

EnSol, Inc.
Environmental Solutions

Transmittal

EnSol, Inc.
661 Main Street, Niagara Falls, New York 14301
(716) 285-3920; (716) 285-3928 fax

To: [Redacted], P.E.
Environmental Engineer II
NYSDEC
Division of Solid & Hazardous Mtls.
270 Michigan Avenue
Buffalo, NY 14203-2999

Date: February 4, 2008

File: Town of Tonawanda Landfill
EnSol P/N 99-0025

Re: FUSRAP Limits Evaluation

We are sending you _____ X _____ herewith _____ under separate cover
_____ drawings _____ letters _____ other

If material received is not as listed, please notify us at once.

Quantity	Identifying Number	Title	Action*
1	January 21, 2008	Memorandum Re: Tonawanda Landfill -- FUSRAP Limits Evaluation (EnSol, Inc.)	I
1	As shown	E-Mails: EnSol to NYSDEC and USACOE dated 11/7/07, 12/7/07, 1/14/08	I

*Action letter code: R - reviewed N - reviewed and noted I - for your information
D - Draft F - Final Y - for your approval

Remarks:

As requested in your e-mail correspondence to EnSol dated November 5, 2007 we have completed our evaluation of the previously shown FUSRAP limits located along the northern property boundary of the Town of Tonawanda Landfill. Enclosed, please find a Memorandum and attached figures prepared by EnSol that summarize our findings and provide related recommendations. Related e-mail correspondence between the NYSDEC, EnSol, USACOE, and the Town are also enclosed for completeness.

We trust the enclosed documents provide the Department the information you require. We are prepared to conduct the work listed in our recommendations immediately upon your concurrence. Please contact me if you have any questions or require additional information. I can be reached at 285-3920, ext. 212.

Sincerely,

ENSOL, INC.

CC: [Redacted] (Town of Tonawanda)
[Redacted] (U. S. Army Corps of Engineers)
[Redacted] (EnSol, Inc.)

[Redacted], P.E.
Vice President

MEMORANDUM

Date: January 21, 2008
To: [REDACTED], P.E.
[REDACTED], P.E.
From: [REDACTED], LSIT
Re: Tonawanda Landfill - FUSRAP Limits Evaluation

In response to your request for clarification of the limits of the FUSRAP area at the Tonawanda Landfill, the following was prepared to further explain how the current FUSRAP area boundary was established, and also the findings of a more recent United States Army Corps of Engineers (USACOE) report which may change the boundary currently in use.

FUSRAP Limits

The original FUSRAP limits were established using the information provided in the Malcolm Pirnie Landfill Closure Investigation Report (July 1995). Site drawings were provided in AutoCAD format for preparation of the conceptual closure plans and operational plans for the site. The information used to establish the limits are shown on the attached Figures (refer to star symbols). These locations are where United States Department of Energy (USDOE) waste was detected during a 1992 investigation by Oak Ridge National Laboratory (ORNL). A buffer was arbitrarily added around the ORNL points, and a line was created to establish a boundary of the FUSRAP Area.

2001 FUSRAP Investigation for USACOE- Buffalo District

In 2001 another investigation was conducted by SAIC Engineering, Inc. for the USACOE to further identify areas containing elevated levels of U-238, Th-230, or Ra-226. The areas identified in this investigation are consistent with the 1992 ORNL investigation with the exception of three areas identified east of the previously established FUSRAP boundary. This investigation was documented as part of an April 2005 report by the USACOE Buffalo District titled "Remedial Investigation Report - Tonawanda Landfill Vicinity Property".

Conclusions

- In January of 2007, a perimeter diversion ditch was constructed to direct run-off from the active landfill operations area to the North retention pond and, in September of 2007, a buried electrical service to the landfill equipment storage area was established via an on-site utility pole and trenched underground wire. These construction activities were performed outside of the previously established FUSRAP boundary. Two of the

three locations identified as part of the 2001 FUSRAP investigation that fall outside of the previously established FUSRAP boundary are in the vicinity of the recent construction activities. More specifically, the two sample locations are labeled "TLFA2-018" and "TLF3-063" on Figure 4-11 of the April 2005 USACOE Report (also shown on the figures provided).

- According to the 2005 USACOE Report, the depth at which the elevated levels (above screening Level UTL 99/99.9) were found for the above mentioned sample locations are as follows:
 1. TLFA2-018 (near electric line trench) - 3.5 feet below ground surface.
 2. TLF3-063 (near Western diversion swale) - 2.5 feet below ground surface.
- The depth of disturbance for the recent construction activities are as follows:
 1. The utility pole was set in a 6-foot deep augured hole.
 2. The trench containing the electric line was installed approximately 3 feet deep.
 3. The diversion ditch is approximately 2.5 feet below pre-construction grades in the area of sample location TLF3-063.
- The FUSRAP boundary was not revised based on the additional 2001 data included in the USACOE 2005 Report.

Recommendations

1. The FUSRAP boundary will be revised and field delineated using engineering controls including safety fence and signs (see attached figures). This action will inhibit unauthorized access to the newly established FUSRAP area.
2. The area of diversion ditch within the safety fence line will be backfilled with the adjacent excavated soils and covered with an additional 1-foot minimum of clean soil and re-routed around the fence line (see attached figures).
3. An additional 1-foot minimum of clean soil will be placed over the electric line trench located within the revised FUSRAP boundary.

CC:  - Town of Tonawanda
- NYSDEC
- USACOE

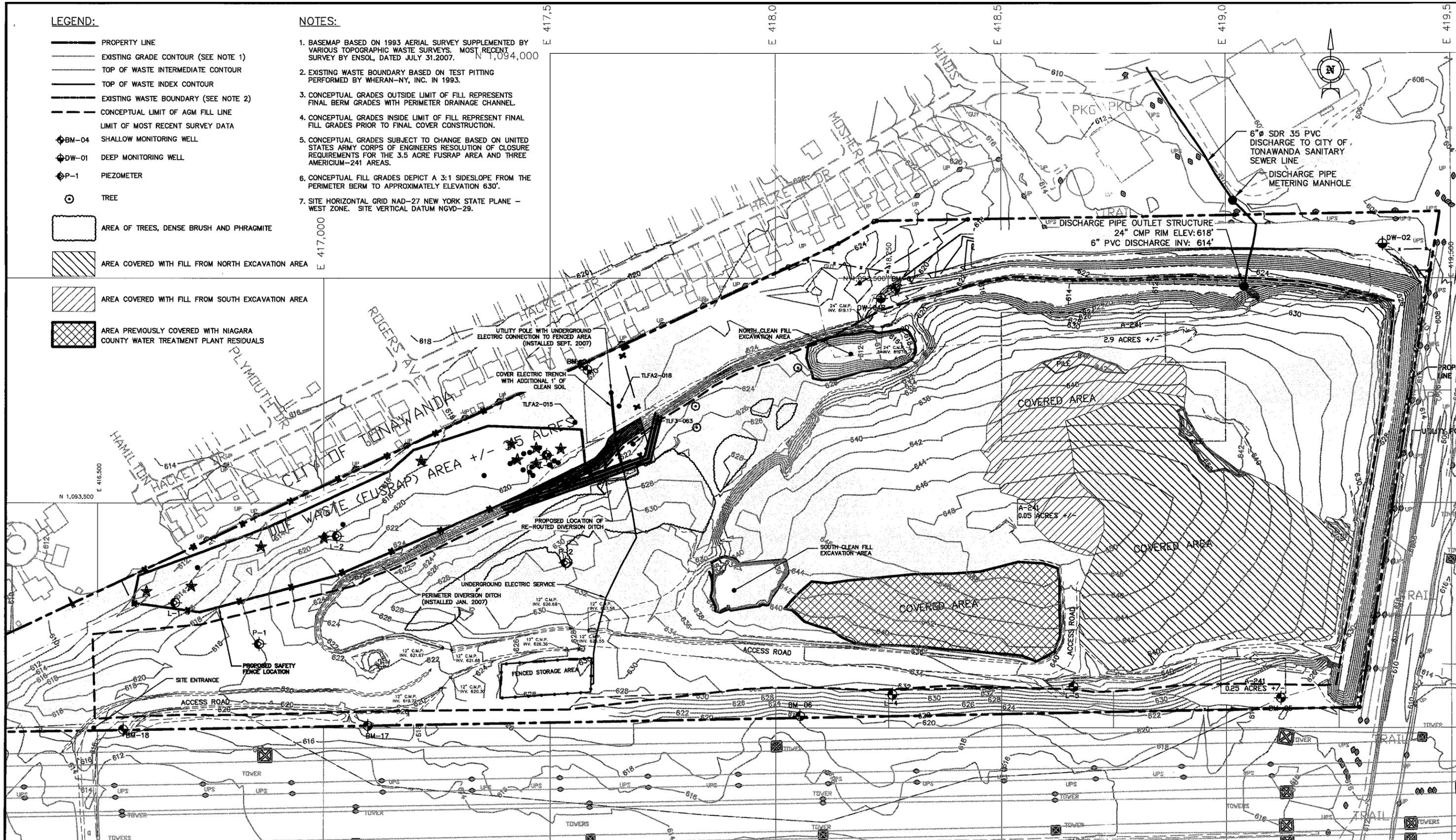
Attachments

LEGEND:

- PROPERTY LINE
- EXISTING GRADE CONTOUR (SEE NOTE 1)
- TOP OF WASTE INTERMEDIATE CONTOUR
- TOP OF WASTE INDEX CONTOUR
- EXISTING WASTE BOUNDARY (SEE NOTE 2)
- CONCEPTUAL LIMIT OF AGM FILL LINE
- LIMIT OF MOST RECENT SURVEY DATA
- ⊕ BM-04 SHALLOW MONITORING WELL
- ⊕ DW-01 DEEP MONITORING WELL
- ⊕ P-1 PIEZOMETER
- TREE
- ▭ AREA OF TREES, DENSE BRUSH AND PHRAGMITE
- ▨ AREA COVERED WITH FILL FROM NORTH EXCAVATION AREA
- ▩ AREA COVERED WITH FILL FROM SOUTH EXCAVATION AREA
- ▧ AREA PREVIOUSLY COVERED WITH NIAGARA COUNTY WATER TREATMENT PLANT RESIDUALS

NOTES:

1. BASEMAP BASED ON 1993 AERIAL SURVEY SUPPLEMENTED BY VARIOUS TOPOGRAPHIC WASTE SURVEYS. MOST RECENT SURVEY BY ENSOL, DATED JULY 31, 2007.
2. EXISTING WASTE BOUNDARY BASED ON TEST PITTING PERFORMED BY WHERAN-NY, INC. IN 1993.
3. CONCEPTUAL GRADES OUTSIDE LIMIT OF FILL REPRESENTS FINAL BERM GRADES WITH PERIMETER DRAINAGE CHANNEL.
4. CONCEPTUAL GRADES INSIDE LIMIT OF FILL REPRESENT FINAL FILL GRADES PRIOR TO FINAL COVER CONSTRUCTION.
5. CONCEPTUAL GRADES SUBJECT TO CHANGE BASED ON UNITED STATES ARMY CORPS OF ENGINEERS RESOLUTION OF CLOSURE REQUIREMENTS FOR THE 3.5 ACRE FUSRAP AREA AND THREE AMERICIUM-241 AREAS.
6. CONCEPTUAL FILL GRADES DEPICT A 3:1 SIDESLOPE FROM THE PERIMETER BERM TO APPROXIMATELY ELEVATION 630'.
7. SITE HORIZONTAL GRID NAD-27 NEW YORK STATE PLANE - WEST ZONE. SITE VERTICAL DATUM NGVD-29.



X:\AA\p1\tonawanda\landfill\98-0025 FUSRAP\CADD\AMW Jan 2008 Memo\F_01-FUSRAP.DWG, EX TOPO 11X17, 2/23/2008 4:23:51 PM, Adam Wellington, EnSol Inc., Tabloid, 1:1

REVISION	BY	DATE
ADDED FUSRAP SAMPLE LOCATIONS, FENCE, AND REVISED DITCH	AMW	2/01/08

BRIAN D. SHIAH, P.E.
N.Y.S. LICENSE NO. 079072

EnSol, Inc.
Environmental Solutions
661 MAIN STREET
NIAGARA FALLS, NY 14301
PHONE (716) 285-3920 FAX (716) 285-3928

PROJECT NO:	05-0049
SCALE:	100' 0 100' 200'
DWG:	ISO-073107.DWG
DRAWN BY:	AMW
CHECKED BY:	BDS
DATE:	AUGUST 2007

TITLE:	TOP OF WASTE SURVEY (AS OF 07/31/07) OPERATIONS SUPPORT		
PROJECT:	TONAWANDA LANDFILL - OPERATIONS SUPPORT		
PREPARED FOR:	TOWN OF TONAWANDA LANDFILL		
TOWN OF TONAWANDA	COUNTY OF ERIE	STATE OF NEW YORK	

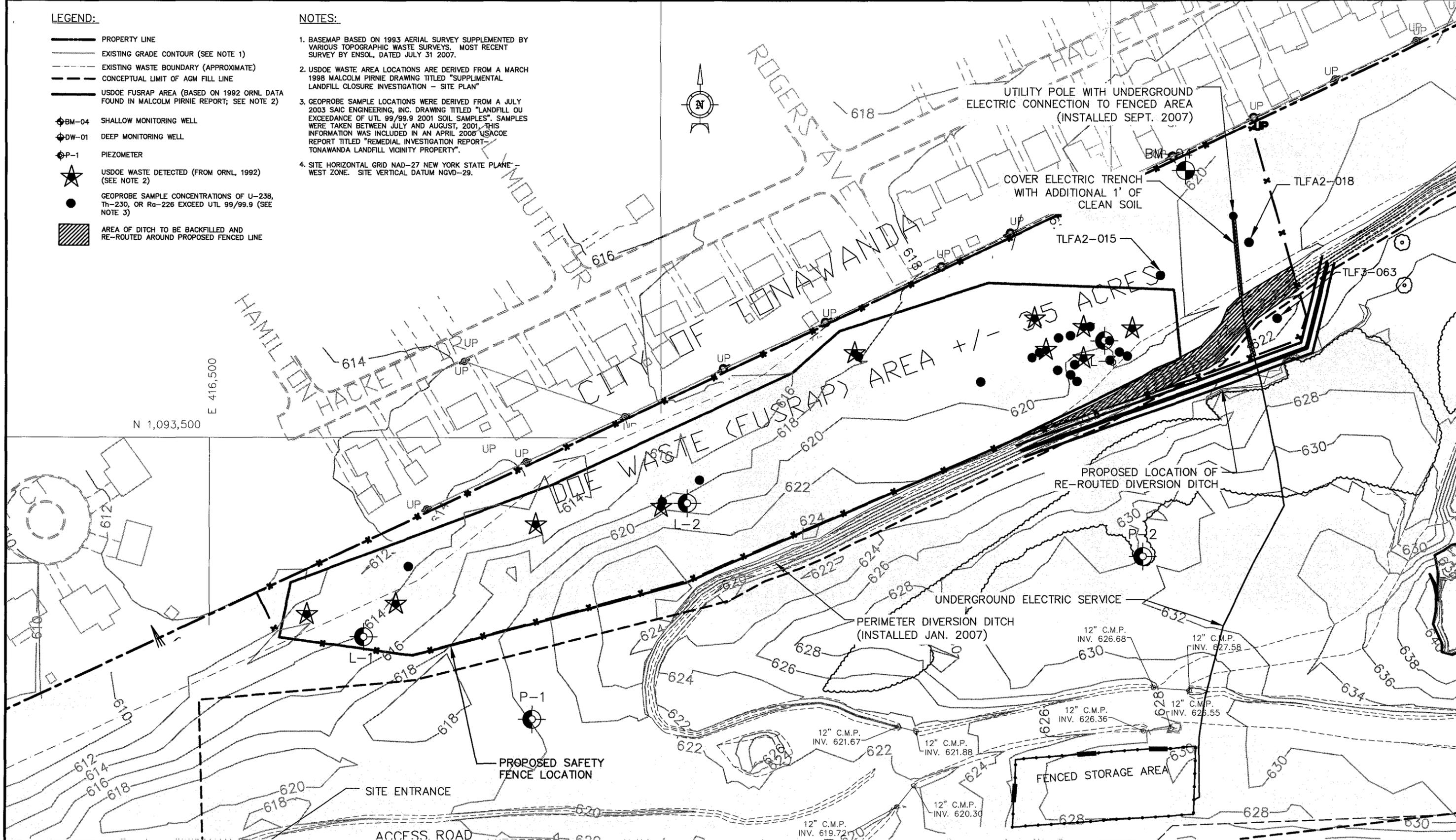
FIGURE
1

LEGEND:

- PROPERTY LINE
- - - EXISTING GRADE CONTOUR (SEE NOTE 1)
- - - EXISTING WASTE BOUNDARY (APPROXIMATE)
- - - CONCEPTUAL LIMIT OF AGM FILL LINE
- USDOE FUSRAP AREA (BASED ON 1992 ORNL DATA FOUND IN MALCOLM PIRNIE REPORT; SEE NOTE 2)
- ⊕ BM-04 SHALLOW MONITORING WELL
- ⊕ DW-01 DEEP MONITORING WELL
- ⊕ P-1 PIEZOMETER
- ★ USDOE WASTE DETECTED (FROM ORNL, 1992) (SEE NOTE 2)
- GEOPROBE SAMPLE CONCENTRATIONS OF U-238, Th-230, OR Ra-226 EXCEED UTL 99/99.9 (SEE NOTE 3)
- ▨ AREA OF DITCH TO BE BACKFILLED AND RE-ROUTED AROUND PROPOSED FENCED LINE

NOTES:

1. BASEMAP BASED ON 1993 AERIAL SURVEY SUPPLEMENTED BY VARIOUS TOPOGRAPHIC WASTE SURVEYS. MOST RECENT SURVEY BY ENSOL, DATED JULY 31 2007.
2. USDOE WASTE AREA LOCATIONS ARE DERIVED FROM A MARCH 1998 MALCOLM PIRNIE DRAWING TITLED "SUPPLEMENTAL LANDFILL CLOSURE INVESTIGATION - SITE PLAN"
3. GEOPROBE SAMPLE LOCATIONS WERE DERIVED FROM A JULY 2003 SAIC ENGINEERING, INC. DRAWING TITLED "LANDFILL OU EXCEEDANCE OF UTL 99/99.9 2001 SOIL SAMPLES". SAMPLES WERE TAKEN BETWEEN JULY AND AUGUST, 2001. THIS INFORMATION WAS INCLUDED IN AN APRIL 2006 USAOE REPORT TITLED "REMEDIAL INVESTIGATION REPORT - TONAWANDA LANDFILL VICINITY PROPERTY".
4. SITE HORIZONTAL GRID NAD-27 NEW YORK STATE PLANE - WEST ZONE. SITE VERTICAL DATUM NGVD-29.



X:\00\api\TonawandaLandfill\0025 FUSRAP\ACAD\DWG Jan 2008 Memo\F_01-FUSRAP.DWG, FUSRAP, 2/20/2008 4:24:05 PM, Adam Wellington, EnSol Inc., Tabloid, 1:1

REVISION	BY	DATE

EnSol, Inc.
Environmental Solutions
 661 MAIN STREET
 NIAGARA FALLS, NY 14301
 PHONE (716) 285-3920 FAX (716) 285-3928

PROJECT NO:	99-0025
SCALE:	50' 0 50' 100'
DWG:	F_01-FUSRAP.DWG
DRAWN BY:	AMW
CHECKED BY:	BDS
DATE:	JANUARY 2008

TITLE:	FUSRAP AREA BOUNDARY EVALUATION		
PROJECT:	TONAWANDA LANDFILL - OPERATIONS		
PREPARED FOR:	TOWN OF TONAWANDA		
	TOWN OF TONAWANDA	COUNTY OF ERIE	STATE OF NEW YORK

FIGURE
2

IT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW, ARTICLE 148 SECTION 7200, FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR TO ALTER ANY ITEM IN ANY WAY.

[REDACTED]

From: [REDACTED]
Sent: Wednesday, November 07, 2007 3:03 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Tonawanda Landfill FUSRAP Limits

In response to the two items below:

1. A copy of the 2007 Event 1 of 2 Semi-Annual Monitoring Report was delivered to [REDACTED] yesterday who will send it to [REDACTED] directly.
2. The electric pole location was placed approximately 50-feet east of the most eastern FUSRAP boundary, based on the boundary limits shown on the EnSol drawings. All EnSol drawings used to-date for projects at the Tonawanda Landfill have historically and consistently showed the same limits. These limits were given to EnSol several years ago by the Town and by Malcolm Pirnie as shown on their Closure Investigation Report Documents. If the COE shows apparent different limits, we are not aware of these differences.
3. No intrusive work has knowingly been done in the FUSRAP area, based on the limits as we know them (i.e., as shown on the Malcolm Pirnie and EnSol drawings). The recently constructed drainage ditch design and power pole location were consciously and purposely placed outside the limits. ESG does not decide where these items go, as they are the site operations sub-contractor to EnSol, who does all the related engineering and site surveying.
4. EnSol will have to further investigate and evaluate/verify the FUSRAP limits as shown on our drawings, compared to previous Malcolm Pirnie drawings, the actual power pole location, and the limits shown on COE documents. We may need to contact the COE to see if they can give us coordinates for the limits.
5. Once the above is complete, we will inform you of our findings, agree on the limits to be used, and install field markers to delineate the limits.

Thanks for bringing this concern to our attention. We will get back to you shortly with our findings.

-----Original Message-----

From: [REDACTED]
Sent: Monday, November 05, 2007 3:12 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Tonawanda Landfill

[REDACTED]

As I indicated to you when we spoke this morning, [REDACTED] and I had met with City of Tonawanda officials last week. They have expressed several concerns to us and they also requested a copy of the spring Sem-Annual Monitoring Report. As we discussed, I will assume that the Town or EnSol will forward a copy of that report to [REDACTED], Common Council President, unless I hear otherwise from you. Thanks for your cooperation on this.

Another issue brought up is the location of the electrical power pole recently installed to provide power to ESG's equipment yard. Some City officials believe that it was located within the boundaries of the designated FUSRAP area. We visited the site after our meeting and it appears that this might be the case, depending upon which drawing you refer to. The power pole is located about 30 feet or so to the southeast of monitoring well BM-4. If you use the drawings included in the COE's RI Report, it seems that this falls within the boundary of their Landfill Area A (see Fig 4-11). However, the COE's drawings do not appear to be consistent with EnSol's. In particular, the Conceptual Fill Plan which you submitted on May 10, 2007 shows the FUSRAP area limits to be significantly different than the COE's drawing in the vicinity of BM-4. I recall specifically asking [REDACTED] when ESG was installing the power pole if he was positive that they were located out of the FUSRAP area and he assured me they were as per EnSol's GPS coordinates. I am concerned that EnSol's defined area does not match the COE's. We have all agreed that no intrusive work was to be done within the boundaries of the FUSRAP areas.

Therefore, I am requesting that EnSol immediately recheck with the COE to determine the exact coordinates of the designated FUSRAP area to ensure that the drawings used for all landfill related work accurately show the correct limits. Furthermore, EnSol or ESG should provide some type of markers in the field to delineate the FUSRAP area so there can be no questions about this in the future. Something more permanent than grade stakes will obviously be needed so that they will not be easily removed or destroyed by trespassers.

Please call me if you want to discuss this matter further or wish to meet at the site to go over this issue.

Sincerely,

[REDACTED]

[REDACTED]

NYSDEC Region 9
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220

[REDACTED]

From: [REDACTED]
Sent: Friday, December 07, 2007 6:02 PM
To: [REDACTED]
Subject: RE: Tonawanda LF - Limit of FURAP Area - Digital File Format

Steve,

I'm not sure if anyone ever got back to you on this, but please proceed with providing EnSol the data as you indicated below. We can then come up with something for everyone to review. Thanks.

-----Original Message-----

From: [REDACTED]
Sent: Wednesday, November 21, 2007 3:08 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: Tonawanda LF - Limit of FURAP Area - Digital File Format

[REDACTED]

Thanks for the explanation. Based on what you said, I'm guessing that NYSDEC's preference is to be on the conservative side in marking out the "FUSRAP" area, to ensure that the Town's activities don't disturb the radium, uranium and thorium in the Landfill. As such, I could provide the Town with the coordinates of all of the Corps and DOE sampling locations in the Landfill, and indicate which locations were above background levels, and which were at or below background levels (similar to what is shown on the PDF map I sent previously). The Town could then demarcate whatever size "buffer zone" that NYSDEC deems appropriate around the samples that exceed background. This way, if the Town puts the buffer zone around all of the samples above background, even those that are just slightly above background, it would be a fairly conservative way of ensuring that the radium, uranium and thorium aren't disturbed.

Let me know what you think.

-----Original Message-----

From: [REDACTED]
Sent: Wednesday, November 21, 2007 9:51 AM
To: [REDACTED]
Subject: RE: Tonawanda LF - Limit of FURAP Area - Digital File Format

[REDACTED]

Please let me add my thoughts to this discussion. I hope it may clarify what we are looking for on the issue of delineating the FUSRAP areas.

City of Tonawanda officials have expressed concern to the DEC about activities that may or may not have occurred within the "FUSRAP area" of the landfill. We have therefore asked the Town & EnSol to double check the information used to define the FUSRAP area limits. It appears that the limits shown on EnSol's drawings may not coincide with the boundaries shown on all of the drawings contained in the COE's reports. Specifically, I am referring to the boundaries used to define the Class 1 and Class 2 areas in Areas A & B as shown for example, on Figure 4-11 of the COE's April 2005 RI Report.

While I understand that the COE's investigations have not identified a large contiguous area of soil contamination by U, Th, Ra, there are exceedances of of the UTL 99/99.9

within the Class 1, Class 2 and even a few outside of the Class 2 boundaries as shown on Figure 4-11.

The real question is - how would the boundaries of the FUSRAP area containing the elevated concentrations be best defined? We would like to have EnSol's drawings reflect the appropriate limits and have these marked in the field so there can be no confusion on this issue in the future.

I hope this helps to clarify what we are trying to accomplish by this. If we need to have further discussions maybe we can arrange for a conference call?

[REDACTED]
[REDACTED]
NYSDEC Region 9
270 Michigan Avenue
Buffalo, NY 14203
(716)851-7220

>>> "Buechi, Stephen P LRB" <Stephen.P.Buechi@usace.army.mil> 11/21/07
>>> 8:39 AM >>>

[REDACTED]
I'm not sure what we have as far as ARC View files of the Corps' sampling locations, but I'll check. I will say that we did not find a large contiguous "plume" of soil containing radium, uranium and thorium at the site, but rather just isolated spots that had levels of those radionuclides above background (see attached PDF file), the majority of which were just slightly above background. So I'm not sure exactly what you're looking for as far as "limits" of the FUSRAP area.

[REDACTED]
From: [REDACTED]
Sent: Tuesday, November 20, 2007 3:50 PM
To: [REDACTED]
Subject: Tonawanda LF - Limit of FURAP Area - Digital File Format

[REDACTED]
Can you please email over an ARC View and/or ACAD file with the limits of the FUSRAP area. The City of Tonawanda has expressed concern over these limits and we would like superimpose them onto our site drawing FUSRAP limits. Also, could you please provide the method used to establish these limits.

Thank you,

[REDACTED], PE

EnSol, Inc.
661 Main Street

[REDACTED]

From: [REDACTED]
Sent: Monday, January 14, 2008 12:53 PM
To: [REDACTED]
[REDACTED]
Subject: RE: Tonawanda Landfill

In answer to your two questions below:

1. We have not yet received any actual data (i.e., coordinates, etc.) from the COE as previously asked for. However, we have been able to reasonably accurately scale their Figure 2-2 from the pdf file of the report from their website for use with our site mapping to show their points. We have completed a draft summary memo that explains our review findings of the FUSRAP limits, data, etc. and expect to send it to you later this week.
2. No further work has been done on the NMPC ROW job since we last met on 12/11/07 for Progress Meeting No. 2. We hope to resume soon, if the temperatures get and stay below freezing to allow access.

-----Original Message-----

From: [REDACTED]
Sent: Friday, January 11, 2008 2:38 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Tonawanda Landfill

[REDACTED]

Just wondering if any progress has been made on getting the data from the COE to delineate the limits of the FUSRAP area?

Also, has any more work been done in the NMPC ROW?

Thanks

[REDACTED]

[REDACTED]
NYSDEC Region 9
270 Michigan Avenue
Buffalo, NY 14203
(716) 851-7220