incident (be specific) _____

Unsafe act by injured and/or others contributing to the incident (be specific, must be answered) _____

Personal factors (improper attitude, lack of knowledge or skill, slow reaction, fatigue) _____

ON-SITE INCIDENTS

Level of personal protection equipment required in Site Safety Plan _____

Modifications _____

Was injured using required equipment? _____

Project # _____
Project Name: _____
Location: _____
Date: _____

INCIDENT FOLLOW-UP

Date of Incident _____

Site _____

Brief Description of Incident _____

Outcome of Incident _____

Physician's Recommendations _____

Date Injured Returned to Work _____

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

**SCOPE OF WORK FOR
OPERATION AND MAINTENANCE**

**Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
Town of Salina, Onondaga County, New York**

December 1, 1999

Prepared for:

**The Pfaltzgraff Co.
140 East Market Street
York, Pennsylvania 17401**

Prepared by:

**REMEDIAL ENGINEERING, P.C.
AND
ROUX ASSOCIATES, INC.
1377 Motor Parkway
Islandia, New York 11788**

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TABLES

1. Proposed Site Monitoring Inspection and Maintenance Form

1.0 INTRODUCTION

This *Scope of Work for Operation and Maintenance (O&M Scope of Work)* has been prepared by Remedial Engineering P.C. (Remedial Engineering) on behalf of the Pfaltzgraff Co. (Pfaltzgraff) to describe the proposed operation and maintenance activities to be performed following the completion of Remedial Activities at the Syracuse China Site (the Site) in the Town of Salina, Onondaga County, New York. The complete O&M Plan will be submitted to the O&M Section of the NYSDEC at a later date during the construction phase of the project. This O&M Scope of Work will allow Pfaltzgraff to establish its intent with respect to O&M activities and allow for a subsequent submission of a final O&M Plan that will incorporate substantive NYSDEC comments on prior submissions. The Site is located to the north of the manufacturing facility on the Syracuse China Property and is generally defined in the March 1996 Record of Decision (ROD) as the industrial landfill, the wastewater settling ponds, and the northern wetlands between the landfill and Factory Avenue.

A complete Site description can be found in the *Final Remedial Design Report (Remedial Engineering, March 1998)*. Also, a summary of the construction activities to be performed for remediation of the Site are outlined in Specification Section 01010, "Summary of Work" of the final design submission. Generally, the Remedial Action includes the following.

- Excavation and consolidation of landfill waste and wastewater settling pond sludges currently located beyond the proposed cap boundary beneath the proposed cap.
- Excavation and consolidation under the cap of a portion of the landfill to restore Class 2 wetlands to its original condition prior to encroachment by the landfill.
- Excavation and consolidation of northern wetland soils beneath the cap. Remediated wetland areas will be revegetated to control erosion.
- Installation of a multi-layer, impermeable cap, consistent with the applicable requirements of 6NYCRR Part 360. The cap will be designed so that no additional encroachment on the wetland will result.
- Reconstruction of settling ponds as necessary to maintain the current wastewater discharge in accordance with State Pollutant Discharge Elimination System (SPDES) permit conditions.
- Development of a long term monitoring program which will allow the effectiveness of the implemented remedy to be monitored as part of operation and maintenance activities for the Site.

Monitoring of discharged facility wastewater will be performed immediately following completion of the Remedial Construction, as well as during the Remedial Construction. However, SPDES monitoring after completion of the Remedial Construction will not be addressed in this O&M Scope of Work or the subsequent O&M Plan, as it is a component of facility operations and will, therefore, be conducted by the facility operator.

As required by the ROD, "a long-term monitoring program will be instituted." This O&M Scope of Work is included as part of the Final Remedial Design, and has been developed to identify proposed O&M activities for the Site in accordance with 6NYCRR Part 360-2.9. "Operation and Maintenance Manual", and the United States Environmental Protection Agency's "Remedial Design/Remedial Action Handbook" (June, 1995), as well as the O&M comments in NYSDEC's March 12, 1999 correspondence. This O&M Scope of Work provides details of the proposed operation and maintenance of the cap (and its integral components) to achieve overall effectiveness of the implemented remedy for the Site. This O&M Scope of Work includes the following proposed monitoring, inspection and maintenance activities discussed in the remaining sections of this O&M Scope of Work:

- Section 2.0 – Proposed Ground-Water Monitoring;
- Section 3.0 - Proposed Landfill Gas Monitoring;
- Section 4.0 - Proposed Vegetation Inspection and Maintenance;
- Section 5.0 - Proposed Fence Inspection and Maintenance;
- Section 6.0 - Proposed Access Road Inspection and Maintenance;
- Section 7.0 - Proposed Surface-Water Runoff Control Inspection and Maintenance; and
- Section 8.0 - Proposed Regulatory Reporting Requirements.

This O&M Scope of Work is the basis of an O&M program that will satisfy Site remediation goals by verifying that Standards, Criteria and Guidance for ground-water quality have been attained, and by maintaining the integrity of the cap and its associated Site features so that threats to the

environment are minimized. As part of proposed O&M activities, a Closure Evaluation Report will be submitted to the New York State Department of Environmental Conservation (NYSDEC) five years after completion of the Remedial Action to establish the effectiveness of the remedy.

In accordance with 6NYCRR Part 360, proposed monitoring and inspections discussed below will be performed by Pfaltzgraff initially on a quarterly basis during the 30-year landfill closure period. As discussed in these sections, it is anticipated the frequency may be altered based on the results encountered at the Site. The form that will be used by Pfaltzgraff for monitoring, inspection and maintenance activities is included as Table 1.

The final O&M Plan will include a table detailing all the required O&M sampling. The table will include the: media; analytes; methods; frequency of sample collection and appropriate QA/QC for each of the samples to be collected. Appropriate baseline data collected during remedial investigation, remedial design and remedial action will also be included in the final O&M submission. The baseline data will consist of: ground-water data; landfill gas monitoring data; boring logs; and soil sample analytical results.

2.0 PROPOSED GROUND-WATER MONITORING

The purpose of the cap is to prevent leaching of lead from the fill material into the groundwater. Institution of a groundwater monitoring program is proposed to verify the performance of the cap. Based on the gauging of ground water and the sampling and analysis for lead in Site ground-water monitoring wells, the performance of the cap may be evaluated. In order to evaluate long-term ground-water quality improvement, a network of suitably located groundwater wells will be gauged and sampled. Monitoring is proposed for the following wells for the indicated purpose:

<u>Monitoring Well</u>	<u>Purpose</u>
MW-1	Upgradient well
MW-2	East side-gradient well
MW-5	West side-gradient well
MW-6	Upgradient well
MW-8	Downgradient well
MW-10	Downgradient well

The proposed monitoring well network will be modified if necessary as a result of field conditions or changes in the scope of Remedial Action. Should changes in the proposed wells be needed, NYSDEC will be notified in the O&M Plan. As part of the O&M program, each of the wells will be gauged for water level measurements using an electronic sounding device (M-Scope). In addition, ground-water contaminant monitoring will be performed in accordance with the procedures and methods presented in the Sampling and Analysis Plan, which is included as part of the Final Remedial Design. These sampling procedures include use of low-flow sampling techniques to obtain representative samples.

During each O&M sampling round, one sample is proposed to be taken from each of the six wells indicated in the table above. Based on the requirements of 6NYCRR Part 360-2.15(k)(4), the groundwater monitoring will be performed for a minimum of five years, and after this period, Pfaltzgraff may request a modification to this schedule from the NYSDEC. Since the Closure Evaluation Report for the Site will be submitted five years following completion of the Remedial

Action, the results of the monitoring will be incorporated into that report. However, in the event that any round of sampling indicates an order of magnitude difference in lead concentrations between the upgradient and downgradient wells, Pfaltzgraff will notify the NYSDEC.

3.0 PROPOSED LANDFILL GAS MONITORING

Although it is not anticipated that gas will be generated in the landfill, in accordance with 6NYCRR Part 2.15(a)(2), it is proposed that a gas monitoring program will be initiated as part of O&M activities. The O&M Plan will include sampling of landfill gas from landfill gas vents within the landfill and sampling of ambient air at discrete locations along the landfill cap perimeter. As stated in this regulation, and the referenced subdivision 360-2.17(f), the landfill gas monitoring program must comply with the following requirements.

- The concentration of methane and other explosive gasses must not exceed the lower explosive limit (LEL) at or beyond the property boundary.
- *The monitoring will include at least three rounds of subsurface explosive gas monitoring.*
- Monitoring will be performed at 400 foot intervals when using permanent monitoring locations.

In addition, it is proposed that hydrogen sulfide will be monitored along with LEL, since hydrogen sulfide is a Site-specific concern. Considering these requirements, it is proposed that LEL and hydrogen sulfide monitoring be performed at the 7 landfill gas vents and at 400 foot intervals around the perimeter of the constructed cap. Monitoring at these locations is appropriate as opposed to the property boundary, since it is expected that the cap interior and perimeter will generate equal to, or higher, gas levels than at the property boundary.

Gas monitoring will be performed in accordance with the procedures and methods specified in the Sampling and Analysis Plan. It is proposed that landfill gas monitoring will be performed quarterly for the first year, and annually thereafter for four years. If the LEL and hydrogen sulfide levels remain at low or non-detect levels for these five years, landfill gas monitoring will be eliminated. During the annual monitoring, if the LEL or hydrogen sulfide limits are exceeded, another round of gas monitoring will be performed within 30 days. If the results of this additional round indicate exceedance of the LEL or hydrogen sulfide limits, quarterly gas monitoring will resume.

In accordance with NYSDEC Air Guide-1, Guidelines for the Control of Toxic Ambient Air Contaminants, the short-term guidance concentration for hydrogen sulfide is 14 micrograms per cubic meter, and if exceeded in any of the interior wells, an appropriate method of treatment will be instituted. Although Air Guide-1 is not applicable for soil gas results, it is considered appropriate to evaluate emissions of air contaminants to the atmosphere.

It is proposed that, in the event that explosive gas levels exceed the LEL or hydrogen sulfide exceeds its limit, Pfaltzgraff will notify the NYSDEC within seven days following the monitoring event, indicating the detected gas levels, along with the steps taken to decrease potential exposures. Within 45 days of detection, Pfaltzgraff will submit a proposed remediation plan to the NYSDEC that will discuss methods to decrease the levels of explosive gasses, and initiate implementation of this plan within 60 days following the date of detection.

Inspections of the gas vents will be performed for the thirty-year life of the landfill. Inspections will include checking each vent to observe and record damage to or obstructions of the piping. Observed damage will be repaired by replacing the pipe or damaged portion, and obstructions will be removed.

4.0 PROPOSED VEGETATION INSPECTION AND MAINTENANCE

The inspection and maintenance of vegetation after completion of construction will be addressed as two distinct elements. These elements will be:

- Landfill Cap Vegetation Inspection and Maintenance; and
- Wetlands Vegetation Inspection and Maintenance.

Each of these two elements will be specifically addressed as part of the inspection and maintenance program for the site as described below.

Landfill Cap

In accordance with 6NYCRR Part 360-2.5(k)(6), a vegetative cover must be established and maintained on exposed final cap cover material. In addition to these requirements, it is important to establish and maintain vegetation in all disturbed areas of the Site.

Long-term erosion control through vegetation maintenance is important in the disturbed areas of the eastern portion of the landfill and on the surface of the cap. These areas will be seeded in order to establish vegetation. Inspections of the vegetated areas will be performed in the disturbed of the Site until vegetation has been established, with additional inspections performed as necessary following major storm events.

Reseeding will be performed in areas not adequately re-established by adding three inches of topsoil and an additional application of seed. If this additional seed application does not promote vegetation growth, other corrective actions will be performed. These corrective actions may include the need for irrigation (if soil desiccation is observed), choosing an alternative seed mixture, application of fertilizer, or placement of straw matting on the ground prior to placement of seed in the event that wind dispersal of seed is hindering germination.

The grass cover will be mowed annually and cut to a height not less than 4 inches and not more than 8 inches.

Wetlands

In accordance with the Record of Decision "Restoration of the wetland will be subject to the need to stabilize soils. The wetland will be allowed to re-vegetate naturally with only initial re-seeding, or appropriate re-vegetation implemented to control erosion." Upon completion of remedial activities it is expected that cattails and phragmites will remain at the perimeter of the restored areas and will migrate into the seeded, stabilized areas over time.

Long-term erosion control through vegetation maintenance is necessary in the restored wetland areas. As described in the plans and specifications for construction, the wetland areas will be seeded with two types of seed mixtures, which are:

- Type A - the New England Erosion Control/Restoration Mix; and
- Type B - the New England Wet Mix.

Inspections of the vegetated areas will be performed in the restored areas of the wetland until vegetation has been established, with additional inspections performed as necessary following major storm events.

Reseeding will be performed in areas not adequately re-established to prevent erosion by adding appropriated organic material and/or an additional application of seed. If this additional seed application does not promote vegetation growth, other corrective actions will be performed. These corrective actions may include modifications to the planting substrate, choosing an alternative seed mixture for the area of concern, or some other appropriate measure.

The restored wetland areas will not be specifically maintained other than the periodic inspections, as it is prescribed that re-vegetation shall occur naturally.

5.0 PROPOSED FENCE INSPECTION AND MAINTENANCE

To control access to certain areas of the Site, a permanent 8-foot high chain-link fence will be installed around the cap, and any wastewater treatment units constructed. The fence will be installed with locking gates and will have appropriate warning signs around the perimeter. Annual inspections are proposed to determine if the fence is adequately controlling unauthorized access, and will assess the need for fence, sign or gate repairs. Repairs will be performed within 30 days of the inspection, since it important to control access on an uninterrupted basis.

6.0 PROPOSED ACCESS ROAD INSPECTION AND MAINTENANCE

In accordance with 6NYCRR Part 360-2.17(s), the permanent landfill cap and access road must be maintained throughout the operation and maintenance period so that maintenance vehicles are able to access the cap areas and constructed wastewater ponds. Inspections of the access road are proposed to determine its condition and establish the need for the placement of additional gravel in the access roadway. If necessary, repairs of the road will be performed within 30 days of the inspection.

7.0 PROPOSED SURFACE-WATER RUNOFF CONTROL INSPECTION AND MAINTENANCE

Surface-water runoff control devices such as cap side slope drainage channels, the energy dissipation structures and associated piping located near the access road to Factory Avenue, and the cap drainage swales will be inspected and maintained as described in the O&M Plan to promote proper working conditions of the devices.

It is proposed that the drainage channels be inspected for settling and clogging with loose debris, and cleaned as necessary, and the energy dissipation structures will be inspected for damage. All obstructions hindering flow in the structures will be removed.

The swales will be inspected for erosion of the riprap and subgrade materials. Additional inspections of all runoff control structures will be performed following major storm events, as necessary.

8.0 PROPOSED REGULATORY REPORTING REQUIREMENTS

In accordance with 6NYCRR Part 360-2.15(k)(4), it is proposed that summary reports will be prepared by Pfaltzgraff annually, at a minimum, and submitted to the NYSDEC. As mentioned previously, it is proposed that monitoring, inspection and maintenance activities will be performed quarterly initially, and modified based on discussions in the previous sections. These reports will include the following:

- *summary of inspection, maintenance and monitoring activities performed during the year;*
- Site monitoring, inspection and maintenance report form;
- analytical results of sampling activities;
- corrective actions to be taken, if appropriate; and
- proposed changes to the inspection, maintenance and monitoring schedule.

The proposed Site Monitoring, Inspection and Maintenance Form is included as Table 1. This form documents the inspection and monitoring activities to be performed at the Site.

Table 1. Proposed Site Monitoring, Inspection and Maintenance Form

Inspector: _____

Date: _____

Item	Action	Value	Notes	Corrective Action Suggested
MW-1	Ground-Water Sample for Lead			
MW-1	Water level Gauge			
MW-2	Ground-Water Sample for Lead			
MW-2	Water level Gauge			
MW-5	Ground-Water Sample for Lead			
MW-5	Water level Gauge			
MW-6	Ground-Water Sample for Lead			
MW-6	Water level Gauge			
MW-8	Ground-Water Sample for Lead			
MW-8	Water level Gauge			
MW-10	Ground-Water Sample for Lead			
MW-10	Water level Gauge			
PGW-1	Monitor for LEL			
PGW-1	Monitor for Hydrogen Sulfide			
PGW-1	Inspect Gas Well			
PGW-2	Monitor for LEL			
PGW-2	Monitor for Hydrogen Sulfide			
PGW-2	Inspect Gas Well			
IGW-1	Monitor for Hydrogen Sulfide			
IGW-1	Inspect Gas Well			

Table 1. Proposed Site Monitoring, Inspection and Maintenance Form

Inspector: _____

Date: _____

Item	Action	Value	Notes	Corrective Action Suggested
IGW-1	Monitor for LEL			
IGW-2	Monitor for Hydrogen Sulfide			
IGW-2	Inspect Gas Well			
IGW-2	Monitor for LEL			
Eastern Portion of Site	Inspect Vegetation			
Eastern Portion of Site	Mow Grass			
Cap Surface	Inspect Vegetation			
Cap Surface	Mow Grass			
Eastern Borrow Area	Inspect Vegetation			
Northern Wetland	Inspect Vegetation			
Swales	Inspect Vegetation			
Swales	Inspect for Erosion			
Fence	Inspect for Damage			
Access Road	Inspect for Damage			
Drop Chute	Inspect for Blockage			
Energy Dissipation Structure	Inspect for Damage			

MW = Ground-Water Monitoring Well

PGW = Perimeter Gas Well

IGW = Interior Gas Well

LEL = Lower Explosive Limit

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SAMPLING AND ANALYSIS PLAN

**Syracuse China Landfill Remedial Action
(Site Number 7-34-053)
Town of Salina, Onondaga County, New York**

February 25, 2000

Prepared for:

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1.0 PROJECT DESCRIPTION

This Sampling and Analysis Plan (SAP) combines the field sampling plan (FSP) and quality assurance project plan (QAPP) to streamline the project planning process. This SAP outlines the measures that will be taken to ensure that data generated by the Remedial Action and the Operations & Maintenance Program are of quality sufficient to meet the data quality objectives.

The FSP elements describe the sampling and data-gathering methods to be used during implementation of the investigation. This includes information relative to site background, sampling objectives, sampling location and frequency, sample designation, sampling equipment and procedures, and sample handling and analysis. Guidance for these elements was acquired from the United States Environmental Protection Agency (USEPA) Compendium of Superfund Field Operations Methods (USEPA 1987), and the USEPA Remedial Design/Remedial Action Handbook (USEPA 1995).

The QAPP elements present the organization, objectives, functional activities and specific quality assurance (QA) and quality control (QC) activities associated with the investigation for this Site. The QAPP elements describe the specific protocols which will be followed for sampling, chain of custody, and laboratory and field analysis. All QA/QC procedures will be developed and implemented in accordance with applicable professional technical standards, USEPA requirements, government regulations and guidelines, and specific project goals and requirements. This element is prepared in accordance with USEPA QAPP guidance documents including "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (USEPA QA/R-5) the "Guidance for the Data Quality Objectives Process" (USEPA QA/G 4) and Data Quality Objectives Process for Superfund" (USEPA 540-R-93-071).

The primary objective of this SAP is to outline procedures to obtain physical data to support the construction effort, and to verify that the data obtained accurately reflect actual environmental conditions in the areas to be remediated and to address whether the final response actions

achieved final remediation levels. Deviations from anticipated conditions will be noted, and acceptable corrective actions will be completed to maintain appropriate quality in the sample collection and analysis program.

1.1 Site History and Physical Description

This section provides a brief summary of the history and physical description of the Site, as documented in part by the March 1996 Record of Decision (ROD), and the Geraghty & Miller, Inc. "Remedial Investigation Report, Syracuse China Landfill, Syracuse, New York" dated December 1995.

1.1.1 Location

The Syracuse China facility is located in the Town of Salina, Onondaga County, New York. The Syracuse China landfill is located to the north of the manufacturing facility on Syracuse China Property. The landfill occupies an area of approximately 13.6 acres and is bounded by Conrail tracks to the south of the site, a wetland and Factory Avenue to the north and undeveloped property owned by Syracuse China to the east and west.

1.1.2 Facility and Site History

The Syracuse China facility was constructed in the 1920's and has been manufacturing china since that time. The Syracuse China facility was purchased by the Pfaltzgraff Co. in 1989, who subsequently sold the property to the Libbey, Inc. in 1995.

The Site has been used as an industrial landfill primarily for disposal of scrap china and molds since approximately 1940. During late 1988, Syracuse China contacted the New York State Department of Environmental Conservation (NYSDEC) Region 7 office regarding upgrading or closure of the landfill in response to revised regulations governing solid waste management, specifically, 6 New York State Codes, Rules and Regulations (NYCRR) Part 360. Pursuant to that contact, Syracuse China performed a Preliminary Hydrogeologic Site Assessment Report (O'Brien & Gere Engineers, Inc., 1990) which was submitted to the NYSDEC. Based on these data, the NYSDEC listed the Site on the Registry of Inactive Hazardous Waste Disposal Sites with a classification of 2 in March, 1991.

Syracuse China ceased disposal of waste in the landfill in September 1994. Pursuant to NYSDEC requirements, a Remedial Investigation (RI) was performed in 1995, and a Focused Feasibility Study (FS) was performed in 1996. Based on the results of this RI/FS, a ROD for the Site was rendered by the NYSDEC in March 1996. NYSDEC interaction and certain pre-design studies have been ongoing since that time.

1.2 Project Objectives and Scope

The objective of the SAP is to define the methods used for implementation of the remedial action and the operations and maintenance program. Specifically, the remedial action will include *wastewater sampling from the remediation derived wastewater and, during and immediately following completion of the Remedial Construction, the permitted wastewater, and sampling off-site fill material.* However, it must be noted that SPDES monitoring after the Remedial Construction has been completed is a component of facility operations and will, therefore, be conducted by the facility operator.

The Operations & Maintenance Program will include ground-water monitoring and landfill gas monitoring.

1.3 Data Usage

The intended use of the data to be collected, as described in Section 1.2, is summarized below.

Data obtained from geotechnical testing will be used to evaluate the usability of on-site soils for the landfill liner in compliance with NYSDEC 6 NYCRR Part 360 requirements.

Data collected from the off-site fill material, if necessary, will be used to evaluate whether "clean fill" analytical (i.e., metals, PAHs) standards are met.

Data collected from wastewater sampling will be used to evaluate if the water generated from construction activities will meet the requirements of the NYSDEC.

Data collected during the methane gas survey will be used to evaluate the adequacy of the passive gas removal system and to verify if methane is present.

Post-remedy ground-water sampling results will be used to confirm that the ground water beneath the Site is not impacted by the waste residing beneath the cap. Wastewater sampling will continue and will be conducted by the facility operator; however, this activity is part of the facility operation which will be carried out pursuant to the SPDES permit issued to the facility operator. The type of sampling and analytical parameters are provided in Table 1.

1.4 Sampling Network Design and Rationale

Sampling locations as described in the Technical Specifications have been determined based on the review of historical information, results of previous investigations, site visits, and the results of the pre-design investigation to be completed.

The sample matrices, parameters, and frequencies of field sample collection, are summarized below and in Table 1 (Remedial Action) and Table 2 (Operations and Maintenance). Table 3 presents a summary of sample collection, preservation, and holding times.

A discrete sample will be collected from the clean fill brought onsite at a frequency of one sample per 2,500 cubic yards, which will be analyzed for the Target Compound List (TCL) parameters. A composite sample will also be collected at a frequency of one per 1,000 cubic yards to be tested for Resource Conservation and Recovery Act (RCRA) metals and polynuclear aromatic hydrocarbons (PAHs).

Water generated from construction activities will be collected in temporary storage and will be sampled for total suspended solids, total dissolved solids, biological oxygen demand (BOD), foam, oil and grease and total lead in accordance with the remediation discharge limits, levels and monitoring requirements provided by the NYSDEC memorandum dated August 18, 1998.

Water generated from operational activities will be sampled and analyzed for the parameters provided in the State Pollutant Discharge Elimination System permit by the facility operator.

Landfill gas will be monitored for methane and lower explosive limit using the Infrared Gas Analyzer (GA 90).

Ground-water samples will be collected from a network of six monitoring wells which includes wells which are upgradient, downgradient and crossadjacent of the landfill cap area. These wells will be sampled for lead on a quarterly basis for the first year of post-closure care and annually thereafter.

1.5 Data Quality Objectives

Data Quality Objectives (DQOs) are qualitative and quantitative statements used to develop a scientific and resource effective sampling design. As stated in the Guidance for the Data Quality Objectives Process (EPA QA/G-4), DQOs are derived from the outputs of each step of the DQO process that:

- classify the study objective;
- define the most appropriate type of data to collect;
- determine the most appropriate conditions from which to collect the data; and
- specify acceptable levels of decision errors that will be used as the basis for establishing the quantity and quality of data needed to support the decision.

The objective of the sampling at the Site is to obtain physical data to support the design effort (i.e., liner materials), and chemical data to support compliance with the SPDES permit and to address whether final response actions achieved remediation levels. A nonprobabilistic (judgmental) sampling approach will be used to select the specific sampling locations for these areas of concern.

Total study error is the combination of sampling and measurement error. Total study error is directly related to decision error. These decision errors can be controlled through the use of hypothesis testing. For chemical analysis sampling, the null hypothesis (baseline condition) is that the parameter of interest exceeds the action level (i.e., will not meet SPDES criteria). This

decision has the smallest degree of decision error. In addition, measurement error is reduced by analyzing individual samples using precise laboratory methods. Chemicals analyses will be performed by a New York State Department of Health Certified Environmental Laboratory Approval Program (ELAP) using United States Environmental Protection Agency (USEPA) Test Methods for the Evaluation of Solid Waste (SW-846).

2.0 QUALITY CONTROL CHECKS

This section describes the QC checks that will be used if chemical analyses become necessary for this field investigation. QC samples serve as checks on both the sampling and measurement systems and assist in determining the overall data quality with regard to representativeness, accuracy, and precision. The frequency and type of field QC samples submitted (depending on the sampling matrix/task) are summarized below and provided in Tables 1 and 2. The laboratory procedures for QC checks are provided within the specific analytical method used and in the laboratory QAPP.

Field duplicate samples are individual portions of the same or essentially the same field sample. These samples can be used to estimate the overall precision of a data collection activity. Sampling error can be estimated by the comparison of duplicate sample results from the same sample. If chemical analyses are performed, one duplicate sample will be collected for each 20 samples collected. If fewer than 20 samples are collected per matrix, one duplicate sample will be analyzed for each matrix.

Field blanks (equipment blanks) are samples which are obtained by running analyte-free water through sample collection equipment after decontamination, and placing it in appropriate sample containers for analysis. These samples are used to determine if decontamination procedures are adequate. If chemical analyses are performed, one field blank will be submitted per matrix per day (where necessary).

Matrix spike/matrix spike duplicates (MS/MSDs) are used to evaluate analytical accuracy, and precision, respectively. If chemical analyses are performed, MS/MSDs will be analyzed by the laboratory at a frequency of one per preparation batch.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The overall management structure and a general summary of the responsibilities of project team members is presented below. The overall management structure for field activities is presented in Figure 1.

Project Manager

The Project Manager bears the primary responsibility for the successful completion of the work assignment within the budget and schedule, provides overall management for the execution of the PDI, directs the activities of the Site Manager and technical staff, performs technical review of all field activities, data review and interpretation and the preparation of all investigation reports. The Project Manager also works closely with the analytical laboratory, data validation contractors, drillers, and surveyors during the execution of the field program. Activities of the Project Manager are supported by senior management, the Project Quality Assurance Coordinator, and support staff.

Site Manager

The Site Manager bears the primary responsibility for the successful execution of the field program. The Site Manager directs the activities of technical staff in the field and assists in the interpretation of all physical and chemical data, and report preparation. The Site Manager is also responsible for the management of technical staff including engineers, hydrogeologists and technicians, and subcontractors such as drillers and surveyors. In addition, the Site Manager works closely with the Site Health and Safety Officer to ensure compliance with the Health and Safety Plan (HASP).

Field Technical Staff

Field technical staff consists of engineers, hydrogeologists and technicians who will perform activities such as soil and gas sampling, and preparation of any field documentation which may be necessary.

Laboratory Manager

If chemical analyses become necessary, the Laboratory Manager is responsible for sample container preparation, sample custody in the laboratory, and completion of the required analyses through oversight of the laboratory staff. The Laboratory Manager will ensure that quality assurance procedures are followed and that an acceptable laboratory report is prepared and submitted. The Laboratory Manager reports to the Project Manager.

Project Quality Assurance Coordinator

The Project Quality Assurance Coordinator (PQAC) is responsible for conducting reviews, inspections, and audits to assure that the data collection is conducted in accordance with the SAP. These responsibilities range from effective field equipment decontamination procedures, to proper sample collection, to review of all laboratory analytical data (including tentatively identified compounds, if analyzed) to ensure completeness and usefulness. The PQAC reports to the Project Manager.

4.0 QUALITY ASSURANCE OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

The overall QA objective is to develop and implement procedures for field sampling, chain of custody, laboratory analysis, and reporting that will provide results which maximize the likelihood of obtaining defensible data. The purpose of this section is to address the project specific objectives for precision, accuracy, representativeness, completeness, and comparability, known as the "PARCC" parameters. Specific procedures for sampling, chain of custody, laboratory instruments calibration, laboratory analysis, data reporting, internal quality control, audits, preventive maintenance of field equipment, and corrective action are described in Sections 5.0, 6.0, and 7.0 of this SAP.

4.1 Accuracy, Precision, and Sensitivity of Analysis

The fundamental QA objective with respect to accuracy, precision, and sensitivity of laboratory analytical data is to achieve the QC acceptance criteria of the analytical protocols.

Accuracy, precision and completeness requirements will be addressed for all the data generated. Accuracy, defined as the ability to obtain a true value, is monitored through the use of field and method blanks, spikes, standards, and federal and state regulations and guidelines. Precision, defined as the ability to replicate a value, is monitored through duplicate (replicate) samples. Precision is assessed for each matrix. Corrective actions and documentation for substandard recoveries, or substandard precision, must be performed by the laboratory. Chemical analyses will be based on modified criteria for non-ASP/CLP analyses.

Instrument sensitivity must be monitored to ensure that instrument performance is adequate to yield quality data. Method detection limits depend on instrument sensitivity and matrix effects. Monitoring of instrument sensitivity is performed through the analysis of reagent blanks, near detection limit standards and response factors.

Quality control criteria for laboratory and field analyses are provided in Table 3.

4.2 Completeness, Representativeness and Comparability

Completeness is defined as a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. It is expected that the laboratory will provide data meeting QC acceptance criteria for 95 percent or more for all samples tested using the Routine Analytical Services (RAS) methods (SW-846). Following completion of the analytical testing, the percent completeness is calculated by the following equation:

$$\text{Completeness (percent)} = \frac{(\text{Valid Data Obtained})}{(\text{Total Data Planned})} \times 100$$

Representativeness is defined as the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative parameter which is dependent upon the proper design of the sampling program and proper laboratory protocol. The sampling network was designed to provide data representative of Site conditions. During development of this network, consideration was given to past waste disposal practices, existing analytical data, and physical setting and processes. Representativeness will be satisfied by ensuring that the SAP is followed; and if chemical analyses are required, that proper sampling techniques are used, proper analytical procedures are followed and holding times of the samples are not exceeded in the laboratory. Representativeness will be assessed in part by the analysis of field duplicate samples if chemical analyses are performed.

Comparability expresses the confidence with which one data set can be compared with another. The extent to which existing and planned analytical data will be comparable depends on the similarity of sampling and analytical methods. The procedures used to obtain analytical data are expected to provide comparable data.

5.0 SAMPLING PROCEDURES

Sampling and data gathering methods are described in the subsections that follow. Sample Designation is described in Subsection 5.1. Subsection 5.2 describes Sample Handling and Analysis including: field sample handling and equipment; field analysis; and laboratory analysis. A discussion of Decontamination Procedures is included as Subsection 5.3 and includes drilling equipment, personnel protection, and sampling equipment. Waste Handling and Disposal is described in Subsection 5.4.

5.1 Sample Designation

Sample bottles (preserved, if necessary), labels, shipping containers, trip blanks, and field blank water will be provided by the laboratory. During collection and containment of soil samples (chemical and geotechnical analyses), the sample container will be labeled with the following information:

- Site identifier;
- Project Team project number;
- sample type (media) identification code;
- sample location identifier and field quality control (QC) identifier (if applicable);
- sample depth and analysis identifier;
- date and time of collection; and
- type of preservative added (if applicable).

Ground-water and/or effluent samples containers will be labeled with the following information:

- Site identifier;
- Project Team's project number;
- sample type (media) identification code;
- sample location identifier and field QC identifier (if applicable);
- date and time of collection;
- field handling (e.g., filtration); and
- type of preservative added (if applicable).

The sample identification code and number provided on each sample label will follow the sample number and coding system as described below.

1. Sample type (media) abbreviations will be as presented below.

ground-water sample	= GW
soil sample (fill material)	= SS
effluent sample	= ES

Sample location abbreviations will be as presented below.

fill material	= FM followed by the designated boring number.
monitoring well	= MW followed by the designated well number.
discharge point	= DP followed by the designated location number.
gas point	= represented by grid coordinates or W and a number if collected in the wetland.

2. Depth intervals will be designated in feet or tenths of a foot (e.g., 0.1, 1.0, etc.).

3. QC identifiers will be as follows if chemical analyses are required:

Field replicate	= R
Field blank	= FB
Matrix Spike and Matrix Spike Duplicate	= MS/MSD
Matrix Spike Blank	= MSB

A record of sequentially numbered soil samples for each boring location with corresponding sample designations will be kept in the field book.

5.2 Sample Handling and Analysis

To assure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples as well as sample packaging and shipping procedures.

5.2.1 Field Sample Handling and Shipment

All samples will be collected and handled according to the appropriate analytical protocols for each matrix. The types of containers, volumes needed and preservation techniques for the proposed testing parameters are presented in Table 4.

Geotechnical soil samples will be placed with a shovel in 3-gallon plastic bags, labeled with the sample location designation, tied closed and sent to the geotechnical laboratory for analysis. Sample packaging and shipping procedures for samples requiring chemical analysis are based upon USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations. The procedures vary according to potential sample analytes, concentration, and matrix, and are designed to provide optimum protection for the samples and the public. If chemical analyses are required, the sample packaging and shipment must be performed using the general outline described below.

All samples will be shipped within 48 hours of collection and will be preserved appropriately from the time of sample collection. A description of the sample packing and shipping procedures for samples requiring chemical analyses is presented below.

1. Prepare cooler(s) for shipment.
 - tape drain(s) of cooler shut;
 - affix "This Side Up" arrow labels and "Fragile" labels on each cooler; and
 - place mailing label with laboratory address on top of cooler(s).
2. Arrange sample containers in groups by sample number.
3. Ensure that all bottle labels are completed correctly. Place clear tape over bottle labels to prevent moisture accumulation from causing the label to peel off.
4. Arrange containers in front of assigned coolers.
5. Seal sample containers within plastic zip-lock bags to prevent leakage.
6. Place approximately 2 inches of vermiculite or other packaging material at the bottom of the cooler to act as a cushion for the sample containers.
7. Arrange containers in the cooler so that they are not in contact with the cooler or other samples.

8. Fill remaining spaces with vermiculite or other packaging material.
9. Ensure all containers are firmly packed in vermiculite or other packaging material.
10. *If ice is required to preserve the samples, ice cubes should be repackaged in double zip-lock bags, and placed on top of the vermiculite or other packaging material.*
11. Sign chain of custody form (or obtain signature) and indicate the time and date it was relinquished to Federal Express or other carrier, as appropriate.
12. Separate copies of chain of custody forms. Seal proper copies within a large zip-lock bag and tape to cooler. Retain copies of all forms.
13. Close lid and latch.
14. Secure each cooler using custody seals.
15. Tape cooler shut on both ends.
16. Relinquish to Federal Express or other courier service as appropriate. Retain airbill receipt for project records. *(Note: All samples will be shipped for "NEXT DAY" delivery.*
17. Telephone laboratory contact and provide him/her with the following shipment information:
 - sampler's name;
 - project name;
 - number of samples sent according to matrix and concentration; and
 - airbill number.

5.2.2 Field Analysis

The procedures for field measurement of pH, Eh, specific conductance, temperature, and organic vapors (PID) are described in the Standard Operating Procedures (SOPs) in the FSP (Appendix A). Method references are included in Tables 1 and 2.

Portable probes operated according to the manufacturer's instructions and the Roux Associates' SOPs will be used for specific conductance, temperature, Eh, and pH. For these field measurements, ground water will be collected and transferred into clean containers. The separate specific conductance and temperature/pH/Eh probes will be inserted into the containers and allowed to equilibrate prior to recording the readings.

The analysis for landfill gases (i.e., methane, hydrogen sulfide) will be performed using a Landtec GA 90 Infrared Gas Analyzer, and an Industrial Scientific Corporation HS 267 H₂S monitor.

5.2.3 Laboratory Analysis

Methods published by the USEPA will be used as the basis for all chemical analyses for which such methods exist. The laboratory will follow methods detailed in SW-846. The specific methods are provided in Tables 1 and 2. These methods have been chosen based on applicability to the investigation and the level of data quality provided by the method.

5.3 Decontamination Procedures

The procedures for the decontamination of field equipment, personnel and sampling equipment are outlined in the following subsections.

In an attempt to avoid the spread of contamination, all equipment (i.e., drilling tools, sampling equipment, etc.) must be decontaminated at a reasonable frequency in the decontamination area. The location of the decontamination area will be determined prior to the start of operations.

5.3.1 Excavating Equipment

The excavating equipment will be cleaned by the contractor before arriving at and exiting the Site. The tools, and any piece of equipment that may come in contact (directly or indirectly) with the soil, will be steam cleaned prior to excavation to verify proper decontamination.

All steam cleaning (decontamination) activities will be monitored and documented by the Project Team.

5.3.2 Personnel Protection

The field work will be performed in level D protection. Any required decontamination of personnel will be performed at a designated area of the Site and appropriate decontamination materials (e.g., eye wash) will be maintained for use in this area.

5.3.3 Sampling Equipment

All soil and water sampling equipment used to collect samples for chemical analyses will be decontaminated prior to sampling and between sampling locations according to the procedures outlined in the SOPs. Soil sampling equipment will be decontaminated using steam cleaning equipment, non-phosphate, laboratory-grade detergent solution, and distilled or potable water in a clean bucket. Water sampling equipment will be decontaminated prior to sampling in a similar manner.

5.4 Waste Handling and Disposal

Wastes generated during the performance of field tasks (e.g., drill cuttings) will be contained within the limits of the existing landfill. These wastes will be consolidated under the cap of the proposed landfill during construction. The handling of all wastes will conform to all health and safety requirements of the HASP.

6.0 SAMPLE HANDLING AND CUSTODY REQUIREMENTS

The possession and proper transfer of samples which may require chemical analysis and sample-related information must be traceable from the time the samples are collected until the data have been accepted for analysis. The following subsections summarize the general aspects of custody and how they will be applied and managed during the course of the project. Subsection 6.1 discusses Field Chain of Custody Procedures and Subsection 6.2 discusses Laboratory Chain of custody Procedures.

A sample or sample-related information (sample or evidence file) is under your custody if it:

- is in your possession;
- is in your view, after being in your possession;
- is in your possession and you place them in a secured location; or
- is in a secured, designated place.

6.1 Field Chain of Custody Procedures

The sample packaging and shipment procedures summarized below will ensure that any samples requiring chemical analyses will arrive at the laboratory with the chain of custody intact. The protocols for specific sample numbering and other sample designation documentation are included in the Section 5.1.

6.1.1 Field Procedures

- a) The field sampler is responsible for the care and custody of the samples until they are transferred or properly dispatched. As few people as possible should handle the samples.
- b) All bottles will be labeled with the appropriate sample numbers and locations.
- c) Sample labels are to be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample tag because the ball-point pen would not function in freezing weather.
- d) The Field Manager will review all field activities to determine whether proper custody procedures were followed during the field work and decide if additional samples are required.

6.1.2 Field Logbooks/Documentation

Field logbooks will be used to document data collection activities performed in the field. As such, entries will be described in sufficient detail such that persons going to the Site could reconstruct a particular situation without reliance on memory. A summary of field documentation requirements is presented below.

Field logbooks will be bound field survey books or notebooks. Logbooks will be assigned to field personnel, but will be stored in the document control area when not in use. Each logbook will be identified by the project-specific document number.

The title page of each logbook will contain the following:

- person to whom the logbook is assigned;
- logbook number;
- project name;
- project start date; and
- end date.

At the beginning of each entry, the date, start time, weather, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry will be entered into the field logbook. The names of visitors to the Site, field sampling or investigation team personnel and the purpose of their visit will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. All entries will be made in ink (if possible) and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark and initialed by the person making the correction. Whenever a sample is collected, or a measurement is made, a detailed description of the location of the station shall be recorded. The number of the photographs taken of the station, if any, will also be noted. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected according to procedures outlined in the SOPs. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, sample volume and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples they will receive an entirely separate sample identification number, and will be noted under sample description (in the field logbooks but not the chain of custody).

6.1.3 Transfer of Custody and Shipment Procedures

- a) Samples requiring chemical analyses will be accompanied by a properly completed chain of custody form. The sample numbers and locations will be listed on the chain of custody form. When transferring the possession of samples, the individuals *relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage area.*
- b) Samples requiring chemical analyses will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate, signed custody record enclosed in or on each sample box or cooler. Shipping containers will be locked and secured with strapping tape and USEPA custody seals for shipment to the laboratory. The preferred procedure includes use of a custody seal attached to the front right and back left of the cooler. The custody seals are covered with clear plastic tape. The cooler is taped shut with strapping tape in at least two locations.
- c) Whenever samples requiring chemical analyses are split with another source (e.g., a government agency), a separate sample receipt is prepared for those samples and marked to indicate with whom the samples are being split. The person relinquishing the samples to the facility or agency should request the representative's signature acknowledging sample receipt. If the representative is unavailable or refuses, this is noted in the "Received By" space.
- d) All shipments of samples which require chemical analyses will be accompanied by the chain of custody record identifying the contents. The original record will accompany the shipment, and the pink and yellow copies will be retained by the sampler for returning to the sampling office. Photocopies of the original record should be made before shipment, if possible, to ensure that clean copies can be made later.
- e) If the samples are sent by common carrier, a bill of lading (airbill) must be used. Receipts of bills of lading will be retained as part of the permanent documentation. If sent by mail, the package will be registered with return receipt requested. Commercial carriers are not required to sign off on the custody form as long as the custody forms are sealed inside or on the outside of the sample cooler and the custody seals remain intact.

6.2 Laboratory Chain of Custody Procedures

Laboratory custody procedures for sample receiving and log-in, sample storage, tracking during sample preparation and analysis, and storage of data are described in the laboratory QA plan. All laboratory handling and custody procedures must conform to the USEPA requirements. A brief summary of the required laboratory custody and sample handling procedures is presented below.

The laboratory's QA officer will ensure that chain of custody records are filled out upon receipt of the samples and will note questions or observations concerning sample integrity. The laboratory's QA officer will also ensure that sample-tracking records are maintained. These records will follow each sample through all stages of laboratory processing. The sample tracking records must show the date of sample extraction or preparation and the date of instrument analysis. These records will be used, in part, to determine compliance with holding time requirements.

7.0 INSTRUMENT CALIBRATION PROCEDURES AND PREVENTATIVE MAINTENANCE

This section describes procedures for maintaining the accuracy of all measurements and equipment which are used for conducting field tests and laboratory analyses. All equipment must be calibrated prior to each use and on a periodic basis. The preventative maintenance procedures described below are designed to prevent injury and loss of time and data due to faulty equipment/

instrumentation. The purpose of preventative maintenance is to address potential problems before they occur and to help assure that equipment/measurements systems operate adequately when used for routine project activities.

7.1 Field Instruments/Equipment

Field instruments and equipment used to gather, generate, or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications. Specific preventative maintenance procedures to be followed for this and other field equipment are those recommended by the manufacturer.

Equipment to be used during field sampling will be examined to certify that it is in operating condition. This includes checking the manufacturer's operating manual to ensure that all maintenance requirements are being observed. Backup instrumentation will be sent into the field where possible. Two thermometers will be sent to sampling locations where measurement of temperature is required, including those locations where a specific conductance probe/thermometer is required. Preventive maintenance will be conducted for equipment and instruments to ensure the accuracy of measurement systems, and to verify the availability of spare parts and backup systems.

Calibration of field instruments is governed by the specific SOP for the applicable field analysis method, and such procedures take precedence over the following general discussion.

Calibration of field instruments will be performed at the intervals specified by the manufacturer or more frequently as conditions dictate. The field instrumentation to be used includes a Landtec GA-90 Infrared Gas Analyzer. Field instrumentation may also include an Organic Vapor Meter (OVM) or photoionization detector (PID), pH meter, water-level indicator, interface probe, specific conductance meter, and thermometer for water analyses.

The Landtec GA-90 calibration will be checked with a span gas with 15% carbon dioxide and 15% methane. In the event that an internally calibrated field instrument fails to meet calibration/checkout procedures, it will be removed from service until the problem is resolved.

7.2 Laboratory Instruments

Calibration procedures and frequencies are specified in the specific SW-846 method protocol. In all cases where analyses are conducted according to these protocols, the calibration procedures and frequencies specified in the applicable SW-846 methods will be followed.

Calibration of laboratory equipment for SW-846 analyses will be based on approved written procedures. Records of calibration, repairs, or replacement will be filed and maintained by the designated laboratory personnel performing QC activities. These records will be filed at the location where the work is performed and will be subject to QA audits. For all instruments, the laboratory will retain a factory-trained repair staff with in-house spare parts or will maintain service contracts with vendors.

The records of laboratory calibration will be kept as follows:

- if possible, each instrument will have a record of calibration permanently affixed with an assigned record number;
- a label will be affixed to each instrument showing description, manufacturer, model numbers, date of last calibration, by whom calibrated (signature), and due date of next calibration. Reports and compensation or correction figures will be maintained with the instrument;
- a written stepwise calibration procedure will be available for each piece of test and measurement equipment; and

- any instrument that is not calibrated with the manufacturer's original specification will display a warning tag to alert the analyst that the device carries only a "Limited Calibration."

7.3 Standards/Calibration Solutions Preparation

The standards/calibration solutions preparation will be performed in accordance with the SW-846 protocol requirements, if applicable, and using good laboratory practice (GLP) in all cases.

7.4 Documentation

Appropriate documentation of all equipment/instrument maintenance shall be maintained by the field and laboratory personnel and shall include what was done, date, time (if appropriate), next scheduled maintenance, equipment status, anomalies, and person performing maintenance. This documentation shall be entered into field logbooks, or into specific maintenance log forms for off-site maintenance activities.

8.0 DATA REDUCTION, VALIDATION AND REPORTING

If specifically required by the NYSDEC, data validation will be performed; however, based on the data used, this is not expected. Should validation be required, applicable methods/procedures will be required for the reduction, validation and reporting of data generated from chemical analyses, if necessary. Both the field and laboratory data will be subjected to a level of data validation commensurate with the required data quality level. If required, all data will be validated using either the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February, 1994), NYSDEC Organics Data Review and Preliminary Review (SOP No. HW-6, Revision 8), USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February, 1994) and/or the NYSDEC Evaluation of Metals Data for the Contract Laboratory Program (SOP No. HW-2, Revision #11) or the same guidelines modified for SW-846 methods analyses. The level of complete transcription checks (raw data to reporting for calculation checks) shall nominally be 20 percent, but this percentage may be increased or decreased depending on the nature and significance of the individual results.

8.1 Data Reduction

Data reduction involves the generation, interpretation and calculation of results from the field and laboratory analyses performed as part of the data gathering effort. In order to make the appropriate decisions, it is necessary to verify that the reported values are correct, both in the way they have been generated (instrument calibration, etc.) and the way they are calculated and reported. Due to the different quantities of documentation and the different quality levels of data generated in the field and the laboratory, somewhat different levels of effort are required for reduction verification for these different data sources.

8.1.1 Field Data Reduction

Raw data from field measurements and sample collection activities will be appropriately recorded in the field logbook. If the data are to be used in the project reports, they will be documented in the report. All measurement data recorded in field logbooks or field forms will be reviewed by the Project Manager for completeness and clarity. Any discrepancies noted will

be resolved by the Project Manager. All calculation equations shall also be verified by the Project Manager and individual calculations will be verified at a minimum frequency of 30 percent by the PQAC.

8.1.2 Laboratory Data Reduction

For data resulting from chemical analyses, the off-site laboratory will perform in-house analytical data reduction and validation under the direction of the Laboratory QA Officer. The Laboratory QA Officer is responsible for assessing data quality and advising of any data which were rated "preliminary" or "unacceptable" or other notations which would caution the data user of possible unreliability. Data reduction, validation, and reporting by the laboratory will be conducted as follows:

- raw data produced by the analyst is turned over to the respective area supervisor;
- the area supervisor reviews the data for attainment of QC criteria as outlined in SW-846 protocols and/or established USEPA methods and for overall reasonableness;
- upon acceptance of the raw data by the area supervisor, a computerized report is generated and sent to the Laboratory QA Officer;
- the Laboratory QA Officer will complete a thorough audit of reports at a frequency of one in ten, and an audit of every report for consistency;
- the Laboratory QA Officer and area supervisors will decide whether any sample re-analysis is required; and
- upon acceptance of the preliminary reports by the Laboratory QA Officer, final reports will be generated and signed by the Laboratory Project Manager. The laboratory package shall be presented in the same order in which the samples were analyzed.

Data reduction reporting procedures will be those specified in the SW-846 protocols for inorganic and organic analyses.

Laboratories will prepare and retain full analytical and QC documentation the same as or similar to that (SW-846 protocols) required by the CLP.

The laboratory will report the data in chronological order along with all pertinent QC data. Laboratories will provide the following information to the prime contractor in each analytical data package submitted.

1. Cover sheets listing the samples included in the report and narrative comments describing problems encountered in analysis.
2. Tabulated results of inorganic and organic compounds identified and quantified.
3. Analytical results for QC samples, spikes, sample duplicates, initial and continuing calibration verification standards and blanks, standard procedural (method) blanks, laboratory control samples, and Inductively Coupled Plasma (ICP) interference check samples.
4. Tabulation of instrument detection limits determined in pure water.
5. Raw data system printouts (or legible photocopies) identifying: date of analyses, analyst, parameter(s) determined, calibration curve, calibration verifications, method blanks, sample and any dilutions, sample duplicates, spikes and control samples.
6. Sample preparation/extraction/analysis logs including weights, volumes and dilutions.

8.2 Field Data Validation

Field data assessment will be accomplished by the efforts of the PQAC and/or Project Manager. The data assessment by the Project Manager or his/her designee will be based on the criteria that the sample was properly collected and handled.

8.3 Laboratory Data Validation

Validation of laboratory generated data may be performed by the Project Team or a Remedial Engineering, P.C. subcontractor if necessary. The Contractor data reviewer will conduct a systematic review of the data for compliance with the established QC criteria based on the spike, duplicate and blank results provided by the laboratory. An evaluation of data accuracy, precision, representativeness and completeness, based on criteria in Section 4, will be performed and presented in the summary report.

The data reviewer will identify any out-of-control data points and data omissions and interact with the laboratory to correct data deficiencies. Decisions to repeat sample collection and analyses may be made by the Project Manager based on the extent of the deficiencies and their importance in the overall context of the project.

Data validation for laboratory data will be performed in accordance with the aforementioned documents for evaluating organic analyses and inorganic analyses for all samples, however, use of the guidelines will be modified according to the applicable method and required QA/QC. It is anticipated that all chemical laboratory data will be validated (i.e., complete transcription checks, calculation checks, etc.) by the laboratory.

8.4 Data Reporting

All data generated from chemical analyses for the Site will be computerized in a database format organized to facilitate data review and evaluation. The computerized data set will include the data flags provided in accordance with the USEPA Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses and Inorganic Analyses, as well as additional comments of the data reviewer. For SW-846 analysis, the data will include appropriate flags based on the data validation functional guidelines. The data flags will include such items as: 1) concentration below required detection limit, 2) estimated concentration due to poor recovery below required detection limit, 3) estimated concentration due to poor spike recovery, and 4) concentration of chemical also found in laboratory blank. Selected data reviewer comments will also become part of the database in order to indicate whether the data are usable as a quantitative concentration, usable with caution as an estimated concentration, or unusable due to out-of-control QC results.

The Site data set(s) will be available for controlled access by the Project Manager, and authorized personnel. The complete data set(s) will be incorporated into the report.

9.0 ASSESSMENT AND RESPONSE ACTIONS

This section provides the types, frequencies and content of the various audits and audit functions to be applied to this project. Audits for the work generally consist of four types: management audits, data quality audits, technical systems audits and performance audits. These audits may be internal (performed by the same agency/organization generating the information) or external (performed by an outside agency/organization). The purpose of these audits is to establish and verify that the sampling and analysis activities are performed in accordance with this SAP.

Project audits are intended to provide information regarding:

- on-going assessment of the data quality;
- identification of areas with a need for improvement;
- verification of QA program implementation;
- assessment of applied resources to complete the assigned tasks; and
- address changes and/or variances to procedures necessitated by the actual field or laboratory conditions.

The Project Team is dedicated to confirmation of the specific and overall QA/QC objectives for this project through the use of management, performance and systems audits. The specific content and frequency of audits anticipated for this project are delineated below.

9.1 Management Audits

Management audits may be performed by Project Team personnel to determine whether the management functions and responsibilities related to environmental measurements are performed in accordance with the Project Team's QA procedures. Management audits will include a review of the SAP implementation for this project in order to evaluate:

- the level of management support;
- the field and analytical tracking systems;
- the procedures for developing the project DQOs;
- the procedures for developing, approving and reviewing the SAP;
- the procedures for developing and approving SOPs; and
- the procedures and schedules for conducting audits.

Management audits are an on-going function of the Project Team's QA/QC procedures. Project-specific management audits for this project are the responsibility of the Project Manager and will be implemented as required for each management function. The Project Manager will review the management program and the other audit functions on a routine basis.

9.2 Data Quality Audits

Data quality audits may be performed by The Project Team or The Project Team's contractor personnel to determine whether data derived as part of the work are of known quality. Data quality audits will be supported by the data validation effort to determine whether or not sufficient information exists with the data set to support an assessment of data quality. Through the use of data validation and authentication (if applicable), information provided by the Project Team and its contractors will be used to audit and evaluate:

- if a data set, or all the data sets of a particular project, met the DQOs;
- if the contractor collecting or reducing the data performed their own data quality assessment; and
- if the contractor identified deficiencies (if they existed) and corrected the cause(s), both technical and managerial.

For data generated by laboratories and contractors other than the Project Team, all data will be verified through the data validation and authentication (if applicable) programs as described in Section 8. Hard copy data from the laboratories and/or contractors will be checked for completeness and accuracy of data reduction at the level and frequency specified in this section. For data validation performed by the Project Team's subcontractors, key data may be subject to additional Project Team validation based on its importance in decision making for the project.

All data quality functions will be subject to Project Team oversight to verify the accuracy and completeness of the data reduction and validation efforts. Data quality is the responsibility of the PQAC and will be implemented as required for each type of data generating activity. At a minimum, the PQAC will review the data validation effort, perform spot checks on the quality of the data validation effort, and document his/her findings.

9.3 Technical Systems Audits

Technical systems audits may be performed to determine if the field and laboratory sampling and analytical systems specified in the SAP are sufficient to generate data which will meet the stated DQOs. These audits will include the on-site examination of field and laboratory activities for quality and conformance to the SAP. Both internal (performed by the same agency/organization generating the information) or external (performed by an outside agency/organization) audits will be performed for both the field and laboratory systems.

9.3.1 Field Audits - Internal

The internal field audits will include examination and review of field sampling records, field instrument operating records, sample collection, handling, packaging and shipping procedures, maintenance of QA procedures, chain of custody, etc. to determine conformity to the SAP. Internal audits of field activities (sampling and measurements) will be conducted by the Project Team PQAC and/or Project Manager. Should any deficiencies be discovered during the course of the audit, the PQAC will have the authority to take any necessary action, including implementing a "stop work" order, to correct the deficiency.

These internal field audits will occur at the onset of the project to verify that all established procedures are followed. Follow-up audits to correct deficiencies, and to verify that QA procedures are maintained throughout the investigation, will be conducted on a routine basis. The specific contents of these audits will be based on Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) guidelines.

9.3.2 Field Audits - External

At this time it is not anticipated that external audits of the field activities will be necessary. However, if the internal audits determine that deficiencies exist which require an outside organization or agent to resolve the problem(s), the Project Team will employ the services of an outside subcontractor to audit the field activities and make/suggest corrections to the problem.

9.3.3 Laboratory Audits - Internal

The internal laboratory system audits will be performed by the Laboratory QA Officer on at least an annual basis (at a minimum) and will include examination of laboratory documentation on sample receiving, sample log-in, sample storage, chain of custody procedure, sample preparation and analysis, instrument operating records, etc. as described in the laboratory QA Plan (if applicable) or according to the guidelines set forth in the CLP Bid Package documentation regarding laboratory QA requirements.

9.3.4 Laboratory Audits - External

For this project it is anticipated that only laboratories currently meeting the criteria set forth for the ASP/CLP and NYSDOH ELAP will be used for off-site chemical sample analyses. These laboratories will have already been subject to a laboratory audit by NYSDEC/USEPA personnel and it is not anticipated that an additional audit by the Project Team or the Project Team's subcontractor personnel will be required. However, should any laboratory be selected which has not been audited by the ASP/CLP, or an equivalent audit (state or other federal agency) in the last 12 months, the Project Team or its contractor personnel will perform a laboratory audit using the guidelines set forth in the Bid Package documentation prior to that laboratory performing any field sample analyses.

9.4 Performance Evaluation Audits

The internal performance audits of the laboratory(ies) will be conducted by the Laboratory QA Officer. The performance audits will be conducted on at least a quarterly basis. Blind QC samples will be prepared and submitted along with project samples to the laboratory for analysis throughout the project. The Laboratory QA Officer will evaluate the analytical results of these blind performance samples to ensure the laboratories maintain a good performance.

External performance audits of the laboratories selected for the project will have already been performed by the NYSDEC/CLP for some or all of the analytes being tested. These performance evaluation audits may be supplemented by the use of field-generated blind QC samples (replicates) submitted by the Project Team.

Internal performance evaluation audits of the field measurements performed by Project Team personnel may be utilized if suitable reference solutions are available for the specific project activities. These types of checks could include analysis of "blind" calibration span gases for PID measurements, or analysis of USEPA Environmental Monitoring Systems Laboratory aqueous check samples for pH and specific conductance.

For laboratory checks, tolerance limits for the performance evaluation samples will be based on the accepted values supplied with the check sample/standard. For the field checks, the tolerance limits will also be based on the accepted values supplied with the check sample/standard, but may be modified as necessary to take into account the less quantitative (screening) nature of the field analytical measurements.

10.0 CORRECTIVE ACTIONS

Corrective action generally addresses the need to bring data generating systems back into conformance after some trigger or other criteria have shown the system to be out of conformance. The following paragraphs describe the mechanics of how corrective action will be managed and implemented during the course of this project.

Corrective actions may be required for two classes of problems: analytical and equipment functional problems, and noncompliance problems. Analytical and equipment functional problems may occur during sampling and sample handling, sample preparation, laboratory instrumental analysis, and data review. The need for laboratory analysis corrective actions is based on predetermined limits for acceptability (Section 4). By conducting system and performance audits, the Laboratory QA Officer will determine if the overall data generating systems are acceptable.

For noncompliance problems, a formal corrective action program will be determined and implemented at the time the problem is identified. The person who identifies the problem is responsible for notifying the PQAC and/or Project Manager. If the problem is analytical in nature, information on these problems will be promptly communicated to the Laboratory QA Officer and method specific corrective actions will be implemented.

10.1 Field Corrective Action

Corrective actions will be implemented by field personnel and documented in the field record book. No staff member will initiate corrective action without notification through the proper channels. If corrective actions are insufficient, a "stop-work" order may be issued by the Project Manager.

Technical staff and project personnel will be responsible for reporting all suspected technical or QA nonconformance, or suspected deficiencies of any activity (or issued document) by reporting the situation to the Project Manager or designee. The Project Manager will be responsible for assessing the suspected problems in consultation with the PQAC, and for making decisions based on the potential for the situation to impact the quality of the data. If it is determined that the

situation warrants a reportable nonconformance and/or requires corrective action, then a nonconformance report will be initiated by the field personnel and submitted to the Project Manager for review.

The Project Manager will be responsible for ensuring that corrective action for nonconformances are initiated by:

- *evaluating all reported nonconformances;*
- *controlling additional work on nonconforming items;*
- *determining disposition or action to be taken;*
- *maintaining a log of nonconformances;*
- *reviewing nonconformance reports and corrective actions taken; and*
- *ensuring nonconformance reports are included in the Site documentation project files.*

If appropriate, the Project Manager will ensure that no additional work which is dependent on the *nonconforming activity be performed until the corrective actions are completed.*

Corrective action for field measurements may include the following:

- *repeat the measurement to check the error;*
- *check for all proper adjustments for ambient conditions such as temperature;*
- *check the batteries;*
- *recalibration;*
- *check the calibration;*
- *replace the instrument or measurement devices; and*
- *stop work (if necessary).*

The Project Manager or his/her designee is ultimately responsible for all Site activities. In this role, the Project Manager at times is required to adjust the Site programs to accommodate the Site program specific needs. The change in the program will be documented on the Field Change Request form (Attachment 1) that will be signed by the initiators and the Project Manager or designee. The Field Change Request shall be attached to the file copy of the affected document. The Project Manager and the PQAC must approve the change in writing or verbally

prior to the field implementation, if feasible. If unacceptable, the action taken during the period of deviation will be evaluated in order to determine the significance of any departure from established program practices and appropriate action will be taken by the Project Manager to document the significance of the problem.

The Project Manager is responsible for the controlling, tracking, and implementation of the identified changes. Reports on all changes will be distributed to all affected parties.

10.2 Laboratory Corrective Action

Corrective action is required whenever an out-of-control event or potential out-of-control event is noted. The corrective action taken will be somewhat dependent on the analysis and the event. These actions are to be implemented in accordance with the laboratory QA plan and the SW-846 Methods, as appropriate and applicable.

Table 1. Projected Number/Frequency of Field Samples (Remedial Action)

Parameter	Method	Sample Type	Frequency	Field Duplicates ^(a)	Field Blanks ^(a)	MS/MSD ^(b)	Estimated Total number of Samples
Fill Material							
Target Compound List	Various	Discrete	1/2500 cy	1/20	1/20	1/20	10
Polynuclear Aromatic Hydrocarbons	8270 ^(c)	Composite	1/1000 cy	1/20	1/20	1/20	25
RCRA Metals	6010/7471 ^(c)	Composite	1/1000 cy	1/20	1/20	1/20	25
Post Excavation							
Lead-sludge from ponds	USEPA 6010	Confirmatory	1/200 linear feet 1/2500 sq. feet	NA	NA	NA	29
Lead-over excavated soils below China	USEPA 6010	Confirmatory	4/acre	NA	NA	NA	28
Wastewater (Remediation Water) ^(e)							
Lead (total)	200.7 ^(d)	6 Hour composite	Weekly	NA	NA	NA	27
Total Suspended Solids(TSS)	160.2 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
Total Dissolved Solids (TDS)	106.1 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
pH	Meter	6 hour composite	Daily	NA	NA	NA	183
Biological Oxygen Demand 5 (BOD5)	Visible	Grab	Weekly	NA	NA	NA	27
Foam	Visible	6 hour composite	Daily	NA	NA	NA	183
Oil & Grease	Visible	Grab	Daily	NA	NA	NA	183
Flow	Monitor	Grab Totalizer	Continuous	NA	NA	NA	NA
Wastewater (SPDES outfall) * ^(f)							
Flow	Monitor	Recorder	Recorder	NA	NA	NA	NA
Temperature	Monitor	Grab	Twice/week	NA	NA	NA	51
Total Dissolved Solids	106.1 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
Total Suspended Solids	160.2 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
BOD5	405.1 ^(d)	6 hour composite	Weekly	NA	NA	NA	27
Oil & Grease	413.1 ^(d)	Grab	Monthly	NA	NA	NA	9
Boron (total)	212.3 ^(d)	6 hr composite	Quarterly	NA	NA	NA	5
Lead (total)	200.7 ^(d)	6 hour composite	Twice/month	NA	NA	NA	15
pH	Meter	Grab	Twice/week	NA	NA	NA	51

Notes:

The expected turnaround time for sample results is 10-14 days.

Estimated total number of samples is based on a 6-month construction period.

- (a) Frequency estimates based on one blank per twenty samples, or one per day minimum.
- (b) Matrix Spike/Matrix Spike Duplicate (for metals duplicate sample) - one per twenty samples.
- (c) Test Methods for Evaluating Solid Waste
- (d) 40 Code of Federal Regulations Part 136
- (e) Remediation wastewater shall be sampled for 3 consecutive events (with a 24-hour turnaround time), one event every 5,000 gallons for 3 events prior to discharge. Thereafter, wastewater shall be sampled in accordance with this table.
- (f) Facility wastewater shall be sampled for 3 consecutive events (with a 24-hour turnaround time), one event every 600,000 gallons for 3 events prior to discharge. Thereafter, wastewater shall be sampled in accordance with this table.

* In accordance with SPDES Permit Number NY 100137 issued to the facility operator.

Table 2. Projected Number of Field Samples (Operation and Maintenance)

Parameter	Method	Sample Type	Frequency	Total Number of Samples
Ground-Water Monitoring				
Lead	6010 ^a	Bailer	Quarterly	6
pH, Temperature, Specific Conductance	per SOP ^b	Bailer	Quarterly	6

a. Test Methods for Evaluating Solid Waste

b. Methods for Chemical Analysis of Water and Waste Methods 120.1, 150.1 and 170.1)

**Table 3. Preservation, Holding Times and Sample Containers
Pfaltzgraff Co., Syracuse China Landfill; Town of Salina, New York.**

Parameter	Preservation	Holding Time*	Containers
Lead (Total) Boron (Total)	HNO ₃ to pH<2 4°C until analysis	180 days	1 liter plastic bottle
Polynuclear Aromatic Hydrocarbons (soil)	4°C until extraction and analysis	10 days until extraction 40 days until analysis	4 oz jar w/teflon lined lid
Metals (soil)	None	180 days Mercury-28 days	8 oz jar w/teflon lined lid
Total suspended solids (aqueous)	4°C until analysis	7 days	300 ml plastic bottle
Total dissolved solids (aqueous)	4°C until analysis	7 days	300 ml plastic bottle
BOD 5	4°C until analysis	48 hours	1 liter plastic bottle
Oil & Grease	H ₂ SO ₄ to pH<2	28 days	1 liter plastic bottle

* From laboratory receipt until analysis unless otherwise specified.

NA = Not applicable.

Table 4. Project Quality Control Summary

Parameter	Matrix	Quantitation Limit^a	Estimated Accuracy	Estimated Precision	Completeness	Analysis Method
Lead	Water	0.027 mg/L	95 – 120%	20 RPD	95%	6010 ^b
Lead (Total)	Water	0.01 mg/L	95-100%	20 RPD	95%	200.7 ^c
Total Suspended Solids	Water	4 to 20,000 mg/L	NA	NA	90%	160.2 ^c
Total Dissolved Solids	Water	10 - 20,000 mg/L	NA	NA	90%	160.1 ^c
BOD5	Water	NA	NA	25 RPD	90%	405.1 ^c
Oil & Grease	Water	5 to 1000 mg/L	93%	5 PRD	90%	413.1 ^c
Boron (Total)	Water	0.1 to 1 mg/L	70 – 100%	22 RPD	90%	212.3 ^c
pH	Water	per SOP	per SOP	per SOP	80%	150.1
Temperature	Water	per SOP	per SOP	per SOP	90%	170.1
Polynuclear Aromatic Hydrocarbons	Soil	660 to 3700 µg/kg	20 - 150%	50 RPD	95%	8270 ^b
RCRA Metals	Soil	0.2 to 1,000mg/kg	75 - 125%	35 RPD	95%	6010/7471 ^b

- a. Quantitation limits are based on method references. Limits for soil are based on nominal wet weight of the sample. Dry weight limits will be higher.
- b. Test Methods for Evaluating Solid Wastes
- c. 40 CFR Part 136
- d. American Society for Testing and Materials

FIELD ORGANIZATION CHART

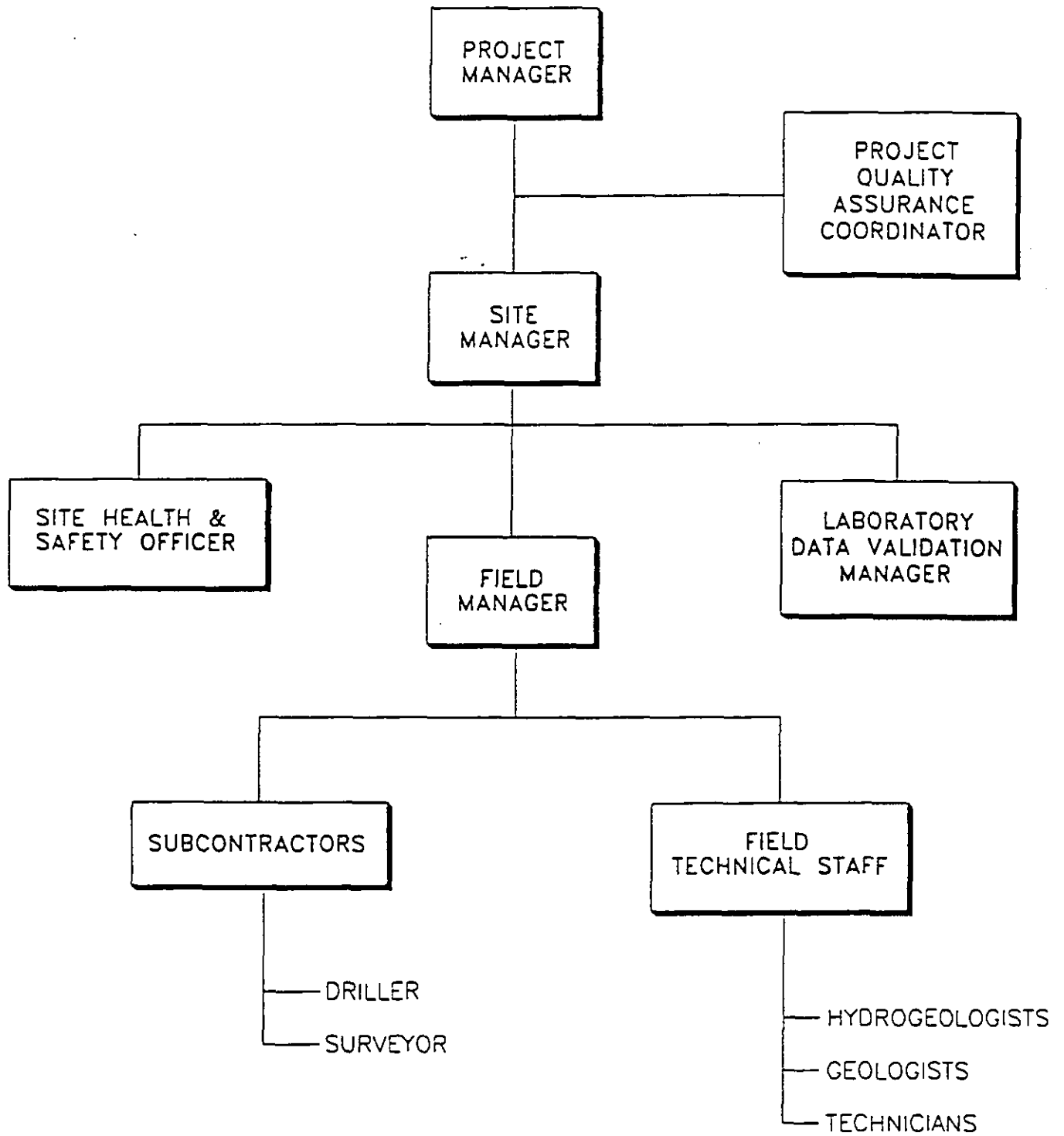


FIGURE 1

ATTACHMENT 1

**Roux Associates'
Standard Operating Procedures**

STANDARD OPERATING PROCEDURE
FOR MEASURING THE CONDUCTIVITY
OF WATER SAMPLES

Page 1 of 2

Date: December 21, 1989

Revision Number: 0

Corporate QA/QC Manager: *Michael A. DeCilly*
(CD)

1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for measuring the electrical conductance (conductivity) of water in the field. The conductivity is measured in the field using a conductivity meter which compensates for temperature (automatically or manually). Some conductivity meters measure directly in micromhos/centimeter ($\mu\text{mhos/cm}$) while others have to be converted to this unit. Conductivity will be recorded in $\mu\text{mhos/cm}$. The manufacturer's instrument manual of each particular conductivity meter, which is maintained with the instrument, will be referred to for calibration, use, repair, maintenance, or trouble-shooting operations.

The specific conductivity is measured in the field as a measure of the total dissolved solids (TDS) in the ground water or surface water. TDS data can then be used as a qualitative measure of contamination and to assist in evaluating electrical resistivity and borehole geophysical data. In addition, specific conductivity measurements can be used during well purging to help determine when sufficient ground water has been purged (removed) from a well (i.e., the standing water in the well has been removed and replaced with "fresh" water from the aquifer). The determination is made when conductivity readings have achieved stabilization or near-stabilization.

2.0 CALIBRATION

- 2.1 Calibration is in accordance with the manufacturer's specific directions.
- 2.2 Calibration of the conductivity meter is to be performed at the beginning and end of each day's use.
- 2.3 Recalibration must occur if: 1) the specific conductivity of samples being measured is outside the calibration standard solution range; or 2) the instrument has been moved from one area to another (e.g., offsite or out of the study area).
- 2.4 Choose a conductivity calibration solution that is near the conductivity of the water samples to be measured.
- 2.5 Select the appropriate conductivity calibration solution and adjust the span on the instrument to the conductivity calibration solution value.
- 2.6 Rinse the probe in distilled or deionized water and store the probe according to the manufacturer's specifications (e.g., distilled or deionized water, or a buffer solution).

STANDARD OPERATING PROCEDURE
FOR MEASURING THE CONDUCTIVITY
OF WATER SAMPLES

2.7 The following information is documented in the calibration logbook:

- a. Date.
- b. Conductivity meter identification.
- c. Initials of individual performing calibration.
- d. Calibration results.

3.0 PROCEDURE

- 3.1 The conductivity electrodes must be kept in good working order as specified by the manufacturer.
- 3.2 The water sample is placed in a clean, appropriate container(s) and the temperature and conductivity are measured immediately.
- 3.3 The temperature of the sample is taken and the conductivity meter is compensated for the water temperature.
- 3.4 *The probe is immersed in a water sample until the meter equilibrates.*
- 3.5 In reading the conductivity meter scale, one or more of the following may have to be considered:
 - a. The reading may have to be multiplied appropriately (e.g., the reading is expressed in micromhos/centimeter).
 - b. If the conductivity meter is not capable of compensating for temperature differences, then note that the conductance measurements are not temperature compensated and document the temperatures.
 - c. If the conductivity meter can be compensated for temperature, then adjust the temperature control before reading the conductance measurement. (Some meters automatically compensate for temperature, and this should be documented.)
- 3.6 Conductivity measurements are recorded in the field notebook and on the appropriate field form, and initialed and dated. Units of $\mu\text{mhos/cm}$ are used to represent conductivity.
- 3.7 The probe will be cleaned with distilled or deionized water after each use and will be stored according to the manufacturer's specifications (e.g., conductivity cells may have to be stored in distilled or deionized water, or a buffer solution).

STANDARD OPERATING PROCEDURE
FOR DECONTAMINATION OF FIELD EQUIPMENT

Page 1 of 4

Date: December 21, 1989

Revision Number: 0

Corporate QA/QC Manager:

Michael R. DeCeltis

1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for decontamination of all field equipment potentially exposed to contamination during drilling, and soil and water sampling. The objective of decontamination is to ensure that all drilling, and soil-sampling and water-sampling equipment is decontaminated (free of potential contaminants): 1) prior to being brought onsite to avoid the introduction of potential contaminants to the site; 2) between drilling and sampling events/activities onsite to eliminate the potential for cross-contamination between boreholes and/or wells; and 3) prior to the removal of equipment from the site to prevent the transportation of potentially contaminated equipment offsite.

In considering decontamination procedures, state and federal regulatory agency requirements must be considered because of potential variability between state and federal requirements and because of variability in the requirements of individual states. Decontamination procedures must be in compliance with state and/or federal protocols in order that regulatory agency(ies) scrutiny of the procedures and data collected do not result in non acceptance (invalidation) of the work undertaken and data collected.

2.0 PROCEDURE FOR DRILLING EQUIPMENT

The following is a minimum decontamination procedure for drilling equipment. Drilling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

- 2.1 The rig and all associated equipment should be properly decontaminated by the contractor before arriving at the test site.
- 2.2 The augers, drilling casings, rods, samplers, tools, rig, and any piece of equipment that can come in contact (directly or indirectly) with the soil, will be steam cleaned onsite prior to set up for drilling to ensure proper decontamination.
- 2.3 The same steam cleaning procedures will be followed between boreholes (at a fixed on-site location[s], if appropriate) and before leaving the site at the end of the study.
- 2.4 All on-site steam cleaning (decontamination) activities will be monitored and documented by a member(s) of the staff of Roux Associates, Inc.

- 2.5 If drilling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat drilling equipment, then special decontamination procedures may have to be utilized before steam cleaning (e.g., hexane scrub and wash).
- 2.6 Containment of decontamination fluids may be necessary (e.g., rinsate from steam cleaning) or will be required (e.g., hexane), and disposal must be in accordance with state and/or federal procedures.

3.0 PROCEDURE FOR SOIL-SAMPLING EQUIPMENT

The following is a minimum decontamination procedure for soil-sampling equipment (e.g., split spoons, stainless-steel spatulas). Soil-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

- 3.1 Wear disposable gloves while cleaning equipment to avoid cross-contamination and change gloves as needed.
- 3.2 Steam clean the sampler or rinse with potable water. If soil-sampling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat sampling equipment, then special decontamination procedures may have to be utilized before steam cleaning and washing in detergent solution (e.g., hexane scrub and wash).
- 3.3 Prepare a non-phosphate, laboratory-grade detergent solution and distilled or potable water in a clean bucket.
- 3.4 Disassemble the sampler, as necessary and immerse all parts and other sampling equipment in the solution.
- 3.5 Scrub all equipment in the bucket with a brush to remove any adhering particles.
- 3.6 Rinse all equipment with copious amounts of potable water followed by distilled or deionized water.
- 3.7 Place clean equipment on a clean plastic sheet (e.g., polyethylene)
- 3.8 Reassemble the cleaned sampler, as necessary.
- 3.9 Transfer the sampler to the driller (or helper) making sure that this individual is also wearing clean gloves, or wrap the equipment with a suitable material (e.g., plastic bag, aluminum foil).

As part of the decontamination procedure for soil-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

4.0 PROCEDURE FOR WATER-SAMPLING EQUIPMENT

The following is a decontamination procedure for water-sampling equipment (e.g., bailers, pumps). Water-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

4.1 Decontamination procedures for bailers follow:

- a. Wear disposable gloves while cleaning bailer to avoid cross-contamination and change gloves as needed.
- b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a bucket.
- c. Disassemble bailer (if applicable) and discard cord in an appropriate manner, and scrub each part of the bailer with a brush and solution.
- d. Rinse with potable water and reassemble bailer.
- e. Rinse with copious amounts of distilled or deionized water.
- f. Air dry.
- g. Wrap equipment with a suitable material (e.g., clean plastic bag, aluminum foil).
- h. Rinse bailer at least three times with distilled or deionized water before use.

4.2 Decontamination procedures for pumps follow:

- a. Wear disposable gloves while cleaning pump to avoid cross-contamination and change gloves as needed.
- b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a clean bucket, clean garbage can, or clean 55-gallon drum.

STANDARD OPERATING PROCEDURE
FOR DECONTAMINATION OF FIELD EQUIPMENT

- c. Flush the pump and discharge hose (if not disposable) with the detergent solution, and discard disposable tubing and/or cord in an appropriate manner.
- d. Flush the pump and discharge hose (if not disposable) with potable water.
- e. Place the pump on clear plastic sheeting.
- f. Wipe any pump-related equipment (e.g., electrical lines, cables, discharge hose) that entered the well with a clean cloth and detergent solution, and rinse or wipe with a clean cloth and potable water.
- g. Air dry.
- h. Wrap equipment with a suitable material (e.g., clean plastic bag).

As part of the decontamination procedure for water-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

STANDARD OPERATING PROCEDURE
FOR MEASURING THE pH OF WATER SAMPLES

Page 1 of 2

Date: December 21, 1989

Revision Number: 0

Corporate QA/QC Manager: *Michael A. DeCillis*
(GDM)

1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for measuring the pH of water in the field. The pH is measured in the field using a pH meter which should have the ability to compensate for temperature (automatically or manually). The pH will be measured in standard units (SU) and can be recorded with or without the SU designation. The conventional means of recording a pH value is without a unit designation (e.g., 7.0); however, the SU designation may be used provided the term is defined as standard units when first referenced. The manufacturer's instrument manual for each particular pH meter, which is maintained with the instrument, will be referred to for calibration, use, repair, maintenance, or trouble-shooting operations.

The pH is measured in the field to provide the pH of the water under ambient (in situ) conditions. The pH is a measure of acidic (<7.0) or basic (>7.0) nature of the water and is used to assist in evaluating the mobility of contaminants. In addition, pH measurements can be used during well purging to help determine when sufficient ground water has been purged (removed) from a well (i.e., the standing water in the well has been removed and replaced with "fresh" water from the aquifer). The determination is made when pH readings have achieved stabilization or near-stabilization.

2.0 CALIBRATION

- 2.1 Calibration of the pH meter is to be performed at the beginning and end of each day's use in accordance with the manufacturer's specific instructions. Usual procedures are given below.
- 2.2 Recalibration must occur if: 1) the pH of the samples being measured is outside the previous calibration range; 2) the procedure or use conditions warrant frequent calibrations; 3) four or more hours have elapsed; or 4) the instrument has been moved from one area to another (e.g., offsite or out of the study area).
- 2.3 Two buffer calibrations bracketing the expected pH range of samples are to be performed prior to its use in a study. Three pH buffers (4.0, 7.0, and 10.0) are read after standardization at pH of 7.0 to evaluate the linearity and electrodes.
- 2.4 The measurements of sample and buffers are made while stirring. The samples and buffers are measured at the same temperature; therefore, the pH meter must be temperature compensated. If not, then record the temperature.

STANDARD OPERATING PROCEDURE
FOR MEASURING THE pH OF WATER SAMPLES

2.5 The following information is documented in the calibration logbook at the time of calibration:

- a. Date:
- b. pH meter identification.
- c. Calibration results using pH standards.
- d. Initials of the individual performing calibration.

3.0 PROCEDURE

3.1 A warm-up period may or may not be necessary for the instrument, depending on instrument requirements. The manufacturer's instrument manual must be followed.

3.2 The pH electrodes must be kept in good working order as follows:

- a. Proper levels of electrolyte solution are maintained. The electrolyte solution level should be at least 1 inch above the solution being measured.
- b. The electrodes must be carefully rinsed with distilled or deionized water before each measurement.

3.3 The water sample (approximately 500 milliliters [ml]) is placed in a clean container and the temperature and pH are measured immediately.

3.4 The temperature of the sample is measured and the pH meter is compensated for the water temperature. If compensation is not possible, then record the temperature.

3.5 The electrodes are immersed in a water sample and stirred continuously until the pH reading equilibrates. The pH will be measured and recorded in increments of 0.1 or 0.1 SU.

3.6 Pertinent data are documented in the field notebook or appropriate field form, and initialed and dated.

3.7 The electrodes are rinsed with distilled or deionized water and the unit stored properly in accordance with the manufacturer's instructions (e.g., capping and storing in a buffer such as altex electrode storage solution). The electrodes are not to be stored in potable water, or distilled or deionized water.

STANDARD OPERATING PROCEDURE
FOR MEASURING WATER TEMPERATURE

Page 1 of 2

Date: December 21, 1989

Revision Number: 0

Corporate QA/QC Manager: *Michael A. DeCollis*
MD

1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for measuring water temperature in the field. Temperature measuring devices may include thermometers, and pH and/or conductivity meters equipped with a temperature probe. The temperature measuring device must be rapidly equilibrating, precision-grade, and meet or exceed National Bureau of Standards (NBS) specifications for accuracy. Temperature will be measured and recorded in degrees Celsius/Centigrade ($^{\circ}$ C). If the temperature measuring device is a meter, then the manufacturer's instrument manual, which is maintained with the instrument, will be referred to for calibration, use, repair, maintenance, or trouble-shooting operations.

Temperature data is collected in the field to determine the temperature of the water sample under ambient (in situ) conditions. Temperature data can be used to evaluate the mobility of compounds in ground water and flow conditions. In addition, temperature measurements can be used during well purging to help determine when sufficient ground water has been purged (removed) from a well (i.e., the standing water in the well has been removed and replaced with "fresh" water from the aquifer). The determination is made when temperature readings have achieved stabilization or near-stabilization.

2.0 CALIBRATION

- 2.1 Calibration of thermometers and temperature measuring meters will be performed before entering the field and checked upon return to the office.
- 2.2 Temperature measuring devices will be calibrated against a NBS-traceable thermometer.
- 2.3 If a thermometer is used to measure temperature, then the thermometer must read within 1° C to 1.5° C of the NBS-traceable thermometer. If the thermometer does not read within this range and the thermometer cannot be calibrated, then it will not be used for temperature measurements and will be disposed of in an appropriate manner. If the thermometer does not read within this range and the thermometer can be calibrated, then the thermometer will be calibrated to the NBS-traceable thermometer.

ATTACHMENT 2

Field Forms

CUSTODY SEAL

DATE _____

SIGNATURE _____

ROUX



CHAIN OF CUSTODY

№ 02835Y

ROUX ASSOCIATES INC <i>Environmental Consulting & Management</i>		1377 MOTOR PARKWAY ISLANDIA, NEW YORK 11788 (516) 232-2600 FAX (516) 232-9898		ANALYSES						PAGE	OF
PROJECT NAME		PROJECT NUMBER		SAMPLE MATRIX						TOTAL BOTTLES	
PROJECT LOCATION											
SAMPLER(S)											
SAMPLE DESIGNATION/LOCATION		DATE COLLECTED	TIME COLLECTED							NOTES	
RELINQUISHED BY: (SIGNATURE)		FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)		FOR	DATE	TIME	SEAL INTACT Y OR N
RELINQUISHED BY: (SIGNATURE)		FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)		FOR	DATE	TIME	SEAL INTACT Y OR N
RELINQUISHED BY: (SIGNATURE)		FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)		FOR	DATE	TIME	SEAL INTACT Y OR N
DELIVERY METHOD			COMMENTS								
ANALYTICAL LABORATORY											

FIELD PROCEDURE MODIFICATION AUTHORIZATION

Project/Task Number: _____

Procedure Reference: _____

Requested Modification: _____

Reason for Modification: _____

Special Equipment, Material or Personnel Required: _____

Modification Requested By: _____ Date: _____

Approved By: _____ Date: _____ Title: _____

_____ Comments: _____

**SPECIFIC REQUIREMENTS
OF
CONSOLIDATED RAIL CORPORATION
FOR
WORK ON ITS RIGHT OF WAY**

APPROVED:



**G. A Thelen - Assistant Vice President
Engineering**

2/1/97

SCOPE

It must be clearly understood that Conrail owns and uses its right of way for the primary purpose of operating a railroad. All work shall therefore be done in a manner such that the rail operations and facilities are not interfered with, interrupted or endangered. In addition, any facilities that are a result of the proposed work shall be located to minimize encumbrance to the right of way so that Conrail will have unrestricted use of its property for current and future operations.

The sponsor of the project shall be ultimately responsible for assuring that its agents, consultants, contractors and sub-contractors fully comply with the specifications contained herein. The term 'sponsor' used throughout these specifications shall mean the sponsor, its employees, its agents, consultants, contractors, sub-contractors, etc.

The following terms and conditions shall apply to any project which requires performance of work on the right of way or other property of Conrail.

RIGHT OF ENTRY ON CONRAIL PROPERTY

No entry upon Conrail property shall be permitted without the proper authorization by Conrail to the sponsor in the form of an agreement or a proper permit-to-enter prepared by Conrail. The applicant shall pay the associated fees and execute the permit-to-enter prior to entering Conrail property. The location and design of that portion of the access route to the project site that is on Conrail property shall be shown clearly on any plans for the project and approved by Conrail. It is to be clearly understood that the issuance of a permit-to-enter does not constitute authority to proceed with any construction work. Construction cannot begin until a formal agreement between Conrail and the sponsor is executed, and the sponsor receives permission from Conrail's representative to proceed with the work.

INSURANCE

In addition to any other forms of insurance or bonds required under the terms of any contract or specifications and except to the extent that any of the requirements of this section are expressly waived or revised in writing by Conrail, prior to the commencement of any work, contractor, at his own cost and expense, shall maintain insurance of the following kinds and amounts and deliver to Conrail satisfactory evidence of such insurance as indicated herein:

1. Public Liability Insurance

Public Liability Insurance, including contractual liability insurance of not less than \$5,000,000 combined single limit for bodily injury and/or property damage for damages arising out of bodily injuries to or death of all persons in any one occurrence and for damage to or destruction of property, including the loss of use thereof, in any one occurrence. Conrail shall be named as an additional insured under this insurance.

2. Automobile Liability Insurance

Automobile Liability Insurance with a limit of not less than \$5,000,000 combined single limit for bodily injury and/or property damage per occurrence. Conrail shall be named as an additional insured under this insurance.

3. Workers' Compensation / Employers' Liability Insurance

Employers' Liability and Occupational Disease Insurance with limits of \$1,000,000 each accident, \$1,000,000 policy limit and \$1,000,000 each employee. Such policy shall include a waiver of subrogation in favor of Conrail.

4. General Contractors Pollution Legal Liability Insurance

General Contractor's Pollution Liability Insurance with limits of not less than \$5,000,000 per occurrence / \$5,000,000 aggregate bodily injury, property damage and cleanup expenses resulting from pollution conditions. Conrail shall be named as an additional insured under this insurance.

5. Railroad Protective Liability Insurance

With respect to the operations performed by it or any of its' subcontractors, contractor shall provide Railroad Protective Liability Insurance (ISO-RIMA FORM) in the name of Consolidated Rail Corporation *, with a limit of not less than \$2,000,000 per occurrence, combined single limit for bodily injury and/or property damage, for damages arising out of bodily injuries to or death of all persons and for damage to or destruction of property, including the loss of use thereof. Such insurance shall also contain an aggregate of not less than \$6,000,000 for damages arising out of more than one occurrence. * Conrail shall be the "Named Insured" on this policy.

The insurance specified above shall be carried until the project is satisfactorily completed and formally accepted by Conrail. The above indicated insurance coverages shall be effected under standard form policies issued by insurers of financial responsibility that are rated "A" or better by Best's Insurance Reports, "AA" or better by Standard & Poor's Insurance Rating Service, and "Aa" or better by Moody's Investors Service. Conrail reserves the right to reject as inadequate any insurance coverage provided by an insurance company that is rated less than the ratings above by any of the aforementioned rating services. The above indicated insurance coverages shall be enforceable by any legitimate claimant after the termination or cancellation of the project, whether by expiration of time, by operation of law or otherwise, so long as the basis of the claim against the insurance company occurred during the project and when the insurance was in force. Contractor shall furnish Conrail with certificates of insurance evidencing the insurance coverages required in sections 1, 2, 3, & 4, and shall also furnish the original Railroad Protective Liability Insurance policy referred to in section 5 at least thirty (30) days prior to commencement of the project. All insurance policies shall be endorsed to provide that the insurance company shall give thirty (30) days prior written notice to Conrail if the policies are to be terminated or if any changes are to be made which shall in any way affect the insurance requirements of the project. Certificates, policies or notices should be sent to Manager - Insurance, Consolidated Rail Corporation, 2001 Market Street - 6A, PO Box 41406, Philadelphia, PA 19101-1406.

CHANGES IN RAILROAD FACILITIES

Temporary and permanent changes of signal, communication, power transmission lines, trailers, drainage and other railroad facilities required in connection with the project to clear temporary and/or permanent work of the sponsor as shown on the approved construction plans, shall be made or caused to be made by Conrail at the sole cost and expense of the sponsor in accordance with Conrail's force account estimate. Any other changes made or services furnished by Conrail at the request of the sponsor shall be the sole cost and expense of the sponsor.

PROTECTION OF RAILROAD OPERATIONS

The sponsor shall conduct the work in such a manner as to safeguard the operations, facilities, right of way and property of Conrail. All work affecting the above items shall be subject to the approval of Conrail. The sponsor's operations adjacent to, over or under Conrail's tracks,

facilities, right of way, and property shall be governed by Conrail's standards and by such other requirements as specified by Conrail's representative so as to insure the safe operation of trains, prevent delay to trains and insure the safety of all concerned, including the sponsor's forces.

An operating track shall be considered obstructed or fouled when any object is brought closer than fifteen (15) feet (4.6 m) horizontally from the centerline of track and projects above the top of tie or as determined by Conrail's representative. A power line shall be considered fouled when any object is brought to a point less than eight (8) feet (2.5 m) therefrom. A signal line shall be considered fouled when any object is brought nearer than six (6) feet (1.8 m) to any wire or cable. Cranes, trucks and other equipment shall be considered as fouling the track, power line or signal line when failure of equipment, whether working or idle, with or without load, will obstruct the track or other Conrail facilities.

Equipment used by the sponsor shall be in first-class condition to preclude any failure that would cause interference with the operation of Conrail trains or damage to its facilities. The sponsor's equipment shall not be placed or put in operation adjacent to the tracks or facilities of Conrail without obtaining clearance from Conrail's representative. All such equipment shall be operated by the sponsor in a manner satisfactory to Conrail. No equipment or material shall be stored on Conrail property.

In general, a hazard occurs and a flagman is necessary in the following circumstances: (1) the driving of sheeting or piles within twenty five (25) feet (7.6 m) of the tracks, (2) the removal or demolition of all or part of an overhead or adjacent structure, (3) the erection of any structural material, or (4) the performance of any other operation that could obstruct or foul (as described above) the tracks or other facilities of Conrail as determined by Conrail's representative.

Minimum overhead and lateral clearances as specified by Conrail, shall be maintained during the performance of all work. Existing overhead and lateral clearances shall be maintained during construction unless a temporary reduction in clearance for construction purposes is approved, in writing, by Conrail. The sponsor shall erect a highly visible construction fence no closer than fifteen (15) feet (4.6 m) from the centerline of the track through the work area to insure that the lateral clearance requirement is being met.

All wire and attachments shall be treated as live unless notified by Conrail's representative that same have been grounded and de-energized. Particular attention shall be given to the use of hand lines containing metal strands which cannot be used when working near or above exposed live wires. When working over wires, tools and materials not in use shall be stored in a manner to prevent them from falling. Tools or materials shall not be thrown to or by men working over the wires. The sponsor shall be responsible for locating and protecting all underground facilities.

Painting and paint removal procedures shall be approved by the Conrail and inspected by Conrail's representative prior to beginning the work over railroad right of way. The sponsor shall protect the track structure and railroad property from any material used in conjunction with performing the work. A flagman shall be required whenever the above described work fouls or is likely to foul the track, as previously defined.

The sponsor shall give notice to Conrail's representative at least fourteen (14) days in advance of the time work is to be commenced. Conrail shall assign, at the sole cost and expense of the

sponsor, conductors and/or flagmen, or other similar qualified employees to protect Conrail's trains and facilities when in the opinion of its representative, the construction work will cause or may cause a hazard to Conrail facilities and the safe operation of trains. No operations of the sponsor shall be carried out without all the necessary protection to properly safeguard the work.

The minimum hours per day for railroad employees engaged in flagging service shall be eight (8) hours. The overtime rate will be charged for all time in excess of eight (8) hours. Flagmen are paid from the time they leave headquarters until they arrive back at headquarters. The travel time to and from project site is known as "deadheading" and is paid at full rate of pay, plus travel expenses. No conductor or flagman may remain on duty longer than twelve (12) hours in any twenty-four (24) hour period.

The providing of flagmen or inspectors or the taking of other precautionary measures, shall not, however, relieve the sponsor from liability for payment of damages caused by their operations. The sponsor must obtain permission from the flagman before fouling or obstructing any track.

The sponsor shall be responsible for damage to Conrail facilities or property arising out of the execution of its work. Conrail shall undertake any necessary repair work at the sole cost and expense of the sponsor. Billing for the work shall be in accordance with Conrail's standard billing procedures.

Conrail labor shall be charged to sponsor at actual rate plus amount paid for insurance, railroad retirement, excise tax, vacation allowance, holidays, health and welfare benefits, small tools, 401k payment and overhead in accordance with Conrail's standard billing procedures. Materials shall be charged to the sponsor at actual cost to Conrail plus transportation costs, handling expense and applicable taxes.

RAILROAD ENGINEERING AND INSPECTION

Conrail, at its sole discretion, may assign an engineer or inspector for the general protection of railroad property and operations during the construction of the project. This inspection service shall be supplied at the sole cost and expense of the sponsor.

PAYMENT OF RAILROAD SERVICES

It is a requirement that the sponsor shall reimburse Conrail in full for work undertaken by Conrail in accordance with any provision of these special requirements. Final contract payment shall not be made by the sponsor to its contractor, sub-contractor, consultant or agent, until Conrail certifies that all railroad bills against them, if any, have been paid in full.

TEMPORARY GRADE CROSSING

Under most circumstances, a grade crossing of our track will not be permitted. Should the sponsor demonstrate a necessity for a temporary grade crossing of Conrail's tracks, the sponsor shall be required to apply for and execute the standard private grade crossing agreement for each crossing required. Application for the crossing shall be made to Conrail at least twelve (12) weeks before the crossing is required and addressed to:

Consolidated Rail Corporation
 2001 Market Street -12B
 PO Box 41412
 Philadelphia, Pennsylvania 19101-1412

A letter size plan showing the location, size, construction details, and access to the requested crossing should accompany the letter of application. The plan shall be fully detailed and dimensioned with all Conrail facilities shown and referenced. The sponsor shall state the purpose for which the crossing is needed and the expected life of the crossing. All application fees, construction, maintenance, protection and removal costs shall be at the sole cost and expense of the sponsor. The roadbed and all other Conrail facilities will be restored to the original condition subject to the approval of Conrail's designated representative.

SHEETING AND SHORING REQUIREMENTS

The following items are to be included in the design and construction procedures for all permanent and temporary facilities adjacent to Conrail tracks:

- 1) Footings for all piers, columns, walls or other facilities shall be located and designed so that any temporary sheeting and shoring for support of adjacent track or tracks during construction shall not be closer than ten (10) feet (3.0 m) from the centerline of the nearest track.
- 2) When excavation for construction of the above mentioned facilities is within the theoretical railroad embankment line (see Conrail Drawing SK-1, attached), interlocking steel sheet piling, driven prior to excavation, must be used to protect track stability. The use of trench boxes or similar devices is not acceptable. Soldier piling and lagging will be considered for supporting adjacent track(s) only when its use is approved by Conrail. Consideration for the use of soldier piling and lagging shall be made if the required penetration of steel sheet piling cannot be obtained and when dry, non-running, stable material will be encountered.
- 3) The sheeting shall be designed to support all lateral forces caused by the earth, railroad and other surcharge loads. The railroad loading to be applied is an E-80 loading. This loading consists of 80 Kip (356 KN) axles spaced five (5) feet (1.5 m) on centers. The lateral forces acting on the sheeting shall be computed as follows:
 - a. The Rankine Theory shall be used to compute the active earth pressure due to the weight of the soil.
 - b. The Boussinesq analysis shall be used to determine the lateral pressure caused by the railroad loading. The load on the track shall be taken as a strip load with a width equal to the length of the ties (8'-6" or 2.6 m). The vertical surcharge, q (psf), caused by each axle, shall be uniform and equal to the axle weight divided by the tie length and the axle spacing (5'-0" or 1.5 m). For an E-80 loading, this results in: $q = 80,000 / (8.5 \times 5) = 1882$ psf (90.1 KPa). The horizontal pressure due to the live load surcharge at any point on the sheet piling wall is Ph and can be calculated by the following: $Ph = (2q/\pi)(\beta - \sin \beta \cos 2\alpha)$ (see Conrail Drawing SK-2, attached).
- 4) Deflection design criteria is as follows:
 - a. 1/2" (1.27 cm) maximum deflection for sheet piling ten (10) feet (3.0 m) from centerline of the nearest track.
 - b. 1" (2.54 cm) maximum deflection for sheet piling greater than ten (10) (3.0 m) feet from centerline of the nearest track.
 - c. Use K (at-rest earth pressure) for design of all braced and tie-back excavations.

- 5) The allowable stresses for the sheet piling and other steel members (wales, struts, etc.) shall be in accordance with AREA Chapter 15, Part 1. These allowable stresses may be increased ten percent (10%) due to the temporary nature of the installations. A factor of safety of at least 1.5 must be used on temporary sheeting for the embedment length (i.e. multiply calculated embedment depth by 1.5).
- 6) Where soil or rock anchors are used, all anchors must be tested. Testing shall be in accordance with industry standards with ten percent (10%) of the anchors "Performance Tested" and all others "Proof Tested". All tie-back anchor stresses are to be in accordance with AREA Chapter 8, Part 20.5.7.
- 7) Exploratory trenches, three (3) feet (0.9 m) deep and fifteen (15) inches (0.4 m) wide in the form of an "H" with outside dimensions matching the outside of sheeting dimensions are to be hand dug, prior to placing and driving steel sheeting, in areas where railroad underground installations are known to exist. These trenches are for exploratory purposes only and are to be backfilled with the backfill compacted immediately. This work must be done in the presence of Conrail's representative.
- 8) Absolute use of track is required while driving sheeting within fifteen (15) feet (4.6 m) from centerline of a live track. The procedure for arranging the use of track shall be as outlined on pages Three and Four.
- 9) Cavities adjacent to the sheet piling, created by the driving of sheet piling, shall be filled with sand and any disturbed ballast must be restored and tamped immediately.
- 10) Sheet piling shall be cut off at the top of tie during construction. After construction and backfilling has been completed, piling within ten (10) feet (3.0 m) from centerline of track, or when bottom of excavation is below a line extending a 1:1 slope from end of tie to point of intersection with sheeting, shall be cut off eighteen (18) inches (0.5 m) below existing ground line and left in place.
- 11) Any excavation adjacent to track shall be covered and ramped and provided with barricades as required by Conrail. A lighted walkway with a handrail must be provided adjacent to the track for any excavation within ten (10) feet (3.0 m) of the centerline.
- 12) Final backfilling of excavation shall be as required by project specifications.
- 13) The sponsor is to advise Conrail of the time schedule of each operation and obtain approval of Conrail for all work to be performed adjacent to Conrail tracks so that it may be properly supervised by railroad personnel.
- 14) All drawings for temporary sheeting and shoring shall be prepared and stamped by a Registered Professional Engineer and shall be accompanied by complete design computations when submitted for approval.
- 15) Where physical conditions of design impose insurmountable restrictions requiring the placing of sheeting closer than specified above, the matter must be submitted to Conrail for approval of any modifications.
- 16) Five (5) copies of the submission are to be sent to Conrail's Area Engineer. The sponsor is advised to expect a minimum thirty (30) day review period from the day the submission is received by the Area Engineer.
- 17) Conrail's representative must be present at the site during the entire sheeting and shoring procedure period. The sponsor must notify the railroad representative at least seventy-two (72) hours in advance of the work. No changes will be accepted after that time.

ERECTION, HOISTING AND DEMOLITION REQUIREMENTS

- 1) A plan showing the locations of cranes, horizontally and vertically, operating radii, with delivery or disposal locations shown. The location of all tracks and other railroad facilities should also be shown.
- 2) Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick. A complete set of crane charts, including crane, counterweight, and boom nomenclature is to be submitted.
- 3) Plans and computations showing weight of picks must be submitted. Where beams are being removed over Conrail facilities, the weight shall include the weight of concrete or other material that will be included in each pick. Calculations shall be made from plans of the existing and/or proposed structure showing complete and sufficient details with supporting data for the demolition or erection of the structure.
- 4) If the sponsor can prove to Conrail that plans do not exist and weights must be calculated from field measurements, the field measurements are to be made under the supervision of the Registered Professional Engineer submitting the procedure and he shall include sketches and estimated weight calculations with his procedure. If possible, field measurements shall be taken with a Conrail representative present. Weights shall include the weight of concrete, or other material, that will be included in the lifts.
- 5) If the procedure involves either the cutting of steel or the bolting of joints which would affect Conrail operations, a detailed staging plan with estimated durations will be required.
- 6) A location plan showing all obstructions such as wires, poles, adjacent structures, etc., must be provided to show that the proposed lifts are clear of these obstructions.
- 7) A data sheet shall be prepared listing the type, size and arrangements of slings, shackles, or other connecting equipment. Include copies of a catalog or information sheets for specialized equipment.
- 8) A complete procedure is to be included, indicating the order of lifts and any repositioning or rehitching of the crane or cranes.
- 9) Demolition shield submittals must include a plan showing the details of the shield, a written installation and removal procedure and design calculations verifying the capacity of the shield. The shield should be designed for a minimum load of fifty (50) pounds/sq.ft (245 kgs./sq.m) plus the weight of the equipment, debris and any other load to be carried.
- 10) Temporary support of any components (overhead or undergrade) or intermediate stages is to be shown and detailed. A guardrail (railroad) will be required to be installed in a track where a temporary bent is located within twelve (12) feet (3.7 m) from the centerline of that track.
- 11) A time schedule of the various stages must be shown as well as a schedule for the entire lifting procedure.
- 12) All bridge erection or demolition procedures submitted will be prepared, signed and sealed by a Registered Professional Engineer.
- 13) Five (5) copies of the lifting procedures are to be sent to Conrail's Area Engineer. The sponsor is to expect a minimum thirty (30) day review period from the day the submission is received by The Area Engineer.
- 14) Conrail's representative must be present at the site during the entire demolition and erection procedure period. The sponsor must notify the railroad representative at least seventy-two (72) hours in advance of the work. No changes will be accepted after that time.
- 15) The name and experience of the employee supervising the operation must be supplied to Conrail.

OVERGRADE BRIDGE REQUIREMENTS**CLEARANCES**

- 1) The minimum vertical clearance above the top of the higher rail shall be twenty three (23) feet (7 m) at all times. In areas where the railroad has been electrified with a catenary wire, and areas which are likely to be electrified, the minimum vertical clearance must be twenty four (24) feet, six (6) inches (7.5 m) above the top of the higher rail.
- 2) The minimum horizontal clearance measured from the centerline of track to the near face of the obstruction must be twenty (20) feet (6.1 m) for tangent track and twenty one (21) feet (6.4 m) for curves. See Conrail Standard Plan 48754-B, attached.
- 3) Whenever practicable, bridge structures must have the piers and abutments located outside of the railroad right of way. All piers located less than twenty five (25) feet (7.6 m) from the centerline of track require a crashwall designed in accordance with specifications outlined in the current AREA manual.
- 4) All piers should be located so that they do not interfere with ditches. Where special conditions make this impossible, an explanation of these conditions must be submitted with the drainage plans for review by Conrail.
- 5) The permanent clearances should be correlated with the methods of construction so that temporary construction clearances will not be less than the minimum allowed.
- 6) Bridge structures shall provide sufficient lateral and vertical clearance for anticipated future tracks, changes in track centers and raising of tracks for maintenance purposes. The locations of these tracks shall be determined by inquiry to Conrail.
- 7) The profile of the top of rail should be examined to determine if the track is in a sag at the location of the bridge. If the track is in a sag, the vertical clearance from the track to the bridge should be increased sufficiently to allow raising the track to remove the sag.
- 8) Plans for bridges must show dimensioned locations of all utilities which might be located on the railroad right of way.
- 9) Vertical and horizontal clearances must be adjusted so that the sight distance to railroad signals is not reduced from what is existing.
- 10) All proposed temporary clearances which are less than those listed above must be submitted to Conrail for review and must be approved by Conrail prior to construction.
- 11) Clearances are subject to the requirements of the state in which the construction takes place and must be approved by the State and Conrail if less than those prescribed by law.

DRAINAGE

- 1) Maintaining the existing drainage and providing for future drainage improvements is of the utmost importance. Conrail will give special attention to reviewing drainage details.
- 2) Drainage plans must be included with the general plans submitted to Conrail for approval. These plans must include hydrologic and hydraulic studies and computations showing the frequency and duration of the design storm used, as well as the method of analysis such as Soil Conservation Service or the Rational method. Conrail uses storms with a 100-year recurrence interval as the minimum design storm.
- 3) Lateral clearances must provide sufficient space for construction of the required track ditch parallel to the standard roadbed section. If the ditch cannot be provided, or the

pier will interfere with the ditch, then a culvert of sufficient size must be provided. See Conrail Standard Plans 48754-B and 48747, attached.

- 4) Ditches and culverts must be sized to accommodate all increased run-off due to the construction and the increased size must continue to the natural outlet of the ditch. Ditches must be designed in accordance with good drainage engineering practices and must meet all local codes and ordinances.
- 5) No scuppers or other deck drains, roadway drainage, catch basins, inlets or outlets are permitted to drain onto Conrail property. Any variation of this policy must have the prior approval of Conrail. If an exception is ultimately granted, maintenance of such should not be Conrail's. Drainage from scuppers and deck drains must be conveyed through pipes, preferably to a point which is off Conrail property. If the drainage must be conveyed into a railroad ditch, calculations must be provided to Conrail which indicate the ability of the ditch to carry the additional run-off.
- 6) Additional drainage may require the installation of a pipe or pipes, new ditch or reprofiling of the existing ditch.

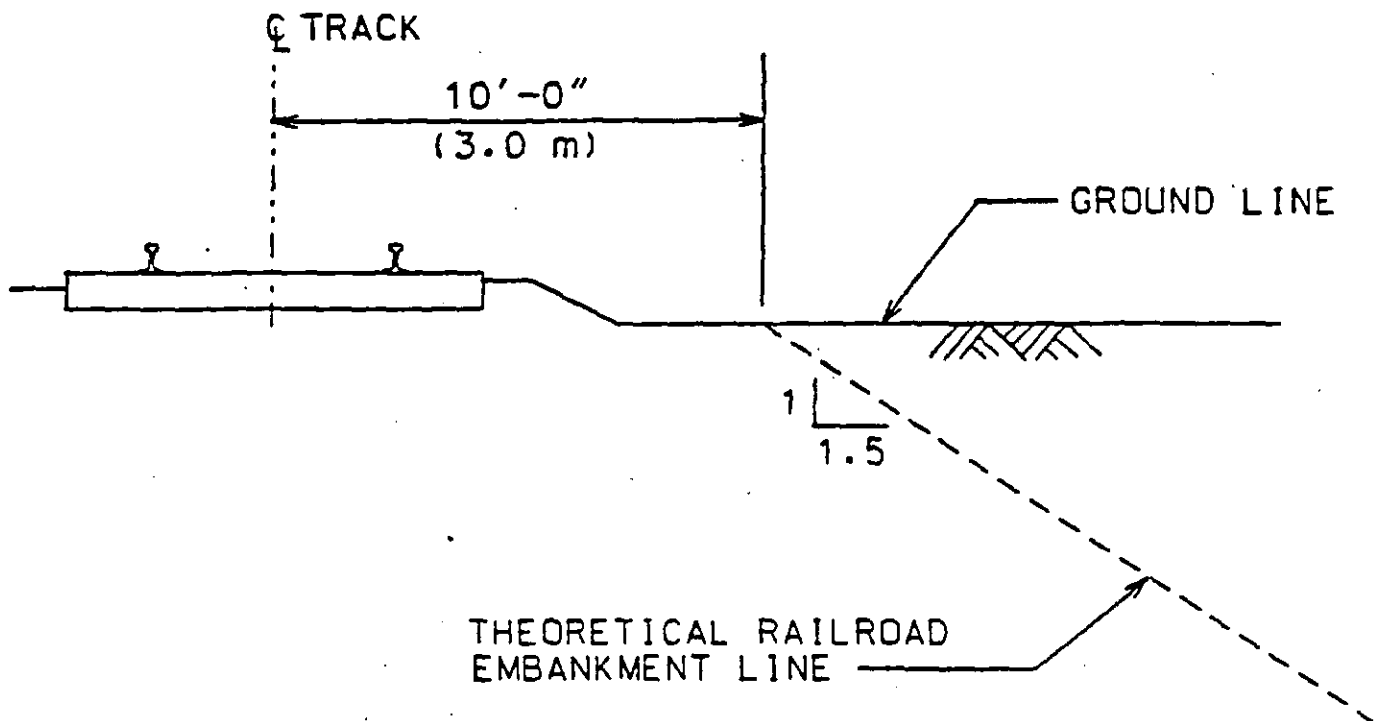
EROSION CONTROL

- 1) Embankment slopes on Conrail property adjacent to the track must have a slope of 2:1 or less and be paved for a minimum of two (2) feet (0.6 m) beyond the outside edge of the bridge foundation structure. The purpose of the pavement is to minimize erosion of the embankment material and to reduce deterioration of the sub-grade material by drainage water. The pavement shall consist of a prepared sub-base and/or filter fabric with grouted rip-rap on the surface.
- 2) The general plans for the bridge should indicate the proposed methods of erosion control during construction and must specifically address means to prevent silt accumulation in ditches and culverts and to prevent fouling the track ballast and sub-ballast. If the plans do not show erosion control, the contractor must submit a proposed method of erosion control and must have this method approved by Conrail prior to beginning any grading on the site.
- 3) Existing track ditches must be maintained at all times throughout the construction period. After the construction has been completed, all erosion and siltation must be removed and the ditches must be restored.
- 4) Conrail's approval of drainage and erosion control plans will not relieve the sponsor submitting these plans from ultimate responsibility for a satisfactory plan.

REFERENCES

- 1) In areas where underground utilities may be affected, Conrail's C.E. 8, "Specifications for Pipeline Occupancy" will govern.
- 2) In areas where power or communication lines will be affected, Conrail's C.E. 4, "Specifications for Wire, Conduit and Cable Occupations" will govern.

CE-6 prepared by F. X. Giacomia, Civil Engineer, Conrail Engineering Department.



REQUIREMENTS FOR TEMPORARY SHEET PILING ADJACENT TO TRACK

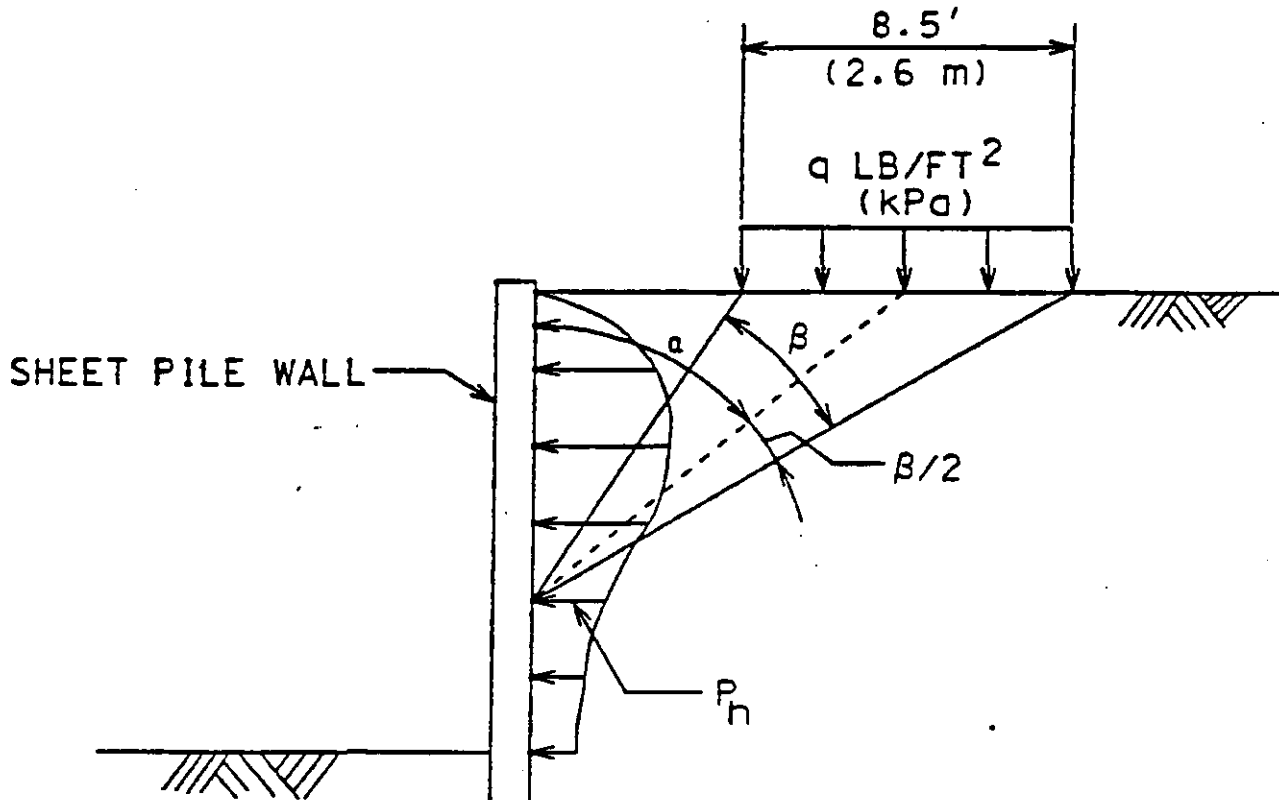
1. STEEL SHEET PILING FOR TRACK SUPPORT IS NOT REQUIRED FOR EXCAVATION OUTSIDE THE THEORETICAL RAILROAD EMBANKMENT LINE. SHORING IN ACCORDANCE WITH OSHA REQUIREMENTS SHALL BE USED IN THIS AREA.
2. STEEL SHEET PILING, DRIVEN PRIOR TO EXCAVATION, IS REQUIRED WHEN EXCAVATION IS WITHIN THE THEORETICAL RAILROAD EMBANKMENT LINE.
3. ALL SHEET PILING IS TO BE DESIGNED FOR AN E-80 LOADING. THE BOUSSINESO ANALYSIS IS TO BE USED TO DETERMINE THE LATERAL PRESSURE CAUSED BY THE RAILROAD LOADING.

OFFICE OF CHIEF ENGINEER - D & C

FEB 1, 1995

DWG. NO.: SK-1

LATERAL PRESSURE DIAGRAM



$$P_h = (2q/\pi)(\beta - \sin \beta \cos 2\alpha)$$

P_h = PRESSURE AT ANY GIVEN POINT

q = STRIP LOAD SURCHARGE

α = ANGLE IN DEGREES

β = ANGLE IN RADIANS

LATERAL PRESSURE DUE TO STRIP LOAD

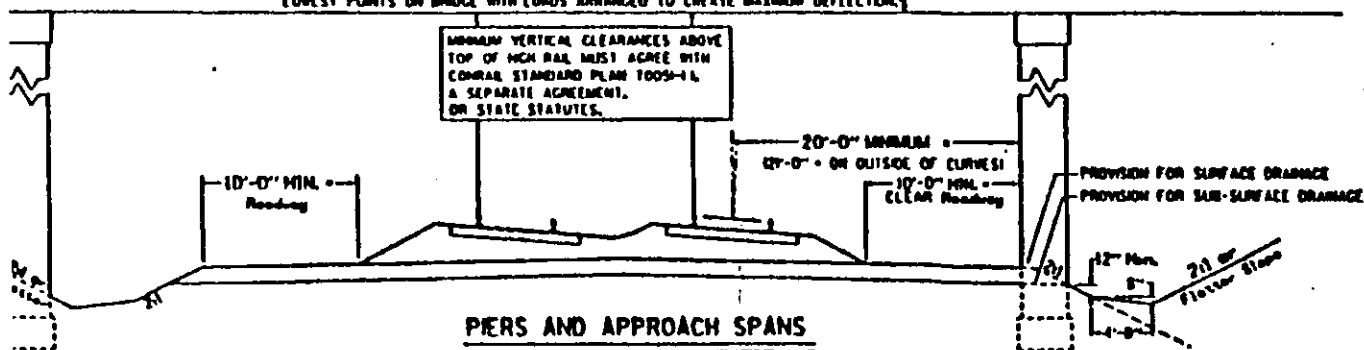
OFFICE OF CHIEF ENGINEER - D & C

FEB 1, 1995

DWG. NO.: SK-2

RAIN WATER RUNOFF MUST NOT BE DEPOSITED ONTO THE RAILROAD RIGHT OF WAY.
DECK DRAINS AND SCUPPERS ARE PROHIBITED BETWEEN THE TRACK DITCHES.

LOWEST POINTS ON BRIDGE WITH LOADS ARRANGED TO CREATE MAXIMUM DEFLECTION.



ALL SIDE SLOPES THROUGH THE BRIDGE AREA MUST BE COVERED WITH RP-RAP.

DITCHES AND SLOPES THROUGH THE BRIDGE AREA MUST MEET THE EXISTING DRAINAGE FACILITIES AND MATCH OR EXCEED THEM IN HYDRAULIC CAPACITY.

PIERS LOCATED LESS THAN 25 FEET FROM THE CENTERLINE OF ANY TRACK MUST BE PROTECTED BY CRASH WALLS IN ACCORDANCE WITH THE SPECIFICATIONS IN CHAPTER 8, PART 2A3 OF THE A.R.E.A. MANUAL FOR RAILWAY ENGINEERING.

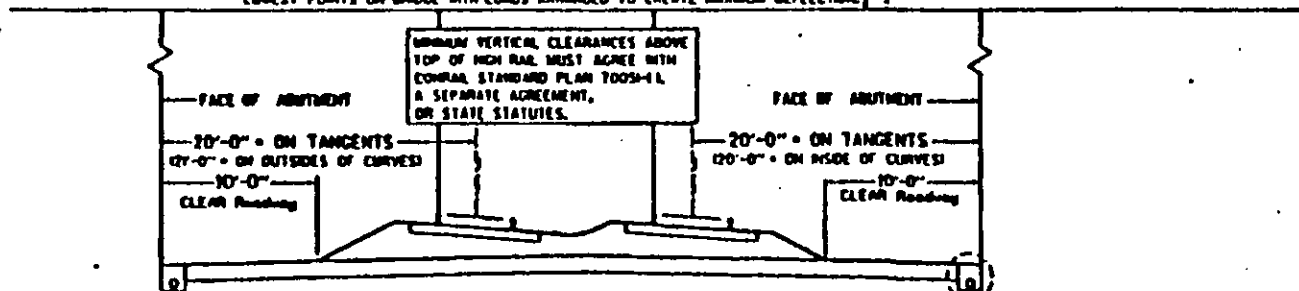
LATERAL CLEARANCES MARKED "L" MAY BE REDUCED BY 2 FEET IF A ROADWAY IS NOT REQUIRED.

ADDITIONAL CLEARANCE MAY BE REQUIRED TO ACCOMMODATE COMMUNICATION AND SIGNAL POLE LINES, OR AS OTHER FIELD CONDITIONS REQUIRE.

FLAT BOTTOM DITCHES, AS SHOWN, ARE TO BE USED. "V" BOTTOM DITCHES ARE PERMITTED ONLY IN CONNECTION WITH A DRAINAGE PIPE. THE PIPE MUST HAVE AT LEAST 4 FEET OF COVER, OR BE AT AN ELEVATION MEETING THE EXISTING DITCHES, AND MUST BE AT LEAST 24" DIAMETER.

THE DITCH SECTION SHOWN IS THE MINIMUM ACCEPTABLE SECTION. DITCH SIZES MUST BE INCREASED WHEN NECESSARY AS DETERMINED BY HYDROLOGIC AND HYDRAULIC STUDIES, OR IF THE DRAINAGE PATTERN IS ALTERED BY CONSTRUCTION.

RAIN WATER RUNOFF MUST NOT BE DEPOSITED ONTO THE RAILROAD RIGHT OF WAY.
DECK DRAINS AND SCUPPERS ARE PROHIBITED BETWEEN THE TRACK DITCHES.
LOWEST POINTS ON BRIDGE WITH LOADS ARRANGED TO CREATE MAXIMUM DEFLECTION.



DRAINAGE PIPE - 24" MINIMUM DIAMETER

FILTER FABRIC

DRAINAGE PIPE - 24" MINIMUM DIAMETER PIPES SHOULD BE PROVIDED ON BOTH SIDES TO PERMIT CONTINUITY OF ROADDED DITCHES.

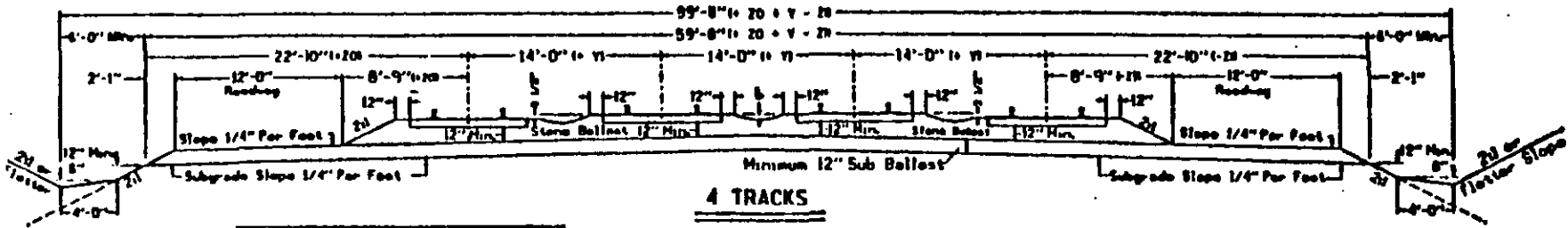
6" x 18" DRAINAGE AREA WITH OPEN GRADED STONE AND 4" DIA. PERFORATED PIPE SLOPED TO DRAIN, WITH FILTER FABRIC WHEN REQUIRED.

CONRAIL 48754-B

OVERHEAD BRIDGE
MINIMUM
CLEARANCE DIAGRAM

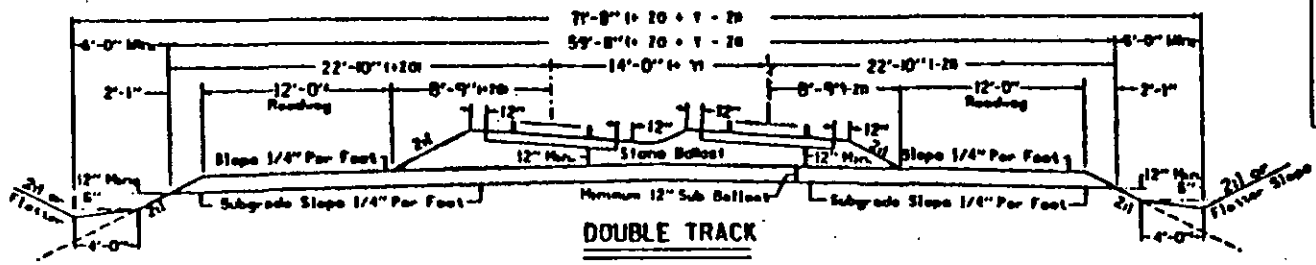
R.D. Carl
CHIEF ENGINEER BIC

FEBRUARY, 1990



Notes Z0 and Z1 are indicated for tracks which curve to the right.

4 TRACKS

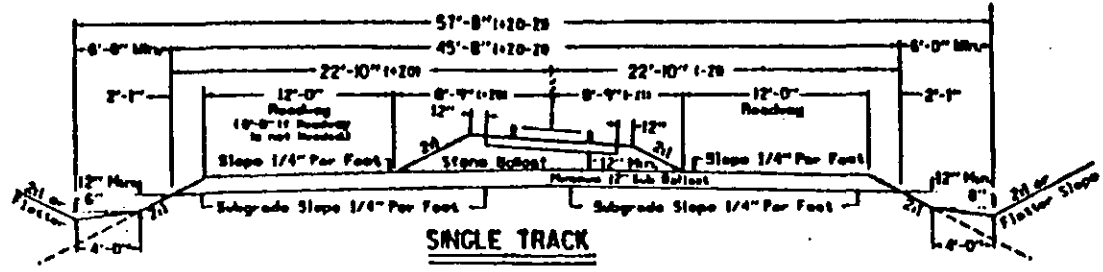


DOUBLE TRACK

Y DIMENSION
 On adjacent tracks where the super-elevation is the same or the outer track has less, $Y = 2''$ per degree of curve.
 Where super-elevation is greater on the outer track, $Y = 2''$ per degree of curve added to $3\frac{1}{2}$ times the amount of difference in super-elevation.

**Z Dimensions
2 or More Tracks**

Super-Elevation	Z - Outside of Curve	Z - Inside of Curve
0"	0"	0"
1"	4"	1"
2"	7"	5"
3"	10"	6"
4"	1'-1"	7"
5"	1'-4"	8"
6"	1'-7"	10"



SINGLE TRACK

**Z Dimensions
Single Track**

Super-Elevation	Z - Outside of Curve	Z - Inside of Curve
0"	0"	0"
1"	2"	2"
2"	5"	4"
3"	8"	5"
4"	11"	6"
5"	1'-3"	7"
6"	1'-6"	9"

CONRAIL **48747**

**TYPICAL
ROADBED
AND
BALLAST SECTIONS**

AUGUST, 1968

COPY 48747-100-1

New York State Department of Environmental Conservation

Division of Environmental Permits, Region 7

615 Erie Boulevard West, Syracuse, New York 13204-2400

Phone: (315) 426-7438 FAX: (315) 426-7425



John P. Cahill
Commissioner

April 1, 1999

Philip Harvard Env. Manager

Syracuse China Company

P.O. Box 4820

Syracuse, NY 13221-4820

**RE: State Pollutant Discharge Elimination System (SPDES) NY 0100137
DEC #7-3115-00160/00011**

Dear Mr. Harvard:

Enclosed please find your permit with the effective date changed to April 1, 1999.

Included is a SPDES Permit fact sheet.

Unless otherwise specified this permit will become effective immediately unless you petition, pursuant to ECL Section 17-0907, that you be given an opportunity to be heard in connection with this determination and where applicable.

Should you have any questions feel free to call.

Sincerely,

Robert A. Torba
Deputy Permit Administrator

RAT/eab
Harvard

cc: Robert Hannaford, Albany
Steve Eidt, Region 7
Shayne Mitchell, Albany

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT
Special Conditions (Part I)



Industrial Code: 3262
Discharge Class (CL): 01
Toxic Class (TX): T
Major Drainage Basin: 07
Sub Drainage Basin: 02
Water Index Number: O-66-12-P154-3
Compact Area: _____

SPDES Number: NY-0100137
DEC Number: 7-3115-160/1-0
Effective Date (EDP): 4/01/99
Expiration Date (ExpD): 4/01/2004
Modification Date(s): _____
Attachment(s): General Conditions (Part II) Date: 11/90

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act as amended, (33 U.S.C. Section 1251 et. seq.) (hereafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Attention: Vice President of Mfg.

Name: Syracuse China Company
Street: PO Box 4820
City: Syracuse State: NY Zip Code: 13221-4820

is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: Syracuse China Company
Location (C,T,V): Syracuse (C) County: Onondaga
Facility Address: 2900 Court Street
City: Syracuse State: NY Zip Code: 13221
NYTM - E: _____ NYTM - N: 4
From Outfall No.: 001 at Latitude: 43° 05' 33" & Longitude: 76° 07' 49"
into receiving waters known as: Ley Creek Class: B

and; (list other Outfalls, Receiving Waters & Water Classifications)

002 - Ley Creek, Class: B

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in Special Conditions (Part I) and General Conditions (Part II) of this permit.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: Syracuse China Company
Street: P.O. Box 4820
City: Syracuse State: NY Zip Code: 13221-4820
Responsible Official or Agent: Philip Harvard, Env. Manager Phone: (315)455-6763

This permit and the authorization to discharge shall expire on midnight of the expiration date shown and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for a permit renewal no less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

Permit Administrator:	
Robert A. Torba	
Address:	
615 Erie Blvd. W., Syracuse, NY 13204	
Signature: <i>Robert A. Torba</i>	Date: 4/01/99

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING			
	This cell describes the type of wastewater authorized for discharge. Examples include process wastewater, storm water, non-contact cooling water.	This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect.	The date this page is no longer in effect			
PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE		
pH	The minimum level that must be maintained at all times.	The maximum level that may not be exceeded at any time.	SU				
PARA-METER	CALCULATED LIMIT	COMPLIANCE LEVEL	ACTION LEVEL	UNITS	MDL AND PQL	SAMPLE FREQUENCY	SAMPLE TYPE
	Daily Avg. and Daily Max. are defined below. The calculated limit is the limit that has been derived based on the assumptions and rules in place at the time the permit is written. Examples of these assumptions include receiving water hardness, pH and temperature; rates of other discharges to the receiving stream; conservatism of substances in the environment; etc. If the assumptions or rules change, the calculated limit may, after due process, change. The Calculated Limit is developed without consideration of what level is technologically achievable or what can be quantitated analytically. If a calculated limit is not included in this column, but a compliance level is included in the next column, the calculated limit is the compliance level.	Daily Max. and Daily Avg. are defined below. All determinations of compliance with substance specific discharge limits are made by comparing monitoring results to the compliance level. The compliance level is developed considering what can be quantitated analytically or what level is technologically achievable in the permittee's discharge at the time the permit is written.	Type I or Type II Action Levels are monitoring requirements, as defined below, that trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, Temperature, mass or concentration. Examples include SU, °F, µg/l, lbs/d, etc.	The method detection limits and practical quantitation limits that the permittee must make all reasonable efforts to achieve when measuring the parameter in the wastewater, including using a more sensitive approved analytical procedure.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

DAILY DISCHARGE: The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day.

DAILY MAX.: The highest allowable daily discharge.

DAILY AVG.: The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

ACTION LEVELS: Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards.

TYPE I: The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results in excess of the stated Action Level.

TYPE II: The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results that show the stated action level exceeded for four of six consecutive samples, or for two of six consecutive samples by 20 % or more, or for any one sample by 50 % or more.

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FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
001	Outfall 01A, noncontact cooling water, storm water runoff and groundwater.	Ley Creek	EDP	EDP + 5 Years

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES					
pH	6.5	8.5	SU	2/Week	Grab						
PARAMETER	CALCULATED LIMIT		NIGHTTIME COMPLIANCE LEVEL		MONITORING ACTION LEVEL		UNITS	MDL (µg/l)	PQL (µg/l)	SAMPLE FREQUENCY	SAMPLE TYPE
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	TYPE I	TYPE II					
Flow			Monitor	Monitor			GPD			Continuous	Recorder
Temperature			Monitor	Monitor			°F			2/Week	Grab
Total Dissolved Solids			Monitor	600			mg/l			Weekly	6 hr. composite
Total Suspended Solids			Monitor	20			mg/l			Weekly	6 hr. composite
BOD5					21		mg/l			Quarterly	6 hr. composite
Oil & Grease			Monitor	15			mg/l			Monthly	Grab
Boron, Total					840		µg/l			Quarterly	6 hr. composite
Lead, Total			Monitor	70			µg/l			2/Month	6 hr. composite

SPECIAL CONDITION:

The permittee must report both the concentration (in mg/l or µg/l) and the mass loading (in lbs/day) on the Discharge Monitoring Reports for all parameters except flow, pH, temperature and set solids. This requirement applies to all outfalls.

DEFINITIONS:

Recorder - A flow measurement system that continuously measures and displays the instantaneous flow rate, and records the cumulative discharge volume versus time on paper and/or electronic.

Totalizer - A flow measurement system that continuously measures and displays the instantaneous flow rate and the cumulative discharge volume.

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PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
01A	Dinnerware production contact wastewaters - raw material batching, ware forming and firing, ware cleaning and plaster mold making.	Outfall 001	July 1, 1999	EDP + 5 years

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)						
pH	Monitor	Monitor	SU	Monthly	Grab							
PARAMETER	CALCULATED LIMIT		ENFORCEABLE COMPLIANCE LEVEL		MONITORING ACTION LEVEL		UNITS	MDL (µg/l)	PQL (µg/l)	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	TYPE I	TYPE II						
Flow			Monitor	Monitor			GPD			Weekly	Totalizer	
Total Dissolved Solids			Monitor	Monitor			mg/l			Monthly	Grab	
Total Suspended Solids					40		mg/l			Monthly	Grab	

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FINAL PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
01B	Ceramic material preparation contact wastewaters.	Outfall 001	July 1, 1999	EDP + 5 years

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)						
pH	Monitor	Monitor	SU	Monthly	Grab							
PARAMETER	CALCULATED LIMIT		ENFORCEABLE COMPLIANCE LEVEL		MONITORING ACTION LEVEL		UNITS	MDL (µg/l)	PQL (µg/l)	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	TYPE I	TYPE II						
Flow			Monthly	Monthly			GPD			Weekly	Totalizer	
Total Dissolved Solids			Monthly	Monthly			mg/l			Monthly	Grab	
Total Suspended Solids					40		mg/l			Monthly	Grab	

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PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
002	Storm water runoff.	Storm sewer trib. to Ley Creek	EDP	EDP + 5 Years

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)						
pH	6.0	9.0	SU	Monthly	Grab							
PARAMETER	CALCULATED LIMIT		ENFORCEABLE COMPLIANCE LEVEL		MONITORING ACTION LEVEL		UNITS	MDL (µg/l)	PQL (µg/l)	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	TYPE I	TYPE II						
Flow			Monitor	Monitor			GPD			Monthly	Estimate	
Settleable Solids			Monitor	10			ml/l			Monthly	Grab	
Oil & Grease			Monitor	15			mg/l			Monthly	Grab	

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SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule.

Action Code	Outfall Number(s)	Compliance Action	Due Date
96299	001, 01A, 01B and 002	<p>A short term monitoring program shall be performed to determine the presence of the following parameters:</p> <p>Outfall 001 - dissolved oxygen, total aluminum, ammonia (as N) and MBAS.</p> <p>Outfall 01A - total lead and phthalates (EPA 625).</p> <p>Outfall 01B - total lead and phthalates (EPA 625).</p> <p>Outfall 002 - TDS, TSS and total lead.</p> <p>This program must include, at a minimum, the collection and analysis of one representative effluent sample per day for 3 consecutive discharge days. Analytical methodologies shall achieve detection limits comparable to those utilized by this Department.</p>	October 1, 1999

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT", the permittee is not required to repeat the submission. The above due dates are independent from the effective date of the permit stated in the letter of "SPDES NOTICE/RENEWAL APPLICATION/PERMIT."

- b) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice under terms of the General Conditions (Part II), Section 5. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:
1. A short description of the non-compliance;
 2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
 3. A description of any factors which tend to explain or mitigate the non-compliance; and
 4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.
- c) The permittee shall submit copies of any document required by the above schedule of compliance to NYSDEC Regional Water Engineer at the location listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS and to the Bureau of Water Permits, Room 314, 50 Wolf Road, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

BMPinit2.09

SPDES PERMIT NUMBER NY0100137
Part I, Page 8 of 12**SPECIAL CONDITIONS - BEST MANAGEMENT PRACTICES**

1. The permittee shall develop a Best Management Practices (BMP) plan to prevent, or minimize the potential for, release of significant amounts of toxic or hazardous pollutants to the waters of the State through plant site runoff; spillage and leaks; sludge or waste disposal; and storm water discharges including, but not limited to, drainage from raw material storage. Completed BMP plans shall be submitted by October 1, 1999 to the Regional Water Engineer at the address shown on the Recording, Reporting and Additional Monitoring Requirements. The BMP plan shall be implemented within 6 months of submission, unless a different time frame is approved by this Department.
2. Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (1) above, unless a new deadline is set explicitly by such permit modification or renewal.
3. The permittee shall review all facility components or systems (including material storage areas; in-plant transfer, process and material handling areas; loading and unloading operations; storm water, erosion, and sediment control measures; process emergency control systems; and sludge and waste disposal areas) where toxic or hazardous pollutants are used, manufactured, stored or handled to evaluate the potential for the release of significant amounts of such pollutants to the waters of the State. In performing such an evaluation, the permittee shall consider such factors as the probability of equipment failure or improper operation, cross-contamination of storm water by process materials, settlement of facility air emissions, the effects of natural phenomena such as freezing temperatures and precipitation, fires, and the facility's history of spills and leaks. For hazardous pollutants, the list of reportable quantities as defined in 40 CFR, Part 117 may be used as a guide in determining significant amounts of releases. For toxic pollutants, the relative toxicity of the pollutant shall be considered in determining the significance of potential releases.

The review shall address all substances present at the facility that are listed as toxic pollutants under Section 307(a)(1) of the Clean Water Act or as hazardous pollutants under Section 311 of the Act or that are identified as Chemicals of Concern by the Industrial Chemical Survey.

4. Whenever the potential for a significant release of toxic or hazardous pollutants to State waters is determined to be present, the permittee shall identify Best Management Practices that have been established to minimize such potential releases. Where BMPs are inadequate or absent, appropriate BMPs shall be established. In selecting appropriate BMPs, the permittee shall consider typical industry practices such as spill reporting procedures, risk identification and assessment, employee training, inspections and records, preventive maintenance, good housekeeping, materials compatibility and security. In addition, the permittee may consider structural measures (such as secondary containment and erosion/sediment control devices and practices) where appropriate.
5. Development of the BMP plan shall include sampling of waste stream segments for the purpose of toxic "hot spot" identification. The economic achievability of effluent limits will not be considered until plant site "hot spot" sources have been identified, contained, removed or minimized through the imposition of site specific BMPs or application of internal facility treatment technology. For the purposes of this permit condition a "hot spot" is a segment of an industrial facility, including but not limited to soil, equipment, material storage areas, sewer lines etc.; which contributes elevated levels of problem pollutants to the wastewater and/or storm water collection system of that facility. For the purposes of this definition, problem pollutants are substances for which treatment to meet a water quality or technology requirement may, considering the results of waste stream segment sampling, be deemed unreasonable. For the purposes of this definition, an elevated level is a concentration or mass loading of the pollutant in question which is sufficiently higher than the concentration of that same pollutant at the compliance monitoring location so as to allow for an economically justifiable removal and/or isolation of the segment and/or B.A.T. treatment of wastewaters emanating from the segment.
6. The BMP plan shall be documented in narrative form and shall include any necessary plot plans, drawings or maps. Other documents already prepared for the facility such as a Safety Manual or a Spill Prevention, Control and Countermeasure (SPCC) plan may be used as part of the plan and may be incorporated by reference. USEPA guidance for development of storm water elements of the BMP is available in the September 1992 manual "Storm Water Management for Industrial Activities," USEPA

BMPint2.99

SPDES PERMIT NUMBER NY0100137
Part I, Page 9 of 12**SPECIAL CONDITIONS - BEST MANAGEMENT PRACTICES**

Office of Water Publication EPA 832-R-92-006 (available from NTIS, (703)487-4650, order number PB 92235969). A copy of the BMP plan shall be maintained at the facility and shall be available to authorized Department representatives upon request. As a minimum, the plan shall include the following BMP's:

- | | | |
|-------------------------------------|----------------------------|--------------------------------|
| a. BMP Committee | e. Inspections and Records | i. Security |
| b. Reporting of BMP Incidents | f. Preventive Maintenance | j. Spill prevention & response |
| c. Risk Identification & Assessment | g. Good Housekeeping | k. Erosion & sediment control |
| d. Employee Training | h. Materials Compatibility | l. Management of runoff |
7. The BMP plan shall be reviewed annually and shall be modified whenever: (a) changes at the facility materially increase the potential for significant releases of toxic or hazardous pollutants; (b) actual releases indicate the plan is inadequate or (c) a letter from the Regional Water Engineer highlights inadequacies in the plan.

WTCpg2.99

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WATER TREATMENT CHEMICAL (WTC) REQUIREMENTS

New or increased use of a WTC requires Department review and authorization before it can be used and discharged. At a minimum, the permittee must notify the Department in writing of its intent to change WTC use. The Department will review that submittal and determine if a formal SPDES permit modification is necessary or whether WTC review and authorization may proceed outside of the formal permit administrative process. The majority of WTC authorizations do not require formal SPDES permit modification. WTCs which are used in closed systems and cannot contact wastewater effluents or WTCs which are discharged to municipal STP are not subject to SPDES permit review. WTCs include, but are not limited to, conditioners, corrosion or scale inhibitors, flocculants, biocides, fungicides, molluscicides, and sequestrants. Questions concerning the use in discharge of a new WTC or increased levels of an authorized WTC should be directed to the Department staff person who developed your SPDES permit. If you are not sure who that is, contact the Department staff person who normally inspects your facility.

Generic WTC Usage Requirements

- WTC usage shall not exceed the usage rate reported by the permittee or authorized below, whichever is less.
- The permittee shall maintain a logbook of all WTC use, noting for each chemical the time, amount and location of each dosage. Additional guidance concerning necessary logbook content and other applicable requirements can be found in the general conditions (Part II) of the SPDES permit. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used and subsequently discharged.
- The permittee shall provide an annual report, attached to the December DMR, containing the following information for each outfall: the current list of WTCs authorized for use and discharge by the Department, for each WTC the amount in pounds used during the year, and any other pertinent information.
- The discharge shall not cause or contribute to a violation of water quality or an exceedance of AWQC.

Generic Prohibitions

WTCs which contain measurable levels of phosphorus are not permitted for discharge within the Great Lakes Basin or tributary to ponded waters outside the Basin unless the permittee can clearly demonstrate that no acceptable alternative exists. WTCs containing microorganisms cannot be approved unless a formal SPDES permit modification application is submitted.

List of WTCs Authorized for Use and Discharge

WTC Manufacturer, Name & Function : Ashland Chemical Company, Drew Division, Amerfloc, 482, Flocculant		
Affected Outfall(s) : 001	Avg/Max Daily Dosage : 19 /	lbs/day

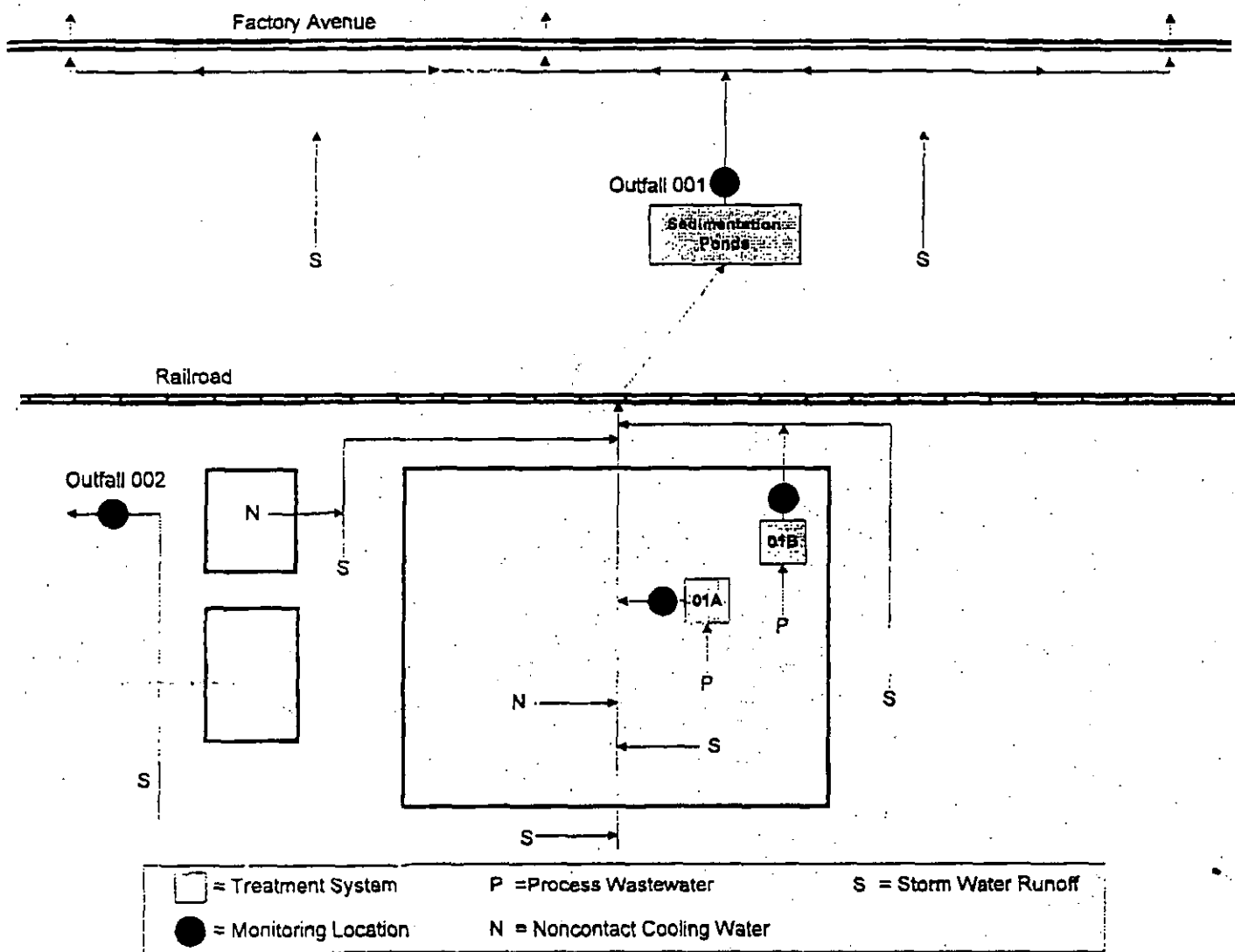
* - Authorized WTCs must either be identified above or in a letter sent to the permittee by the Department. In cases where a WTC is listed above and in a letter from the Department, the more recent document will control.

MON1002.99

SPDES PERMIT NUMBER NY0100137
Part I, Page 11 of 12

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) specified below:



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RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

- a) The permittee shall also refer to the General Conditions (Part II) of this permit for additional information concerning monitoring and reporting requirements and conditions.
- b) The monitoring information required by this permit shall be summarized, signed and retained for a period of three years from the date of the sampling for subsequent inspection by the Department or its designated agent. Also;
- [X] (if box is checked) monitoring information required by this permit shall be summarized and reported by submitting completed and signed Discharge Monitoring Report (DMR) forms for each 1 month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

Send the original (top sheet) of each DMR page to:

Department of Environmental Conservation
Division of Water
Bureau of Watershed Compliance Programs
50 Wolf Road
Albany, New York 12233-3506
Phone: (518) 457-3790

Send the first copy (second sheet) of each DMR page to:

Department of Environmental Conservation
Regional Water Engineer
Region 7
615 Erie Boulevard West
Syracuse, New York 13204-2400

- c) A monthly "Wastewater Facility Operation Report..." (form 92-15-7) shall be submitted (if box is checked) to the [] Regional Water Engineer and/or [] County Health Department or Environmental Control Agency listed above.
- d) Noncompliance with the provisions of this permit shall be reported to the Department as prescribed in the attached General Conditions (Part II).
- e) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.
- f) If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculations and recording on the Discharge Monitoring Reports.
- g) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.
- h) Unless otherwise specified, all information recorded on the Discharge Monitoring Report shall be based upon measurements and sampling carried out during the most recently completed reporting period.
- i) Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section five hundred two of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be sent to the Environmental Laboratory Accreditation Program, New York State Health Department Center for Laboratories and Research, Division of Environmental Sciences, The Nelson A. Rockefeller State Plaza, Albany, New York 12201.

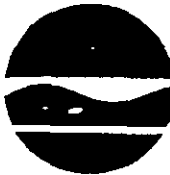
New York State Department of Environmental Conservation

Division of Water

Bureau of Water Permits, Room 314

50 Wolf Road, Albany, New York 12233-3505

Phone: (518) 457-1157 FAX: (518) 485-7786



John P. Cahill
Commissioner

MEMORANDUM

TO: Wayne Mizerak, BWRA, DER
FROM: Shayne Mitchell, BWP, DOW
SUBJECT: Syracuse China, 734053
DRAINAGE BASIN: 07/02
DATE: January 12, 2000

Pursuant to our 01/06/00 meeting, attached are "renewed" effluent criteria for the above noted site.

The DOW does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. DER will be responsible for ensuring compliance with the attached effluent criteria and approval of all engineering submissions. Special Condition A identifies the Bureau of Site Control as the place to send all effluent results, engineering submissions and modification requests. The Regional Water Engineer should be kept apprised of the status of this discharge and, in accordance with the attached criteria, receive a copy of the effluent results for information purposes.

If you have any questions, please call me at 7-0664.

Attachments: Effluent Criteria, General Conditions

cc: Regional Water Engineer (w/Effluent Criteria)
A. Eaton, DOW (w/Effluent Criteria)
H. Samide (w/Effluent Criteria)

SYRACUSE CHINA SITE #7-34-053, REMEDIATION DISCHARGE LIMITS, LEVELS AND MONITORING

OUTFALL NUMBER	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
003	Wetland water, sludge dewatering, stockpile runoff and equipment decontamination.	Wetland trib. to Ley Creek	February 1, 2000	December 31, 2000

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FOOTNOTES (FN)
pH	6.5	8.5	SU	Daily	Grab	2

PARAMETER	CALCULATED LIMIT		ENFORCEABLE COMPLIANCE LEVEL		MONITORING ACTION LEVEL		UNITS	MDL (µg/l)	PQL (µg/l)	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Daily Avg.	Daily Max.	Daily Avg.	Daily Max.	TYPE I	TYPE II						
Flow			Monitor	Monitor			GPD			Daily	Totalizer	1
Total Dissolved Solids			Monitor	Monitor			mg/l			2/Week	6 hr. composite	2
Total Suspended Solids			Monitor	20			mg/l			2/Week	6 hr. composite	2
BOD5			Monitor	20			mg/l			Weekly	6 hr. composite	
Foam			-	None			visible			Daily	Grab	
Oil & Grease			-	None			visible			Daily	Grab	
Lead, Total			130	280			µg/l			2/Week	6 hr. composite	

FOOTNOTES:

- (1) The discharge rate may not exceed the effective or design treatment system capacity approved by the Department.
- (2) If treatment and discharge is performed on a batch basis, testing shall be performed on each batch and acceptable results received prior to discharge.

SPECIAL CONDITIONS:

- (A) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. All monitoring data, engineering submissions and modification requests must be submitted to:
 Chief - Operation Maintenance and Support Section
 Bureau of Hazardous Site Control
 Division of Environmental Remediation
 NYSDEC
 50 Wolf Road
 Albany, NY 12233-7010
 Submit a copy of monitoring data to:
 Regional Water Engineer
 NYSDEC
 615 Eric Blvd West
 Syracuse, NY 13204-2400
- (B) Discharge is only authorized for 4 months during the above noted period.
- (C) Only site generated wastewater is authorized for treatment and discharge.
- (D) Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow, pH and visible tests.
- (E) Any use of water treatment chemicals in the treatment process must first be approved by the Department.
- (F) The discharge and administration of this discharge must comply with the attached general conditions.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

APPENDIX A
GENERAL CONDITIONS (Consent Orders)*

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* This version of General Conditions is intended to be incorporated as Appendix A of all Consent Orders for site remediation projects where a State Pollutant Discharge Elimination System permit is not required but where the order authorizes the treatment and discharge of wastewaters to the surface or groundwaters of New York State.

1. GENERAL PROVISIONS

- a. This order, or a true copy, shall be kept readily available for reference at the wastewater treatment facility.
- b. A determination has been made on the basis of a submitted plans, or other available information, that compliance with the provisions specified in this order will reasonably protect classified water use and assure compliance with applicable water quality standards. Satisfaction of these provisions notwithstanding, if operation pursuant to the order causes or contributes to a condition in contravention of State water quality standards, or if the Department determines, on the basis of notice provided by the operator and any related investigation, inspection or sampling, that a modification of the order is necessary to prevent impairment of the best use of the waters or to assure maintenance of water quality standards or compliance with other provisions of ECL, the Department may require such a modification and may require abatement action to be taken by the operator and may also prohibit the noticed act until the order has been modified.
- c. All discharges authorized by this order shall be consistent with the terms and conditions of this order. Facility expansion or other modifications, treatment and disposal system changes which will result in new or increased discharges of pollutants into the waters of the state must be reported by submission of a formal request for modification of this order. The discharge of any pollutant, not identified and authorized, or the discharge of any pollutant more frequently than, or at a level in excess of, that identified and authorized by this order shall constitute a violation of the terms and conditions of this order. Facility modifications which result in decreased discharges of pollutants must be reported by submission of written notice to the Department.
- d. Where the operator becomes aware that he/she failed to submit any relevant facts or submitted incorrect information prior to or in pursuit of this order or in any report to the Department, the operator shall promptly submit such facts or information.
- e. It shall not be a defense for an operator in an enforcement action that it would have been necessary to halt or reduce the authorized activity in order to maintain compliance with the conditions of this order, unless directed by the Department to continue the activity.
- f. The filing of a request for a modification of this order, or a notification of planned changes or anticipated noncompliance, does not stay any condition of this order.
- g. The operator shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, suspending, or revoking this order, or to determine compliance with this order. The operator shall also furnish to the Department, upon request, copies of records required to be kept by this order.

2. SPECIAL REPORTING REQUIREMENTS

Dischargers must notify the Department as soon as they know or have reason to believe:

- a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant (USEPA Priority Pollutants plus phenols, total) which is not specifically controlled in the order, pursuant to General Provision 1 (c) herein. For the purposes of this section, recurrent accidental or unintentional spills or releases on a frequent basis shall be considered to be a discharge.
- b. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the order, if that discharge will exceed five times the maximum concentration value reported for that pollutant in the information submitted prior to this order; or the level established by the Department.
- c. That they will begin to use any toxic pollutant which was not reported prior to this order and which is being or may be discharged to waters of the state.

3. EXCLUSIONS

- a. The issuance of this order by the Department and the receipt thereof by the operator does not supersede, revoke or rescind an order or modification thereof on consent or determination by the Commissioner issued heretofore by the Department or any of the terms, conditions or requirements contained in such order or modification thereof unless specifically intended by said order.

- b. The issuance of this order does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations; nor does it obviate the necessity of obtaining the assent of any other jurisdiction as required by law for the discharge authorized.
- c. Unless specifically authorized in this order, the construction of any onshore or offshore physical structures or facilities or the undertaking of any work in any navigable waters is not approved.

4. REPORTING NONCOMPLIANCE

- a. *Anticipated noncompliance.* The operator shall give advance notice to the Department of any planned changes in the authorized facility or activity which may result in noncompliance with this order as soon as the operator becomes aware that non-compliance will be unavoidable.
- b. *Immediate and twenty-four hour reporting.* The operator shall report any noncompliance which may endanger health or the environment. Any unusual situation, caused by a deviation from normal operation or experience (e.g. upsets, bypasses, inoperative treatment process units, spills or illegal chemical discharges or releases to the collection system) which create a potentially hazardous condition shall be orally reported immediately. Other information shall be provided orally within 24 hours from the time he or she becomes aware of the circumstances. A written noncompliance report shall also be provided within five (5) days of the time the operator becomes aware of the circumstances. The written noncompliance report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent the noncompliance and its reoccurrence.
 - (1) The following shall be included as information which must be reported within 24 hours under paragraph (b) above:
 - (i) any unanticipated bypass which violates any effluent limitation in the order;
 - (ii) any upset which violates any effluent limitation in the order;
 - (iii) violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the order to be reported within 24 hours.
 - (2) The Department may waive, at their discretion, the written report on a case-by-case basis if the oral report has been received within 24 hours.
 - (3) Reports required by this section shall be filed with the Department's regional office having jurisdiction over the facility. During weekends and holidays, oral noncompliance reports, required by this paragraph, may be made at (518) 457-7362.
- c. *Duty to mitigate.* The operator shall take all reasonable steps to minimize or prevent any discharge in violation of this order which has a reasonable likelihood of adversely affecting human health or the environment.

5. INSPECTION AND ENTRY

The operator shall allow the Commissioner of the Department, the New York State Department of Health, the County Health Department, or their authorized representatives, upon the presentation of credentials and other documents as may be required by law, to:

- a. enter upon the operator's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this order;
- b. have access to and copy, at reasonable times, any records that must be kept under the conditions of this order, including records maintained for purposes of operation and maintenance;
- c. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this order, and
- d. sample or monitor at reasonable times, for the purposes of assuring compliance with this order or as otherwise authorized by the Environmental Conservation Law, any substances or parameters at any location.

6. SPECIAL PROVISIONS - NEW OR MODIFIED DISPOSAL SYSTEMS

- a. Prior to construction of any new or modified waste disposal system or modification of a facility generating wastewater which could alter the design volume of, or the method or effect of treatment or disposing of the wastes from an existing waste disposal system, the operator shall submit to the Department or its designated field office for review, an approvable engineering report, plans, and specifications which have been prepared by a person or firm licensed to practice Professional Engineering in the State of New York.
- b. The construction of the above new or modified disposal system shall not start until the operator receives written approval of the system from the Department or its designated field office.
- c. The construction of the above new or modified disposal system shall be under the general supervision of a person or firm licensed to practice Professional Engineering in New York State. Upon completion of construction, that person or firm shall certify to the Department or its designated field office that the system has been fully completed in accordance with the approved engineering report, plans and specifications and letter of approval; and the operator shall receive written acceptance of such certificate from the Department or designated field agency prior to commencing discharge.
- d. The Department and its designated field offices review wastewater disposal system reports, plans, and specifications for treatment process capability only, and approval by either office does not constitute approval of the system's structural integrity.

7. MONITORING, RECORDING, AND REPORTING

7.1 GENERAL

- a. The operator shall comply with all recording, reporting, monitoring and sampling requirements specified in this order and such other additional terms, provisions, requirements or conditions that the Department may deem to be reasonably necessary to achieve the purposes of the Environmental Conservation Law, or rules and regulations adopted pursuant thereto.
- b. Samples and measurements taken to meet the monitoring requirements specified in this order shall be representative of the quantity and character of the monitored discharges. Composite samples shall be composed of a minimum of 8 grab samples, collected over the specified collection period, either at a constant sample volume for a constant flow interval or at a flow-proportioned sample volume for a constant time interval, unless otherwise specified in this order. For GC/MS Volatile Organic Analysis (VOA), aliquots must be combined in the laboratory immediately before analysis. At least 4 (rather than 8) aliquots or grab samples should be collected over the specified collection period. Grab sample means a single sample, taken over a period not exceeding 15 minutes.
- c. Accessible sampling locations must be provided, maintained and identified by the operator. New sampling locations shall be provided if proposed or existing locations are deemed unsuitable by the Department or its designated field agency.
- d. Actual measured values of all positive analytical results obtained above the Practical Quantitation Limit (PQL)¹ for all monitored parameters shall be recorded and reported, as required by this order; except, for parameters which are limited in this order to values below the PQL, actual measured values for all positive analytical results above the Method Detection Limit (MDL)² shall be reported.
- e. The operator shall periodically calibrate and perform manufacturer's recommended maintenance procedures on all monitoring and analytical instrumentation to insure accuracy of measurements. Verification of maintenance shall be logged into the daily record book(s) of the facility. The operator shall notify the Department's regional office immediately if any required instrumentation becomes inoperable. In addition, the operator shall verify the accuracy of their measuring equipment to the Department's Regional Office annually.

¹ Practical Quantitation Limit (PQL) is the lowest level that can be measured within specified limits of precision and accuracy during routine laboratory operations on most effluent matrices.

² Method Detection Limit (MDL) is the level at which the analytical procedure referenced is capable of determining with a 99% probability that the substance is present. This value is determined in distilled water with no interfering substances present. The precision at this level is +/- 100%.

7.2 SIGNATORIES AND CERTIFICATION

- a. All reports required by this order shall be signed as follows:
- (1) for a corporation: by a responsible corporate officer. For the purposes of this section, a responsible corporate officer means:
 - (i) a president, secretary, treasurer, or a vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making function for the corporation, or
 - (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - (2) for a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
 - (3) for a municipality, state, federal, or other public agency: by either a principal or executive officer or ranking elected official. For purposes of this section, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency; or
 - (4) a duly authorized representative of the person described in items (1), (2), or (3). A person is a duly authorized representative only if:
 - (i) the authorization is made in writing by a person described in paragraph (a)(1), (2), or (3) of this section;
 - (ii) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
 - (iii) the written authorization is submitted to the Department.
- b. Changes to authorization: If an authorization under subparagraph (a)(4) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of subparagraph (a)(4) of this section must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.
- c. Certification: Any person signing a report shall make the following certification:

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

7.3 RECORDING OF MONITORING ACTIVITIES AND RESULTS

- a. The operator shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this order, and records of all data used to complete the application for this order, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

- b. Records of monitoring information shall include:
 - (1) the date, exact place, and time of sampling or measurements;
 - (2) the individual(s) who performed the sampling or measurements;
 - (3) the date(s) analyses were performed;
 - (4) the individual(s) who performed the analyses;
 - (5) the analytical techniques or methods used; and
 - (6) the results of such analyses.

7.4 TEST AND ANALYTICAL PROCEDURES

- a. Monitoring and analysis must be conducted using test procedures promulgated, pursuant to 40 CFR Part 136, except:
 - (1) should the Department require the use of a particular test procedure, such test procedure will be specified in this order.
 - (2) should the operator desire to use a test method not approved herein, prior Department approval is required, pursuant to paragraph (b) of this section.
- b. Application for approval of test procedures shall be made to the **Director of DEC's Division of Water**, and shall contain:
 - (1) the name and address of the applicant or the responsible person making the discharge, identification of this particular order and the telephone number of applicant's contact person;
 - (2) the names of the pollutants or parameters for which an alternate testing procedure is being requested, and the monitoring location(s) at which each testing procedure will be utilized;
 - (3) justification for using test procedures, other than those approved in paragraph (a) of this section; and
 - (4) a detailed description of the alternate procedure, together with:
 - (i) references to published studies, if any, of the applicability of the alternate test procedure to the effluent in question;
 - (ii) information on known interferences, if any; and
 - (5) a comparability study, using both approved and proposed methods. The study shall consist of 8 replicates of 3 samples from a well mixed waste stream for each outfall if less than 5 outfalls are involved, or from 5 outfalls if 5 or more outfalls are involved. Four (4) replicates from each of the samples must be analyzed using a method approved in paragraph (a) of this section, and four replicates of each sample must be analyzed using the proposed method. This results in 24 analyses per outfall up to a maximum of 120 analyses. A statistical analysis of the data must be submitted that shall include, as a minimum:
 - (i) calculated statistical mean and standard deviation;
 - (ii) a test for outliers at the mean ± 3 standard deviations level. Where an outlier is detected, an additional sample must be collected and 8 replicates of the sample must be analyzed as specified above;
 - (iii) a plot distribution with frequency counts and histogram;
 - (iv) a test for equality among with-in sample standard deviation;
 - (v) a check for equality of pooled with-in sample variance with an F-Test;
 - (vi) a t-Test to determine equality of method means; andcopies of all data generated in the study.

Additional information can be obtained by contacting the Bureau of Technical Services & Research (NYSDEC, 50 Wolf Road, Albany, New York 12233 - 3502).

8. DISPOSAL SYSTEM OPERATION AND QUALITY CONTROL

8.1 GENERAL

- a. The disposal system shall not receive or be committed to receive wastes from unapproved sources, nor wastes beyond its design capacity as to volume and character of wastes treated, nor shall the system be materially altered as to: type, degree, or capacity of treatment provided; disposal of treated effluent; or treatment and disposal of separated scum, liquids, solids or combination thereof resulting from the treatment process without written approval of the Department of Environmental Conservation or its designated field office.
- b. The operator shall, at all times, properly operate and maintain all facilities and systems of treatment and control (or related appurtenances) which are installed or used by the operator to achieve compliance with the conditions of this order. Proper operation and maintenance also includes as a minimum, the following: 1) A preventive/corrective maintenance program. 2) A site specific action orientated operation and maintenance manual for routine use, training new operators, adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of installed backup or auxiliary facilities or similar systems only when the operation is necessary to achieve compliance with the conditions of the order.
- c. The operator shall not discharge floating solids or visible foam.

8.2 BYPASS

a. Definitions:

- (1) "Bypass" means the intentional or unintentional diversion of waste stream(s) around any portion of a treatment facility for the purpose or having the effect of reducing the degree of treatment intended for the bypassed portion of the treatment facility.
- (2) "Severe property damage" means substantial damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which would not reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations:

The operator may allow any bypass to occur which does not cause effluent limitations to be violated, but only if it also is for essential maintenance, repair or replacement to assure efficient and proper operation. These bypasses are not subject to the provisions of paragraph (c) and (d) of this section, provided that written notice is submitted prior to bypass (if anticipated) or as soon as possible after bypass (if unanticipated), and no public health hazard is created by the bypass.

c. Notice:

- (1) Anticipated bypass - If the operator knows in advance of the need for a bypass, it shall submit prior written notice, at least forty five (45) days before the date of the bypass.
- (2) Unanticipated bypass - The operator shall submit notice of an unanticipated bypass as required in Section 4, paragraph b. of this Part (24 hour notice).

d. Prohibition of bypass:

- (1) Bypass is prohibited, and the Department may take enforcement action against a operator for bypass, unless:
 - (i) bypass was unavoidable to prevent loss of life, personal injury, public health hazard, or severe property damage;
 - (ii) there were no feasible alternatives to the bypass such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal period of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance or if designed and installed backup equipment which could have prevented or mitigated the impact of the bypass is not operating during the bypass; and
 - (iii) the operator submitted notices as required under paragraph (c) of this section and, excepting emergency conditions, the proposed bypass was accepted by the Department.

8.3 UPSET

a. Definition:

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with order effluent limitations because of factors beyond the reasonable control of the operator. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset:

An upset constitutes an affirmative defense to an action brought for noncompliance with such order effluent limitations if the requirements of paragraph (c) of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset:

An operator who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operation logs, or other relevant evidence that:

- (1) an upset occurred and that the operator can identify the cause(s) of the upset;
- (2) the facility was at the time being properly operated; and
- (3) the operator submitted notice of the upset as required in Section 4, paragraph b of this part (24 hour notice).
- (4) the operator complied with any remedial measures required under Section 4, paragraph d of this part.

d. Burden of proof:

In any enforcement proceeding the operator seeking to establish the occurrence of an upset has the burden of proof.

8.4 SPECIAL CONDITION - DISPOSAL SYSTEMS WITH SEPTIC TANKS

If a septic tank is installed as part of the disposal system, it shall be inspected by the operator or his agent for scum and sludge accumulation at intervals not to exceed one year's duration, and such accumulation will be removed before the depth of either exceeds one-fourth (1/4) of the liquid depth so that no settleable solids or scum will leave in the septic tank effluent. Such accumulation shall be disposed of in an approved manner.

8.5 SLUDGE DISPOSAL

The storage or disposal of collected screenings, sludges, other solids, or precipitates separated from the authorized discharges and/or intake or supply water by the operator shall be done in such a manner as to prevent creation of nuisance conditions or entry of such materials into classified waters or their tributaries, and in a manner approved by the Department. Any live fish, shellfish, or other animals collected or trapped as a result of intake water screening or treatment should be returned to their water body habitat. The operator shall maintain records of disposal on all effluent screenings, sludges and other solids associated with the discharge(s) herein described. The following data shall be compiled and reported to the Department or its designated field office upon request:

- a. the sources of the materials to be disposed of;
- b. the approximate volumes, weights, water content and (if other than sewage sludge) chemical composition;
- c. the method by which they were removed and transported, including the name and permit number of the waste transporter; and
- d. their final disposal locations.

END

OF

DOCUMENT