

March 30, 2006

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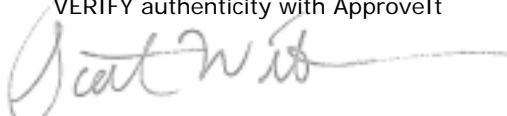
**Subject: Maxey Flats Disposal Site –  
2005 Annual Report**

Dear Ms. Scully;

The Commonwealth of Kentucky is submitting the 2005 Annual Report for the Maxey Flats Disposal Site to fulfill the requirements of Section 4.0 of the Performance Verification Standard Plan (PSVP). The report was prepared by the Maxey Flats Section and summarizes information from the period of January 2005 through December 2005.

If you have any questions, please contact me at (606) 784-6612.

Sincerely,

E-Signed by Wilburn, Scott  
VERIFY authenticity with ApproveIt   


Scott Wilburn  
Environmental Control Supervisor  
Maxey Flats Project

attachment

cc: Derek Matory, USEPA  
Jon Richards, USEPA  
Bennie Underwood, *de maximis, inc.*  
Nicole Barkasi, *de maximis, inc.*  
Fazi Sherkat, EPPC, Superfund

**MAXEY FLATS PROJECT  
ANNUAL REPORT  
2005**

**March 30, 2006**



Environmental and Public Protection Cabinet  
Department for Environmental Protection  
Division of Waste Management  
Superfund Branch

Maxey Flats Project  
2597 Maxey Flat Road  
Hillsboro, KY 41049  
606-784-6612

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**List of Acronyms**

|              |                                               |
|--------------|-----------------------------------------------|
| BoRP         | Balance of Remedial Phase                     |
| Commonwealth | Commonwealth of Kentucky                      |
| DCSW         | Drainage Channels Surface Water               |
| IRP          | Initial Remedial Phase                        |
| IMP          | Interim Maintenance Period                    |
| MFP          | Maxey Flats Project                           |
| O&M          | Operation and Maintenance Requirement Summary |
| PSVP         | Performance Standards Verification Plan       |
| PSSW         | Perennial Streams Surface Water               |
| RA           | Remedial Action                               |
| USEPA        | U.S. Environmental Protection Agency          |
| USGS         | U.S. Geological Survey                        |

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## **1.0 Introduction**

The Commonwealth is submitting this report in accordance with Section 4.0 of the PSVP. The report summarizes sampling and maintenance activities listed in the PSVP and the O&M.

## **2.0 Scope of Work**

The IMP is ongoing pursuant to the Consent Decree (Civil Action Number 95-58) signed by the USEPA, the Maxey Flats Steering Committee (Settling Private Parties), and the Commonwealth. The Commonwealth is responsible for completion of the BoRP that includes the Interim Maintenance Period, Final Closure Period and Associated Remedial Activities and Performance Monitoring.

The Interim Maintenance Period Work Plan describes the tasks to be completed including:

- Surface/ground water monitoring
- IRP cap maintenance and replacement
- Trench leachate management and monitoring
- Subsidence monitoring and surveys
- Erosion evaluation
- General site maintenance
- Contaminated liquid and waste disposal
- Data collection, analysis, and reporting
- Site drainage and erosion control features
- Installation of a horizontal flow barrier, if necessary

## **3.0 Surface Water Monitoring**

### **3.1 East Detention Basin**

The first point of monitoring surface water runoff from the MFP is at the East Detention Basin (EDB). Sampling is performed at the EDB based on storm events of 2.8 inches of rainfall in a 24-hour period. In order for the sequential sampler to collect a storm event sample, the sampler is programmed to collect a sample based on 0.11 inches of rainfall per hour. A total of 27 samples were collected and analyzed for tritium. Results ranged from 0.0 to 0.74 pCi/ml providing an average of 0.16 pCi/ml. Annual averages for 2003 and 2004 were of 0.14 pCi/ml and 0.14 pCi/ml respectively.

### **3.2 Perennial Streams Surface Water**

Perennial Streams Surface Water (PSSW) monitoring is conducted at five locations in three streams inside and outside the MFP's boundary. These locations are monitored using sequential samplers that collect a four aliquot, daily composite.

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Sample location 122A serves as the background sample; it is located on rock Lick Creek up-gradient from site influence. Tritium results for this location ranged from 0.00 to 0.57 pCi/ml, producing an average of 0.05 pCi/ml. Annual average for 2003 and 2004 were both 0.06 pCi/ml.

Sample location 106 is located on No Name Branch, a tributary to Rock Lick Creek. Location 106 receives direct influence from drain 144. Tritium results for this location ranged from 0.08 to 16.52 pCi/ml, producing an average of 4.23 pCi/ml. Annual averages for 2003 and 2004 were 4.46 and 4.58 pCi/ml respectively.

Sample location 122C is located on Rock Lick Creek, downstream of 106 influence. Tritium results from this location ranged from 0.13 to 3.17 pCi/ml, producing an average of 1.02 pCi/ml. Annual averages for 2003 and 2004 were 0.99 and 1.10 pCi/ml respectively.

Sample location 103E is located on Drip Springs Creek and received influence from Drain 107. Tritium results for this location ranged from 0.00 to 2.36 pCi/ml, producing an average of 0.67 pCi/ml. Annual averages for 2003 and 2004 were 0.53 and 0.90 pCi/ml respectively.

Sample location 102D is the only PSSW sampler located outside the Buffer Zone. Due to its location below the confluence of three streams and its location outside the Buffer Zone, 102D is designated as the compliance point for site runoff. In addition to the 4-mrem/year dose limit, this location is also compared to the USEPA tritium in drinking water standard of 20 pCi/ml. Tritium results for 2005 at this location ranged from 0.11 to 2.64 pCi/ml, producing an average of 0.79 pCi/ml. Annual averages for 2003 and 2004 were 0.67 and 0.78 pCi/ml respectively.

A total of 1,822 PSSW samples were collected and analyzed for tritium during this period with no anomalous data reported. For 2005 all PSSW locations were below the MFP Radiological License limit of 4-mrem/year dose.

### 3.3 Drainage Channels Surface Water

Drainage channels upstream of the perennial streams are monitored using sequential samplers that collect a four aliquot daily composite. These locations are monitored for comparison to a 25-mrem/yr total effective dose equivalent (TEDE). All locations met this requirement.

Sample location C107 is located at the base of the West Drain which discharges into Drip Springs Creek. For 2005 this location yielded 191 samples for tritium analysis. Results ranged from 0.78 pCi/ml to 37.86 pCi/ml and averaged 16.97 pCi/ml. Annual averages for 2003 and 2004 were 9.86 pCi/ml and 14.54 pCi/ml respectively.

Sample location 143 is located near the base of the South Drain which discharges into Rock Lick Creek. For 2005 this location yielded 288 samples for tritium analysis. Results ranged from 0.00 pCi/ml to 0.43 pCi/ml and averaged 0.10 pCi/ml. For comparison, averages for 2003 and 2004 were 0.22 pCi/ml and 0.21 pCi/ml respectively.

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Sample location 144 is located at the base of the East Drain which discharges into No Name Branch. This location yielded 355 samples for tritium analysis. Results ranged from 0.11 pCi/ml to 152.25 pCi/ml and averaged 40.03 pCi/ml. For comparison, averages for 2003 and 2004 were 63.36 pCi/ml and 60.66 pCi/ml respectively. The decrease in tritium average in 2005 is likely the result of 2005 having below average precipitation while both 2003 and 2004 had above average precipitation. Appendix A contains the 2003-2005 graph of precipitation.

### 3.4 Sampling Equipment Status

Samples were collected in accordance with the PSVP unless problems occurred beyond site's control such as freezing lines, washouts, equipment failure, no flow, or power outages. A second backup sampler was obtained this year.

## 4.0 Dose Assessment

Based on the assumption that all water sampled is available as drinking water, the streams and drains are evaluated for annual whole-body dose. Tritium via waterborne pathways is the only significant dose contributor identified for the MFP. Table 1 is a summary of the annual average dose for each sampling location for 2003, 2004 and 2005.

**Table 1**  
Summary of Annual Average Dose (mrem)  
All Sampling Locations  
2003-2005

| Location | Dose 2003<br>(mrem) | Dose 2004<br>(mrem) | Dose 2005<br>(mrem) |
|----------|---------------------|---------------------|---------------------|
| 122A     | 0.003               | 0.003               | 0.002               |
| 106      | 0.205               | 0.210               | 0.200               |
| 122C     | 0.046               | 0.050               | 0.047               |
| 102D     | 0.031               | 0.036               | 0.037               |
| 103E     | 0.025               | 0.042               | 0.031               |
| 143      | 0.010               | 0.003               | 0.004               |
| 144      | 2.680               | 2.730               | 1.830               |
| C107     | 0.431               | 0.628               | 0.524               |
| EDB      | 0.005               | 0.008               | 0.008               |



## **5.0 Groundwater Monitoring**

The location of groundwater monitoring wells, referred to as alluvial wells, appear in Figure 2.

### **5.1 Alluvial Wells**

Alluvial well samples for 2005 were collected as outlined in the PSVP. During this reporting period, a total of 20 samples were collected and analyzed for tritium. All alluvial wells were sampled once for the year except for AW-1 and AW-7 which were sampled four times (once each quarter). Only AW-1 and AW-7 had results above 1.00 pCi/ml, their highest detection of tritium for both was 15.52 pCi/ml and 8.26 pCi/ml respectively.

Access to the alluvium within the buffer zone is controlled by the Commonwealth, therefore the alluvial wells are not considered a drinking water source and do not represent a potential radiological dose to the public.

### **5.2 USGS Monitoring Wells**

The 2003-2005 October water levels for the sixteen USGS monitoring wells indicate only one well (UF-5) with fluctuation greater than one inch. Historic data indicates considerable fluctuation in water levels for UF-5. The 2005 tritium results for these wells were typical of historical data.

## **6.0 Data Management**

A data package is prepared for each group of samples analyzed on site. The data package contains the tritium instrument's QC charts (efficiency and background), chain of custody form(s), raw data sheet and data reduction sheet. Data is reviewed and validated through on-site procedures. An employee of the Commonwealth whose normal duties are not involved with the Maxey Flats Project validates the data on a monthly basis. Following data validation, the data is entered into the site's database and transmitted to USEPA, USDOE, *de maximis, inc.* and the Commonwealth. These packets are available on site for review.

## **7.0 Rainfall Data**

Presently there are three rain gauges on site; East Detention Basin (EDB), Well UF-37 and the main office. The official annual rainfall data is obtained from the rain gauge located at the EDB. This data was chosen because the gauge is used in conjunction with the sampler at the EDB. A total of 32.76 inches of rainfall was measured at the EDB gauge during 2005. The 2005 rainfall total was below the annual area precipitation average of 44.08 inches while the two previous years exceeded this average (see Appendix A). The range of precipitation data over the past three years appears to have negligible impact on trench levels and perimeter USGS wells.

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**8.0 Initial Remedial Phase Cap Maintenance**

8.1 Geo-membrane Liner and Boots

The annual inspection of the geo-membrane liner covering the trench cap began in April 2005 and was completed in June 2005. Air lancing of the field seams and visual inspection of the factory seams were conducted as required in O&M, Sections 3.1.1, Geo-membrane Liner Maintenance and 3.1.2, Geo-membrane Liner Boots. During the annual inspection a total of 42 defects were found and repaired as compared to 19 defects from the previous year. While conducting other inspections additional liner defects were discovered and repaired.

The trench sump boots were inspected during the monthly liner inspections and during the downloading of the trench sump liquid level measurements. During this period there were no signs of any defects at the sump boots.

8.2 Headwall Maintenance

Headwall maintenance includes the four headwalls and associated items along the North Channel and the northeast corner piping, geo-membrane liner batten and the liquid collection system.

During this reporting period, debris/leaves were removed numerous times from the trash grate and restricting plate of the upstream headwall of the northeast corner piping. Removal of the leaves/debris will be a continuous maintenance issue for the site.

8.3 Subsidence Monitoring and Repair

Subsidence inspections were conducted monthly in accordance with the O&M, Section 3.3.3, Subsidence Monitoring. No noticeable subsidence of the trench area was observed during this reporting period.

Curd Surveying, Inc. was on site during April 2005 performing the annual engineering survey of the trench cap. Elevations were obtained for the 28 locations established during the remedial work and compared to the 2004 survey data. The variations between the 2004 and 2005 subsidence control points ranged from +0.03 inches to -0.06 inches, with the areas above trench 31, 32 and 35 showing the most significant subsidence.

8.4 Diversion Berms

The diversion berms were inspected twice a month as required by the O&M. Excluding possible liner repairs, all were found to be in satisfactory condition. No liquid was detected under the geo-membrane liner at the diversion berms.

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8.5 Anchor Trenches

The anchor trenches were inspected twice a month as required by the O&M. Excluding possible liner repairs, all were found to be in satisfactory condition. No liquid was detected under the geo-membrane liner at the anchor trenches.

8.6 Drainage Channels

All drainage channels were inspected during this period as required by the O&M. Control of weeds and vegetation in the Articulating Block mats and at the gabions was performed by spraying the areas with weed killer and/or manually removing the vegetation.

8.7 Articulating Concrete Block Mat (AB Mat) System

The AB mat system was inspected monthly as required by the O&M. Buildup of sediment within the AB-mats has reduced their effectiveness of reducing the velocity of water flowing to EDB and increased efforts to control vegetation growth. This buildup of sediment should be expected as this is an inherent design feature of AB mats. The cable linking the blocks is showing signs of stress; this will be closely monitored in the future. The signs of stress indicate movement which could impact liner integrity.

8.8 Former Leachate Storage Facility Area

The covered area of the former leachate storage facility was found to be in satisfactory condition. The area shows no signs of subsidence or any damage to the geo-membrane liner or boots around the tank extensions.

8.9 Inspections

A total of 101 inspections were performed during the period of January 2005 through December 2005. No unsatisfactory reviews were recorded that presented a major problem, mostly leaf collection and liner defects. All unsatisfactory items received attention to return them to satisfactory within established time frames.

8.10 Equipment Status

All liner repair equipment remains in good working condition.

**9.0 Trench Leachate Management and Monitoring**

Trench sump liquid level measurements were obtained in accordance with the PSVP, Section 2.3, Sump Measurement. The purpose of collection and evaluation of the trench sump leachate levels are to detect recharge conditions that may require leachate management and provide data for future evaluation of the horizontal flow barriers

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Due to extensive malfunctions and accuracy concerns, the electronic water level monitors were discontinued from use after the third quarter. Until a trustworthy system can be obtained by the Commonwealth, all 83 trench sumps will be measured manually on a quarterly basis.

A comparison of the baseline to the manual measurements collected in October 2005 indicates little change in freeboard. The average loss of freeboard for all sumps is less than one percent. Only two sumps indicate a greater than 10% loss of freeboard. Sump 7-4 and Sump 44-20 have a freeboard percentage loss of 28% and 12%, respectively.

#### **10.0 Contaminated Liquid and Solid Waste**

Contaminated liquid and waste generated on-site will be disposed of in accordance with the IMP Work Plan; Section 3.2, Treatment of Other Contaminate Liquids and Section 3.3, Waste Burial.

No liquid removed from the trench cap area required storage this reporting period. No solid waste was disposed of on-site during this reporting period. Solid and liquid waste generated from laboratory, radiological activities and site maintenance is temporarily stored in a secured area. Permanent disposal will be arranged based on volume and waste type.

#### **11.0 Erosion Monitoring**

Erosion monitoring consists of obtaining elevation measurements and observations of the east drainage channel. The U.S. Geological Survey monitored the East Main Drainage Channel twice during the reporting period. Tables for the 2003-2005 erosion measurements and the calculated areas are presented in Appendix B.

There were no major water erosion or mud/rock slides evident in the channel during this reporting period.

Inspections of the south and west channels were completed in the spring and fall with minimal erosion observed.

#### **12.0 IMP Work Plan Revisions, Changes and Correspondence**

Revisions and changes to the IMP Work Plan are required to be submitted in writing to USEPA for approval. During this reporting period, two change requests were submitted and implemented:

- Trench sump measurements were changed from automated monitoring to manual monitoring. Quarterly measurements as required in the PSVP still apply.
- A temporary patch for small holes/tears and punctures has been implemented to improve efficiency and reduce potential exposure. The temporary patch must be replaced by a permanent patch within 90 days.

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**13.0 Custodial Care Activities**

13.1 Vegetation

A vegetative covering of the areas disturbed during the remedial activities has been established. Several sections of the north borrow area required reseeding and fertilizing to establish a vegetative cover. This was financially accomplished through the account established with Thompson & Shearer Farm Supply. This account now has a zero balance.

All vegetation was maintained below required height limits.

13.2 Building and Grounds Maintenance

Routine maintenance was conducted for all on-site buildings. Pavement was placed on the entry road and parking lot. A heavy equipment storage building was erected. Upgrades were made to the tank building to allow for controlled access to the restricted area. The access building that remained following completion of the IMP has been removed; that building had been pieced together with liner with electricity supplied by an extension cord. Security lights around the perimeter and within the office complex were redistributed.

13.3 Security Fence

The security fence surrounding the site remains in satisfactory condition with minor maintenance required. The gates and locking mechanisms were checked and maintenance was performed as indicated by the O&M plan.

Modifications were made to the locking mechanisms of the man gates to increase security.

The large gate located between the main office building and tank building was moved closer to the tank building to coordinate with controlled access and pavement.

13.4 Roadway Maintenance

Numerous repairs were required to the perimeter road to maintain good condition.

**14.0 Cathodic Protection**

The cathodic protection for the underground waste disposal tank was checked monthly. All readings were within the accepted range according to the operating instructions. Tom Stewart performed the annual inspection of the Cathodic Protection System in May 2005 and determined the system was working as designed.

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**15.0 Conclusion**

This concludes the textual outlining of the IMP activities at the Maxey Flats Project for 2005. If you would like to receive copies of or review on site any data, inspections or deliverables not included in this report, please contact the MFP office.

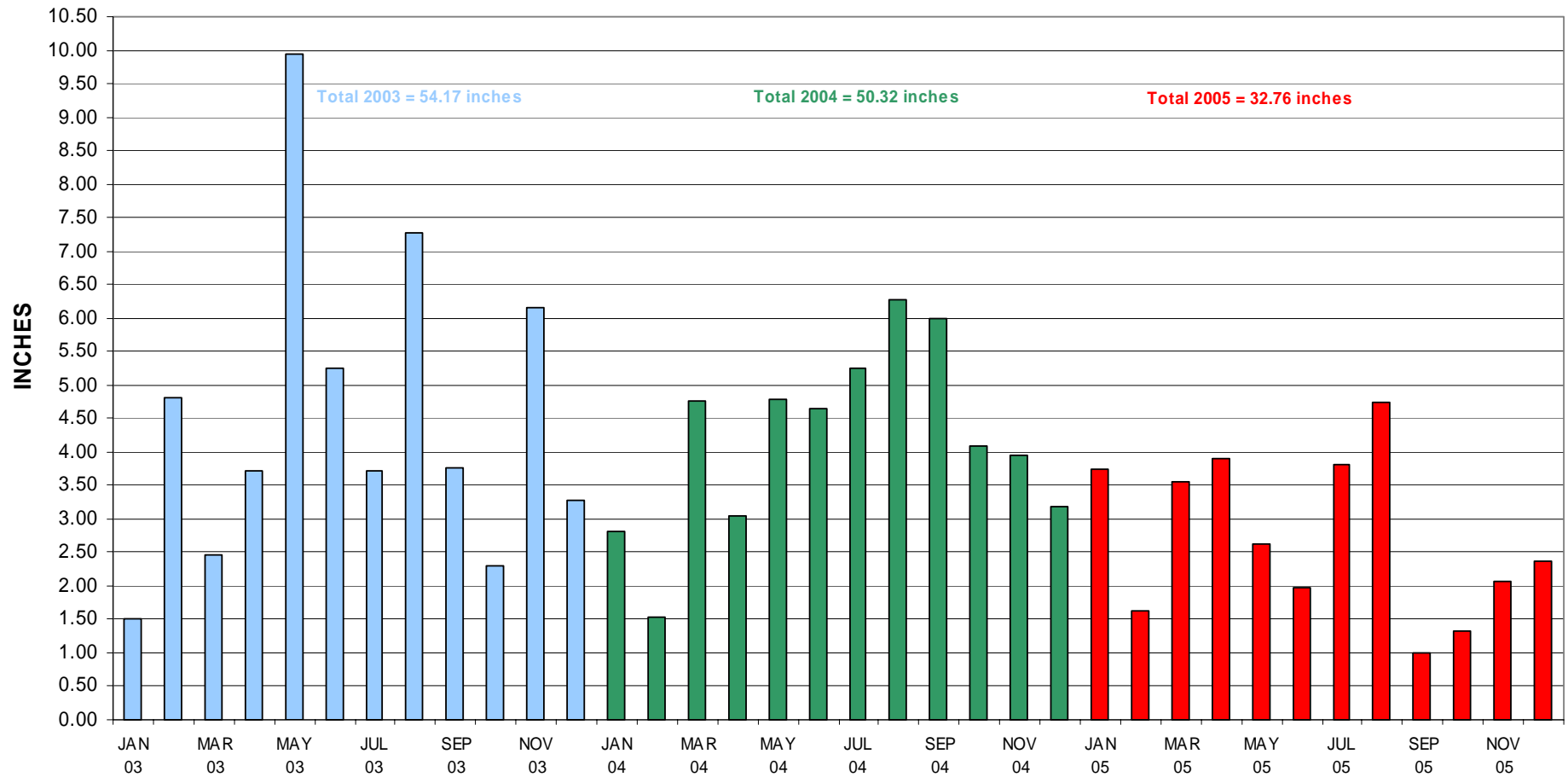
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**APPENDIX A**

Maxey Flats Project Annual Rainfall Data  
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**Maxey Flats Project  
East Detention Basin Gauge  
Monthly Precipitation Measurements  
2003-2005**





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**APPENDIX B**

East Hillside Erosion Measurements  
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**MAXEY FLATS, EAST DRAIN CROSS SECTION # 3.5**

**ELEVATION IN FEET**

| Station | April - 03 | June - 03 | Nov - 03 | April - 04 | Oct - 04 | Apr - 05 | Oct - 05 |
|---------|------------|-----------|----------|------------|----------|----------|----------|
| 0       | 747.08     | 746.66    | 746.66   | 746.66     | 747.04   | 746.67   | 746.68   |
| 2       | 747.08     | 746.66    | 746.66   | 746.66     | 747.04   | 746.67   | 746.68   |
| 4       | 746.58     | 746.50    | 746.59   | 746.58     | 746.50   | 746.61   | 746.46   |
| 6       | 746.08     | 746.03    | 745.98   | 745.98     | 745.98   | 746.00   | 745.98   |
| 8       | 745.96     | 745.97    | 745.87   | 745.75     | 745.89   | 745.87   | 745.80   |
| 10      | 746.44     | 745.96    | 745.92   | 745.89     | 745.98   | 745.98   | 746.02   |
| 12      | 746.27     | 746.19    | 746.13   | 745.88     | 746.32   | 746.27   | 746.19   |
| 14      | 746.22     | 746.18    | 746.08   | 746.04     | 746.13   | 746.13   | 746.08   |
| 16      | 746.76     | 746.69    | 746.67   | 746.62     | 746.70   | 746.67   | 746.61   |
| 18      | 747.23     | 747.18    | 747.16   | 747.11     | 746.80   | 746.88   | 746.77   |
| 20      | 747.26     | 747.23    | 747.21   | 747.16     | 747.11   | 747.18   | 747.18   |
| 22      | 747.08     | 747.03    | 747.01   | 746.95     | 747.06   | 747.08   | 747.04   |
| 24      | 747.00     | 747.06    | 746.96   | 746.94     | 747.00   | 746.99   | 746.96   |
| 26      | 747.21     | 747.19    | 747.17   | 747.15     | 747.26   | 747.21   | 747.18   |
| 28      | 747.10     | 747.06    | 746.99   | 746.99     | 747.10   | 747.04   | 747.04   |
| 30      | 747.47     | 747.51    | 747.36   | 747.37     | 747.44   | 747.46   | 747.46   |
| 30.5    | 747.47     | 747.51    | 747.36   | 747.37     | 747.44   | 747.46   | 747.46   |

**MAXEY FLATS, EAST DRAIN CROSS SECTION # 5.0**

**ELEVATION IN FEET**

| Station | April - 03 | June - 03 | Nov - 03 | April - 04 | Oct - 04 | Apr - 05 | Oct - 05 |
|---------|------------|-----------|----------|------------|----------|----------|----------|
| 0       | 767.49     | 767.51    | 767.51   | 767.49     | 767.45   | 767.45   | 767.47   |
| 2       | 767.49     | 767.51    | 767.51   | 767.49     | 767.45   | 767.45   | 767.47   |
| 4       | 768.17     | 767.37    | 768.09   | 768.07     | 767.92   | 767.91   | 767.94   |
| 7       | 764.89     | 764.93    | 764.92   | 764.97     | 764.89   | 764.83   | 764.10   |
| 7.5     | 764.60     | 764.61    | 764.57   | 764.53     | 764.52   | 764.46   | 764.80   |
| 8       | 764.10     | 764.18    | 764.28   | 764.52     | 764.37   | 764.30   | 764.43   |
| 10      | 763.48     | 764.43    | 763.53   | 763.48     | 763.42   | 763.40   | 764.55   |
| 12      | 763.12     | 763.11    | 763.23   | 763.34     | 763.06   | 763.09   | 763.30   |
| 14      | 763.01     | 762.97    | 763.14   | 763.03     | 762.96   | 762.99   | 763.19   |
| 16      | 763.21     | 762.93    | 763.12   | 763.12     | 762.76   | 762.76   | 763.04   |
| 18      | 765.02     | 764.93    | 765.04   | 765.00     | 764.91   | 764.87   | 765.03   |
| 20      | 765.63     | 765.31    | 765.33   | 765.38     | 765.35   | 765.27   | 765.41   |
| 22      | 765.47     | 765.43    | 765.52   | 765.54     | 765.50   | 765.47   | 765.60   |
| 24      | 765.70     | 765.61    | 765.78   | 765.78     | 765.73   | 765.70   | 765.77   |
| 26      | 766.75     | 766.71    | 766.72   | 766.73     | 766.67   | 766.65   | 766.72   |
| 28      | 768.11     | 768.03    | 767.92   | 768.07     | 768.06   | 768.06   | 768.09   |
| 29.5    | 768.11     | 768.03    | 767.92   | 768.07     | 768.06   | 768.06   | 768.09   |

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**MAXEY FLATS, EAST DRAIN CROSS SECTION # 5.5**

**ELEVATION IN FEET**

| <b>Station</b> | <b>April - 03</b> | <b>June - 03</b> | <b>Nov - 03</b> | <b>April - 04</b> | <b>Oct - 04</b> | <b>Apr - 05</b> | <b>Oct - 05</b> |
|----------------|-------------------|------------------|-----------------|-------------------|-----------------|-----------------|-----------------|
| <b>0</b>       | 769.31            | 769.27           | 769.25          | 769.26            | 769.10          | 769.31          | 769.14          |
| <b>2</b>       | 769.31            | 769.27           | 769.25          | 769.26            | 769.10          | 769.31          | 769.14          |
| <b>4</b>       | 767.45            | 767.23           | 767.36          | 767.53            | 767.29          | 767.31          | 767.58          |
| <b>6</b>       | 766.19            | 766.53           | 766.20          | 766.27            | 766.25          | 766.23          | 766.62          |
| <b>8</b>       | 765.18            | 764.86           | 765.01          | 765.03            | 765.10          | 765.07          | 765.14          |
| <b>10</b>      | 764.99            | 764.85           | 764.96          | 764.89            | 764.85          | 765.02          | 765.11          |
| <b>12</b>      | 765.19            | 765.09           | 765.13          | 765.08            | 764.98          | 765.08          | 765.13          |
| <b>14</b>      | 765.29            | 765.25           | 765.18          | 765.29            | 765.45          | 765.43          | 765.40          |
| <b>16</b>      | 765.17            | 765.14           | 765.18          | 765.19            | 765.04          | 765.07          | 765.00          |
| <b>18</b>      | 767.89            | 767.91           | 767.20          | 767.31            | 767.30          | 767.32          | 767.42          |
| <b>20</b>      | 769.27            | 769.09           | 769.09          | 769.11            | 769.09          | 769.12          | 769.12          |
| <b>21</b>      | 769.46            | 769.35           | 769.33          | 769.31            | 769.36          | 769.44          | 769.51          |
| <b>22.5</b>    | 769.46            | 769.35           | 769.33          | 769.31            | 769.36          | 769.44          | 769.51          |

**MAXEY FLATS, EAST DRAIN CROSS SECTION # 6.0**

**ELEVATION IN FEET**

| <b>Station</b> | <b>April - 03</b> | <b>June - 03</b> | <b>Nov - 03</b> | <b>April - 04</b> | <b>Oct - 04</b> | <b>Apr - 05</b> | <b>Oct - 05</b> |
|----------------|-------------------|------------------|-----------------|-------------------|-----------------|-----------------|-----------------|
| <b>0</b>       | 780.54            | 780.66           | 780.70          | 780.67            | 780.62          | 780.64          | 780.61          |
| <b>1</b>       | 780.54            | 780.66           | 780.70          | 780.67            | 780.62          | 780.64          | 780.61          |
| <b>2</b>       | 780.23            | 780.26           | 780.37          | 780.17            | 780.21          | 780.28          | 780.24          |
| <b>3</b>       | 779.55            | 779.58           | 779.68          | 779.74            | 779.74          | 779.78          | 779.79          |
| <b>4</b>       | 777.52            | 777.78           | 778.74          | 778.12            | 778.01          | 777.67          | 778.09          |
| <b>5</b>       | 774.44            | 777.11           | 775.51          | 776.87            | 776.90          | 775.31          | 775.55          |
| <b>6</b>       | 774.09            | 774.94           | 773.83          | 774.39            | 773.76          | 773.21          | 774.21          |
| <b>8</b>       | 772.92            | 773.24           | 773.07          | 772.93            | 772.85          | 772.90          | 772.96          |
| <b>10</b>      | 773.01            | 772.99           | 773.02          | 772.87            | 772.67          | 772.81          | 772.83          |
| <b>12</b>      | 773.38            | 773.26           | 773.22          | 773.22            | 773.23          | 773.24          | 773.24          |
| <b>14</b>      | 773.74            | 773.62           | 773.72          | 773.66            | 773.61          | 773.68          | 774.29          |
| <b>16</b>      | 777.27            | 776.98           | 776.78          | 776.72            | 777.21          | 777.31          | 777.24          |
| <b>21</b>      | 782.45            | 782.49           | 782.49          | 782.49            | 782.49          | 782.48          | 782.49          |

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**MAXEY FLATS, EAST DRAIN CROSS SECTION # 6.5**

**ELEVATION IN FEET**

| <b>Station</b> | <b>April - 03</b> | <b>June - 03</b> | <b>Nov - 03</b> | <b>April - 04</b> | <b>Oct - 04</b> | <b>Apr - 05</b> | <b>Oct - 05</b> |
|----------------|-------------------|------------------|-----------------|-------------------|-----------------|-----------------|-----------------|
| <b>0</b>       | 781.14            | 781.15           | 781.14          | 780.91            | 781.01          | 781.07          | 781.08          |
| <b>2</b>       | 781.14            | 781.15           | 781.14          | 780.91            | 781.01          | 781.07          | 781.08          |
| <b>4</b>       | 780.71            | 780.60           | 780.64          | 780.53            | 780.52          | 780.58          | 780.46          |
| <b>6</b>       | 779.50            | 779.55           | 779.49          | 778.51            | 779.27          | 779.66          | 779.48          |
| <b>8</b>       | 778.75            | 779.03           | 778.73          | 778.56            | 778.72          | 778.67          | 778.72          |
| <b>10</b>      | 778.86            | 779.00           | 778.78          | 778.82            | 778.83          | 778.73          | 778.99          |
| <b>12</b>      | 778.12            | 778.18           | 778.07          | 778.16            | 778.05          | 778.22          | 778.40          |
| <b>14</b>      | 779.59            | 779.73           | 779.43          | 779.41            | 779.40          | 779.39          | 779.41          |
| <b>16</b>      | 779.57            | 779.68           | 779.69          | 779.90            | 779.82          | 780.08          | 779.83          |
| <b>18</b>      | 781.52            | 781.58           | 781.53          | 781.80            | 781.61          | 781.57          | 781.81          |
| <b>18.5</b>    | 782.96            | 782.97           | 782.97          | 782.95            | 782.96          | 782.96          | 782.95          |

**MAXEY FLATS, EAST DRAIN CROSS SECTION # 6.75**

**ELEVATION IN FEET**

| <b>Station</b> | <b>April - 03</b> | <b>June - 03</b> | <b>Nov - 03</b> | <b>April - 04</b> | <b>Oct - 04</b> | <b>Apr - 05</b> | <b>Oct - 05</b> |
|----------------|-------------------|------------------|-----------------|-------------------|-----------------|-----------------|-----------------|
| <b>0</b>       | 793.43            | 793.43           | 793.43          | 793.40            | 793.43          | 793.40          | 793.39          |
| <b>1</b>       | 791.42            | 791.23           | 791.57          | 791.39            | 791.26          | 791.47          | 791.40          |
| <b>2</b>       | 790.71            | 790.38           | 790.42          | 790.65            | 790.45          | 790.92          | 789.63          |
| <b>4</b>       | 788.83            | 788.81           | 788.88          | 788.84            | 788.80          | 788.73          | 788.79          |
| <b>6</b>       | 791.31            | 791.18           | 791.08          | 791.14            | 791.15          | 791.04          | 788.97          |
| <b>8</b>       | 789.57            | 790.23           | 790.23          | 790.25            | 790.24          | 790.15          | 789.97          |
| <b>10</b>      | 790.02            | 790.00           | 789.98          | 790.19            | 790.36          | 790.29          | 790.35          |
| <b>12</b>      | 789.85            | 790.09           | 790.07          | 790.21            | 790.33          | 790.23          | 790.23          |
| <b>14</b>      | 790.19            | 790.29           | 790.32          | 790.49            | 790.38          | 790.63          | 790.62          |
| <b>16</b>      | 790.42            | 790.53           | 790.44          | 790.85            | 791.64          | 791.44          | 791.37          |
| <b>17</b>      | 792.23            | 791.98           | 791.87          | 792.29            | 792.25          | 792.22          | 792.38          |
| <b>18</b>      | 793.41            | 793.41           | 793.40          | 793.37            | 793.37          | 793.33          | 793.31          |

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**MAXEY FLATS, EAST DRAIN CROSS SECTION # 8.0**

**ELEVATION IN FEET**

| <b>Station</b> | <b>April - 03</b> | <b>June - 03</b> | <b>Nov - 03</b> | <b>April - 04</b> | <b>Oct - 04</b> | <b>Apr - 05</b> | <b>Oct - 05</b> |
|----------------|-------------------|------------------|-----------------|-------------------|-----------------|-----------------|-----------------|
| <b>0</b>       | 925.38            | 925.69           | 925.17          | 925.61            | 925.64          | 925.19          | 925.22          |
| <b>2</b>       | 925.38            | 925.69           | 925.17          | 925.61            | 925.64          | 925.19          | 925.22          |
| <b>4</b>       | 925.73            | 925.79           | 925.83          | 925.84            | 925.69          | 925.71          | 925.68          |
| <b>6</b>       | 922.72            | 922.55           | 922.08          | 922.31            | 922.61          | 922.60          | 922.70          |
| <b>8</b>       | 922.65            | 923.31           | 922.84          | 922.71            | 923.03          | 922.82          | 922.68          |
| <b>10</b>      | 922.18            | 922.71           | 922.20          | 922.19            | 922.41          | 922.28          | 922.00          |
| <b>12</b>      | 923.33            | 923.61           | 923.66          | 923.68            | 923.67          | 923.73          | 923.80          |
| <b>14</b>      | 922.93            | 923.49           | 923.39          | 923.26            | 922.86          | 923.17          | 923.33          |
| <b>16</b>      | 924.28            | 924.09           | 924.13          | 923.81            | 923.61          | 924.13          | 923.86          |
| <b>18</b>      | 925.76            | 925.87           | 925.74          | 925.18            | 925.38          | 925.67          | 925.54          |
| <b>20</b>      | 926.34            | 926.57           | 926.45          | 926.43            | 926.44          | 926.40          | 926.30          |
| <b>22</b>      | 925.62            | 925.77           | 925.68          | 925.73            | 925.70          | 925.64          | 925.54          |
| <b>24</b>      | 926.50            | 926.43           | 926.34          | 926.36            | 926.49          | 926.28          | 926.38          |
| <b>26</b>      | 926.20            | 926.13           | 926.20          | 926.13            | 926.19          | 926.18          | 926.15          |
| <b>28</b>      | 926.22            | 926.29           | 926.09          | 925.81            | 926.17          | 926.15          | 926.11          |
| <b>28.7</b>    | 926.22            | 926.29           | 926.09          | 925.81            | 926.17          | 926.15          | 926.11          |

**MAXEY FLATS, EAST DRAIN CROSS SECTION # 12.0**

**ELEVATION IN FEET**

| <b>Station</b> | <b>April - 03</b> | <b>June - 03</b> | <b>Nov - 03</b> | <b>April - 04</b> | <b>Oct - 04</b> | <b>Apr - 05</b> | <b>Oct - 05</b> |
|----------------|-------------------|------------------|-----------------|-------------------|-----------------|-----------------|-----------------|
| <b>0</b>       | 984.97            | 984.95           | 985.05          | 985.06            | 984.94          | 984.89          | 984.96          |
| <b>6</b>       | 984.97            | 984.95           | 985.05          | 985.06            | 984.94          | 984.89          | 984.96          |
| <b>8</b>       | 985.07            | 985.08           | 984.26          | 985.09            | 984.96          | 985.01          | 985.09          |
| <b>10</b>      | 984.93            | 984.93           | 985.06          | 985.01            | 984.88          | 984.83          | 984.92          |
| <b>12</b>      | 984.60            | 984.64           | 984.77          | 984.65            | 984.66          | 984.60          | 984.66          |
| <b>14</b>      | 984.07            | 984.20           | 984.37          | 984.20            | 984.16          | 984.05          | 984.20          |
| <b>16</b>      | 983.73            | 983.68           | 983.84          | 984.00            | 984.70          | 983.76          | 983.89          |
| <b>18</b>      | 983.35            | 983.60           | 983.66          | 982.17            | 982.01          | 982.08          | 982.08          |
| <b>20</b>      | 981.97            | 982.08           | 982.20          | 982.11            | 981.96          | 982.00          | 982.02          |
| <b>22</b>      | 983.98            | 984.12           | 984.19          | 984.10            | 983.97          | 983.97          | 984.01          |
| <b>24</b>      | 984.35            | 984.48           | 984.54          | 984.48            | 984.32          | 984.34          | 984.36          |
| <b>26</b>      | 983.64            | 983.78           | 983.84          | 983.77            | 983.62          | 983.67          | 983.69          |
| <b>28</b>      | 983.97            | 984.10           | 984.13          | 984.10            | 983.96          | 983.95          | 983.95          |
| <b>30</b>      | 983.21            | 983.40           | 983.43          | 983.32            | 983.18          | 983.22          | 983.25          |
| <b>32</b>      | 984.55            | 984.66           | 984.70          | 984.66            | 984.54          | 984.56          | 984.56          |
| <b>34</b>      | 984.84            | 984.98           | 985.03          | 984.96            | 984.87          | 984.88          | 984.89          |
| <b>36</b>      | 985.17            | 985.26           | 985.33          | 985.29            | 985.19          | 985.17          | 985.17          |
| <b>38</b>      | 984.63            | 984.76           | 984.76          | 984.85            | 984.64          | 984.64          | 984.64          |
| <b>40</b>      | 984.84            | 984.81           | 984.85          | 984.80            | 984.70          | 984.90          | 984.77          |
| <b>42</b>      | 985.41            | 985.52           | 985.44          | 985.49            | 985.90          | 985.43          | 985.40          |
| <b>44</b>      | 985.85            | 985.88           | 985.90          | 985.86            | 985.81          | 985.85          | 985.87          |
| <b>45.7</b>    | 985.85            | 985.88           | 985.90          | 985.86            | 985.81          | 985.85          | 985.87          |

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**MAXEY FLATS, EAST DRAIN CROSS SECTIONAL AREAS**

**Area in Square Feet**

| <b>Cross<br/>Section</b> | <b>April<br/>2003</b> | <b>June<br/>2003</b> | <b>Nov<br/>2003</b> | <b>April<br/>2004</b> | <b>Oct<br/>2004</b> | <b>April<br/>2005</b> | <b>Oct<br/>2005</b> |
|--------------------------|-----------------------|----------------------|---------------------|-----------------------|---------------------|-----------------------|---------------------|
| <b>3.5</b>               | 34.79                 | 37.47                | 39.06               | 40.45                 | 37.62               | 38.55                 | 39.71               |
| <b>5.0</b>               | 103.9                 | 103.71               | 104.5               | 103.84                | 106.48              | 107.03                | 103.93              |
| <b>5.5</b>               | 114.52                | 117.09               | 117.74              | 116.98                | 121.26              | 116.68                | 115.75              |
| <b>6.0</b>               | 123.07                | 119.88               | 122.97              | 122.48                | 122.28              | 124.01                | 120.97              |
| <b>6.5</b>               | 58.68                 | 57.42                | 59.4                | 61.26                 | 59.73               | 58.37                 | 57.94               |
| <b>6.75</b>              | 53.26                 | 52.53                | 52.29               | 49.46                 | 49.25               | 47.93                 | 53.81               |
| <b>8.0</b>               | 134.02                | 130.63               | 134.26              | 136.1                 | 133.92              | 133.94                | 135.23              |
| <b>12.0</b>              | 166.96                | 163.5                | 162.09              | 164.82                | 167.47              | 170.02                | 168.51              |