ATTACHMENT 4

Big Rock Point Plant
April 3, 2006

BIG ROCK POINT

SUPPORTING SURVEY, EXCAVATED SURFACE
RELEASE RECORD EAST $TBCq_1 1$

BASE ELEVATION SURVEY OF TURBINE BUILDING EXCAVATION
FOLLOWING REMOVAL OF FOUNDATIONS AND SUBSURFACE COMPONENTS

64 pages

Supporting Survey, Excavated Surface Release Record East $TBC_{q1}1$

Base Elevation Survey of Turbine Building Excavation Following Removal of Foundations and Subsurface Components

SURVEY PACKAGE CLOSURE

Final Status Survey Documentation is authorized for closure. All required reviews are complete and the evaluation of data results have satisfied the criteria established for unrestricted release and onsite use for excavation backfill.

Signed: _____ Date: 3-30-06
(ESSG Supervisor)

Signed: _____ Date: 3-30-06
(ES Superintendent)

Signed: _____ Date: 3-30-06
(RP & ES Manager)

Survey Package Revision Log

Rev #	Description	Date
0	Original Issue	12-06-05
1	Editorial changes and corrections	03-30-06

Final Status Survey East $TBC_{q1}1$

Turbine Building Base Elevation Survey
Following Removal of Foundations and Subsurface Components

SURVEY PACKAGE CLOSURE

Final Status Survey Documentation is authorized for closure. All required reviews are complete and the evaluation of data results have satisfied the criteria established for unrestricted release and onsite use for excavation backfill.

Signed: _____ Date: 12-06-05
(ESSG Supervisor)

Signed: _____ Date: 01-19-06
(ES Superintendent)

Signed: _____ Date: 1-23-06
(RP & ES Manager)

Design

Survey Requirements

Release Record East $TBC_{q1}1$
Base Elevation Turbine Building Excavation Area

Survey Description

Supporting Survey East $TBC_{q1}1$ encompasses 1776 m^2 of the Turbine Building demolition area located immediately south of Containment. This area is an open excavation approximately four meters below grade that results from demolition and removal of the Turbine Building and all subsurface structures and components. No materials of plant origin remain in the survey area.

History

During plant power operations the Turbine Building supported the components and interconnecting systems external to Containment that were necessary for electrical power generation. These systems included the following:

- Steam turbine and generator
- Nuclear steam supply and condensate return system piping
- Clean-up filter and demineralizer systems
- Condenser cooling water system
- Liquid waste effluent piping

A detailed review of the event history and radiological characterization for the Turbine Building area is provided in Chapter 2 of the License Termination Plan (pages 2-13 and 2E-44).

Current Radiological Status

Soil Characterization surveys and radiological evaluations for the release of demolition materials do not indicate the presence of significant residual radioactivity in this survey area. Based on operational history and former placement of radioactive systems and material transport pathways at this location the radiological status of this survey area is Class 1. Input for this evaluation includes the following survey data:

- Characterization Survey Unit 8 (LTP, 2E-44),
- Survey Package TB 041505,
- Survey Package TB 042005,
- Survey Package TB 051805,
- Survey Package TB 061005,
- Survey Package TB 061405,
- Survey Package TB 090105, and
- Characterization Survey East $TBA_{q1}1$

Post-Construction Expectations

Survey East $TBC_{q1}1$ will be performed in the following activity sequence:

1. Walkdown: Site Characterization personnel will perform a walkdown assessment to insure survey area preparations are complete and confirm that the following post-construction expectations have been satisfied:

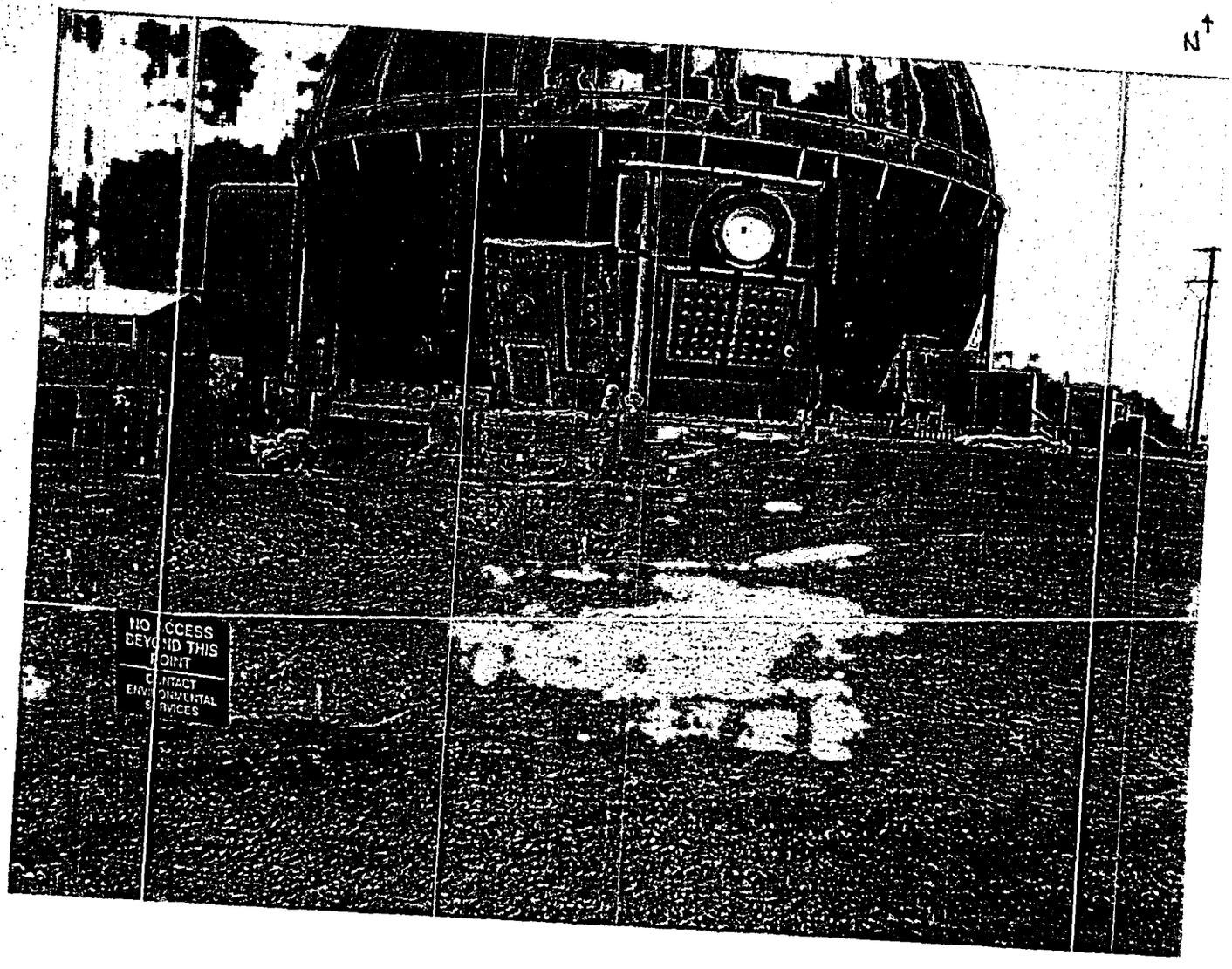
    - Groundwater and Surface water control is adequate
    - All construction debris has been removed from the survey area
    - The current survey area status meets all applicable safety requirements

2. A licensed independent survey shall verify that the excavation area is at or below the base elevation of original construction for all structures, components and foundations formerly located in the survey unit.

3. Survey Area Isolation and Control: Control measures will be established to ensure that any potential ongoing decommissioning activities in adjacent locations do not impact the current survey area status. Isolation and control measures include postings, barriers, access points, and the evaluation of ongoing work activities in adjacent areas.

4. Survey Design and Execution: Survey design and execution will follow the Data Quality Objectives for Survey East $TBC_{q1}1$ in accordance with the survey requirements established in RM-76, *Final Status Survey Design,and* RM-77, *Final Status Survey Implementation*. Survey size will be based on the statistical requirements of the Sign Test for Class 1 areas with soil samples collected in random start, systematic data point locations. Surface scanning will be performed with 100% survey area coverage. This survey will be conducted in accordance with approved BRP procedures and follow the guidance of NUREG 1575.

5. Data Quality Assessment: Isolation and control of the survey area will be maintained until the survey Data Quality Assessment demonstrates that the regulatory requirements for unrestricted site release have been satisfied. Once released for unrestricted use, this area will be backfilled and restored to original grade elevation.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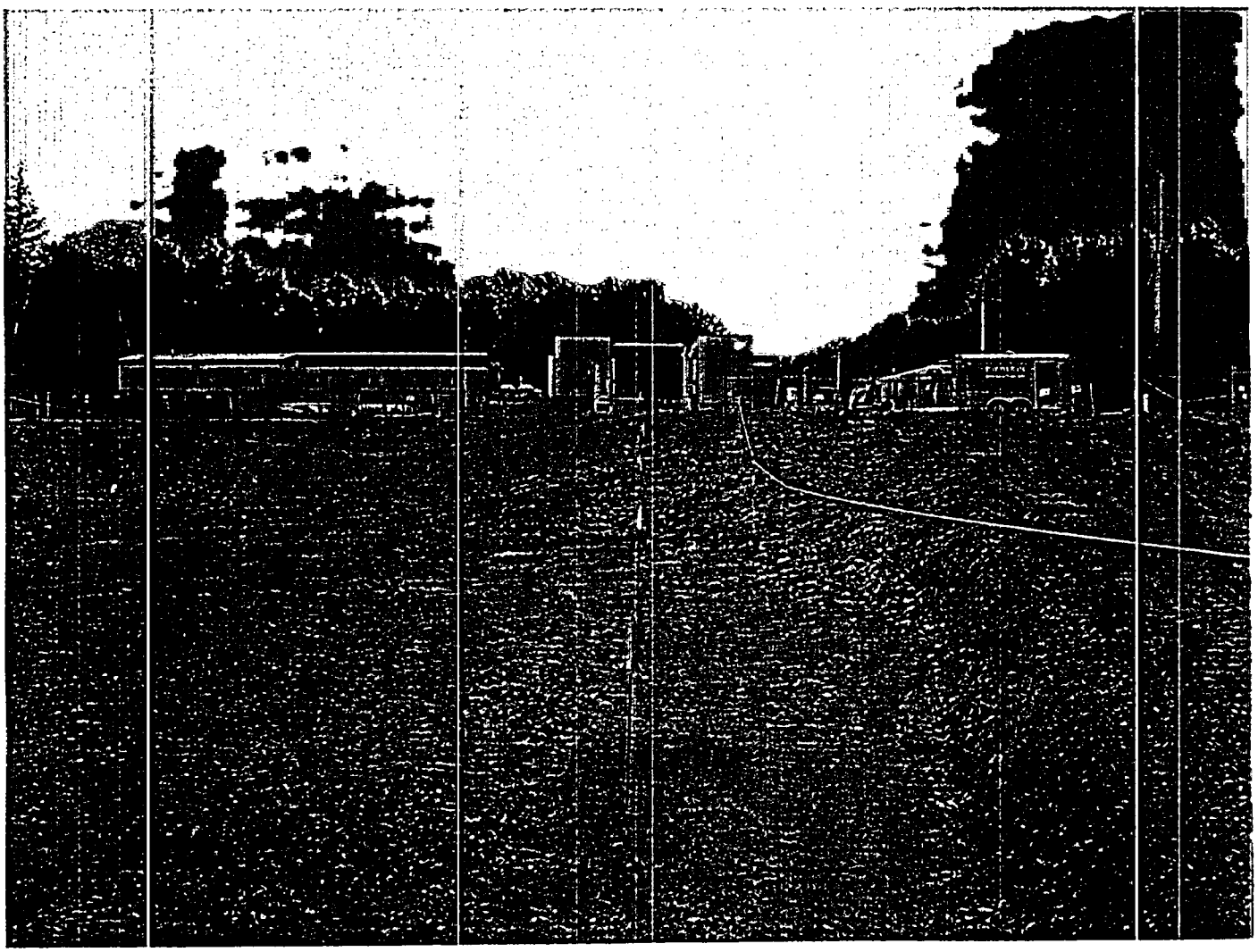

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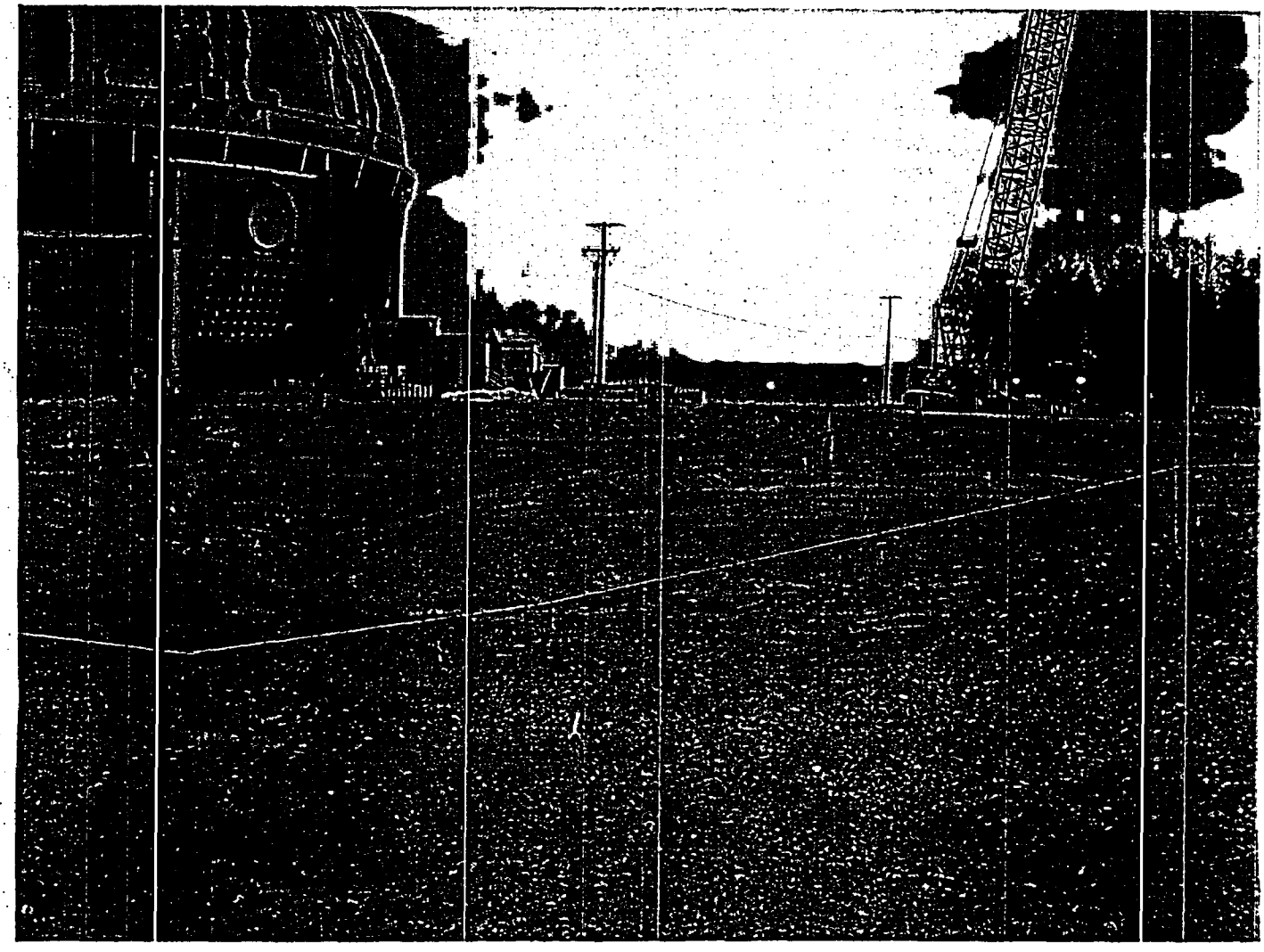

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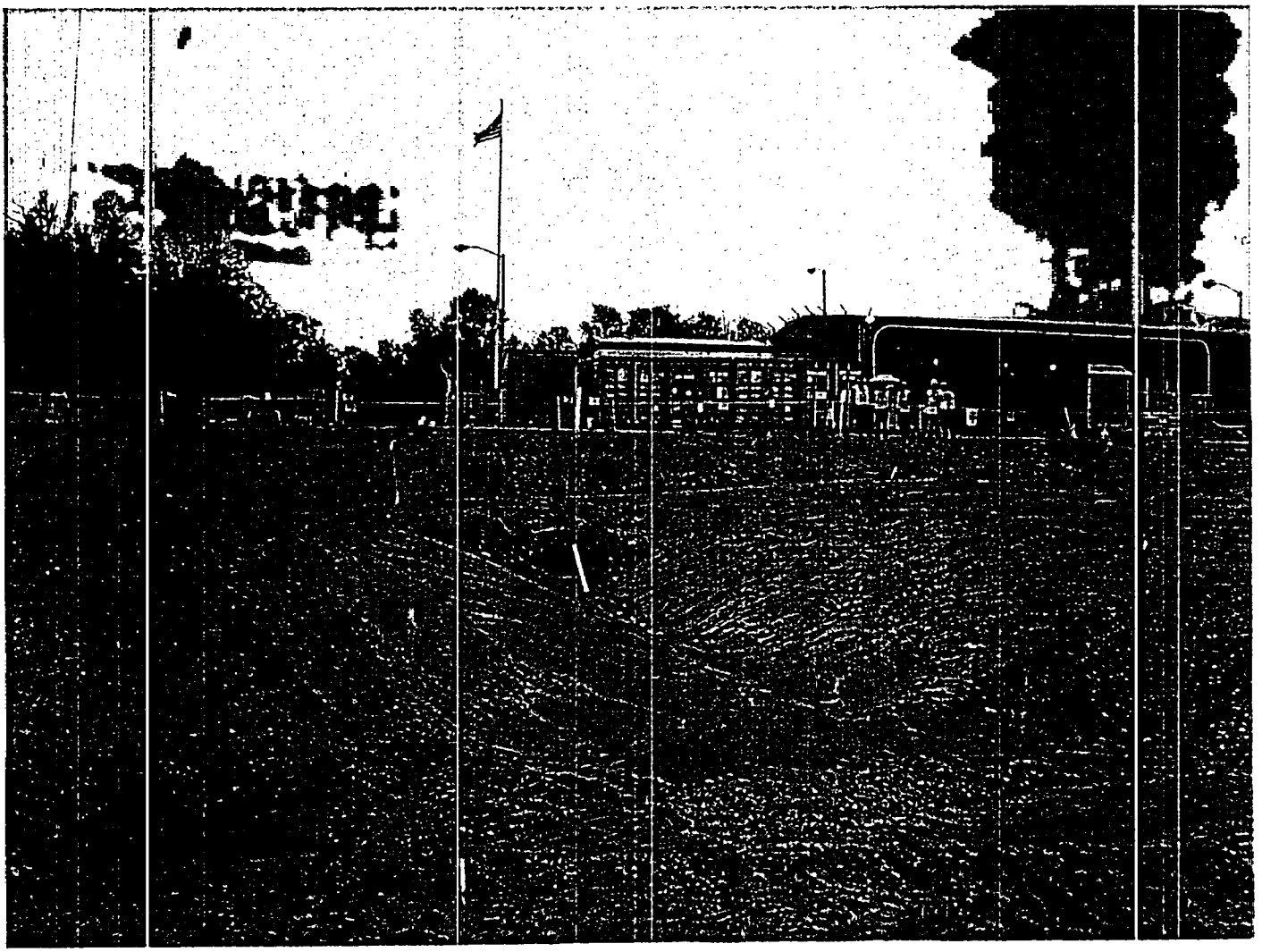


DATA QUALITY OBJECTIVES

Release Record East $TBC_{q1}1$
Base Elevation Turbine Building Excavation Area

1. STATE THE PROBLEM

The Problem:
To demonstrate that the level of residual radioactivity in the excavated area of the former Turbine Building does not exceed the release criteria of 25 mrem/year Total Effective Dose Equivalent (TEDE) as specified in the License Termination Plan (LTP). This Class 1 survey area includes all exposed sub-surface soils in the East Turbine Building Demolition Area. It must be demonstrated that this survey area meets the criteria established for unrestricted release prior to backfill and return to original grade elevation.

Stakeholders:
The primary stakeholders interested in the answer to this problem are Consumers Energy Co., and the general public as represented by the Michigan Department of Environmental Quality (MDEQ), and the US Nuclear Regulatory Commission (USNRC).

The Planning Team:
The planning team consists of members of the BRP Environmental Services Survey Group (ESSG). The primary decision maker will be the Final Status Survey (FSS) Supervisor. The Final Status Survey Supervisor will obtain input from the site Construction Group and Scheduling Group for issues relating to schedule and costs.

Schedule:
Approximately five (5) working days are projected to implement the Final Status Survey to collect and analyze field data.

Resources:
The primary resources needed to determine the answer to the problem are two (2) technicians to perform fieldwork, one (1) technician to prepare the samples and conduct laboratory analyses, and two (2) site characterization team members to prepare and review the design, generate maps, coordinate field activities and evaluate data.

2. IDENTIFY THE DECISION

Several decisions need to be defined to address the stated problem.

Principal Study Question (1):
Does the mean concentration of residual radioactivity in the survey unit exceed the release criteria stated above?

Decision (1):
Determine whether the mean concentration of residual radioactivity in the survey exceeds the release criteria stated in the problem.

Actions (1):
Alternative actions include failure of the survey unit, remediation, or no action required.

Principal Study Question (2):
Do any areas of elevated activity in the survey unit exceed the release criteria?

The Decision (2):
Determine if any areas of elevated activity in the survey unit exceed the release criteria.

Actions (2):
Alternative actions include confirmation and investigation, performing the elevated measurement comparison (EMC), remediation, or no action required.

Principal Study Question (3):
Is the potential dose from residual radioactivity in the survey unit ALARA as stated?

The Decision (3):
Determine if the potential dose from residual radioactivity in the survey unit is ALARA. ALARA requirements for soil remediation are defined in Chapter 4 of the LTP.

Actions (3):
Alternative actions include remediation or no action required.

3. IDENTIFY INPUTS TO THE DECISION

Information Needed:
Characterization measurements are required to define the radionuclides present and determine the extent and variability of residual radioactivity in the survey area for design and implementation of this survey. Survey area classification, ALARA analysis, potential radionuclides of interest, and site-specific DCGL values are also required inputs to the decision process. The primary information required for evaluation is the analytical results of survey measurements.

Source of the Information:
The soil sample data to be used for survey development are the radionuclide-specific measurements of soil samples collected within the affected local coordinate grids during the characterization process. This data also include the results of multiple surveys performed during soil excavation and the removal of demolition debris. The ALARA analysis for potential soil remediation is provided in LTP, Section 4.4. Site-specific DCGL values and BRP radionuclides of interest are defined in LTP Section 5, Table 5-1 and Procedure RM-76, *Final Status Survey Design.*

Survey East TBC_q1 will be conducted in accordance with LTP Section 5 for Class 1 areas and associated BRP survey procedures. Soil samples will be utilized for radionuclide-specific measurements in this evaluation.

4. BOUNDARIES OF THE STUDY

Boundaries of the Survey:
The target population for this survey is the upper 15 cm of soil in a defined survey area of 1776 m^2. The physical boundary includes all exposed soils in the excavated area identified by survey design within local coordinates 6S -12S by 7E -11E.

Temporal Boundaries:
Scanning and sampling in this survey unit will only be performed during daylight hours during acceptable weather conditions. Collection of data will take place when surface conditions are most favorable. Surface soils must be free of excessive snow cover and significant standing water prior to surface scanning. Soils must be in a non-frozen state or fragmented for collection to satisfy BRP procedural sampling requirements. The anticipated start date for the survey is September 20, 2005.

Constraints:
Cold weather or excessive rain conditions may effect the operation of electronic equipment. Adverse weather conditions that include accumulations of rain or snow may limit area access and delay survey efforts.

5. DEVELOP A DECISION RULE

The following decision rules have been developed to define a logical process for choosing among alternative actions for the principal study questions associated with this survey area.

Decision Rule (1):
If all reported concentrations for residual radioactivity are less than the site-specific DCGL's and the unity rule has been satisfied for each sample, then the survey unit meets release criteria. No further action is required.

Decision Rule (2):
If the mean value of activity in the survey unit is greater than the DCGL, then the survey unit fails to meet the release criteria.[1] Remediate, resurvey, and evaluate the results relative to the decision rule.

Decision Rule (3):
If the mean activity in the survey unit is less than the DCGL and any individual sample measurement exceeds this value conduct the Sign Test and the elevated measurement comparison (EMC) per LTP, Chapter 5 and Procedure RM-76, *Final Status Survey Design.* If the EMC and the Sign Test have been satisfied then the survey unit meets the release criteria and no further action is required. If the EMC or the Sign Test has not been satisfied then remediate the area(s) of elevated activity, resurvey as appropriate, and evaluate the results relative to the decision rule.

[1] When multiple radionuclides are present the mean activity value is determined as the average of the weighted sum. The DCGL of the weighted sum is 1.

Decision Rule (4):
If the potential dose from residual radioactivity in the survey unit is ALARA, then no further action is necessary. If the potential dose from residual radioactivity in the survey unit is not ALARA, then remediate and resurvey.

6. SPECIFY TOLERABLE LIMITS ON DECISION ERRORS

The Null Hypothesis:
It is assumed that residual radioactivity in the survey unit exceeds the release criterion.

Type I Error (α):
The α error is the maximum probability of rejecting the null hypotheses when it is true. The α error is defined in the LTP at a value of at 0.05 (5%) and cannot be changed to a less restrictive value unless prior approval is granted by the USNRC. The α error value of 0.05 will be used for survey planning and data assessment for this survey area.

Type II Error (β):
The β error is the probability of accepting the null hypothesis when it is false. A value of 0.05 (5%) will be used for survey planning and data assessment for this survey area.

The Lower Bound of the Gray Region (LBGR):
The LBGR is initially set at 0.5 for this survey unit. The LBGR may be adjusted during survey design to achieve an optimum relative shift between 1.0 and 3.0.

Relative Shift (Δ/σ):
The relative shift will be maintained within the range of 1.0 and 3.0 by adjusting the LBGR as appropriate.

7. OPTIMIZE DESIGN FOR OBTAINING DATA

Statistical Test

Sign Test:
Radionuclides of potential plant origin also present in soil as background activity resulting from fallout constitute only a small fraction of the DCGL. Therefore, the Sign Test will be used where applicable in the FSS evaluation to determine if the survey area meets the requirements for unrestricted release.

Number of Samples Determined:
The number of samples required for this survey will be determined based on the relative shift as defined by the requirements of the Sign Test (LTP, Chapter 5) and Procedure RM-76, *Final Status Survey Design*. The LBGR is initially set at 0.5 and may be adjusted as necessary for optimizing the survey design to achieve a relative shift between 1.0 and 3.0. Sample point locations are to be determined using a random start, systematic grid spacing. For sample point locations where access is impractical or unsafe, alternate locations will be randomly selected to achieve the sample size requirement.

Biased Sampling:
Co-60 is the most limiting radionuclide for identification by surface scanning; biased surface and subsurface core samples will be collected in any location that exceeds the scan investigation level.

Scan Coverage:
Scanning for this survey area will provide 100% coverage.

Number of Samples for Quality Control:
A minimum of 5% of the sample population will be collected for quality evaluation. These samples may include sample splits, sample recounts, or third party sample analysis. Quality analyses will be conducted as defined in LTP, Chapter 5 and Procedure RM-79, *Final Status Survey Quality Control.*

Additional Sample Analysis Requirements:
An additional quantity of soil shall be collected for Tritium Analysis in the same locations as samples selected for QA/QC. A minimum of 10% of the sample population will be sampled. Tritium analyses will be performed by an independent laboratory. Data results will be provided in the FSS package.

Investigation Levels:
Investigation levels are defined in LTP, Chapter 5 and Procedure RM-76, *Final Status Survey Design,* by individual survey area classification; however, prior to regulatory approval of the LTP a more conservative approach for investigation will be established for this survey as shown below.

Investigation Levels for Survey EastTBC_{q1}1

Classification	Scan Measurement	Soil Sample Analysis
Class 1	> DCGL	> $DCGL_w$

The investigation levels for soil sample measurements are meant to include any individual radionuclide result greater than the site-specific DCGL or where the combined radionuclide values exceed the unity rule. Co-60 is the most limiting radionuclide for identification by surface scanning; further investigation will be initiated at any location that exceeds the Co-60 Scan $_{DCGL}$ of 1818 CPM above background as detailed in the survey design.

SURVEY DESIGN

Release Record East $TBC_{q1}1$
Base Elevation Turbine Building Excavation Area

Survey Unit Description

Final Status Survey East $TBC_{q1}1$ encompasses 1776 m^2 of the Turbine Building demolition area immediately south of Containment. The Turbine Building and all system components, subsurface structures, and foundations have been removed. No materials of plant origin remain at this location. The survey area is an open excavation that extends approximately four meters below grade to the base elevation of original construction as detailed in Attachment 4.

Soil Sample Design

Scoping Data

Scoping survey measurements conducted in the Turbine Building excavation area only identified MDA or background levels of residual radioactivity. As a conservative measure, input values for survey design were estimated based on activity measurements identified in the adjacent survey unit for final status evaluation of the Screenhouse excavation (FSS 09Q1).

Table 1
Input Data for Survey Design (pCi/g)

Radionuclides	Cs-137	Co-60
σ	0.41	0.41
DCGL	11.93	3.21

Sample Requirements

The number of sample data points for this survey is based on the requirements of the Sign Test. The Unity Rule is used for the presence of multiple radionuclides. The Standard Deviation of the weighted sum is described by the following:

$$\sigma = \sqrt{\left(\frac{\sigma_{CS137}}{DCGL_{CS137}}\right)^2 + \left(\frac{\sigma_{CO60}}{DCGL_{CO60}}\right)^2}$$

$$\sigma = \sqrt{\left(\frac{0.41}{11.93}\right)^2 + \left(\frac{0.41}{3.21}\right)^2}$$

$$\sigma = 0.13$$

Relative Shift

The DCGL for the weighted sum is 1.0. The relative shift is determined using an LBGR value set at 74% of the $DCGL_w$.

$$\text{Relative Shift} = \frac{DCGL - LBGR}{\sigma}$$

$$\text{Relative Shift} = \frac{1 - 0.74}{0.13}$$

$$\text{Relative Shift} = 2.0$$

With α and β error levels set at 0.05 and the relative shift of 2.0, the Sign Test requires 15 sample data points (Table 5.5 NUREG 1575). As a conservative measure a minimum of 18 samples will be collected in this survey unit.

Sample Locations

Sample locations are selected in a random-start systematic pattern with the southwest corner of the survey unit as origin (X=0, Y=0). Two numbers between 0 and 1 have been randomly selected and then applied to the survey unit maximum X and Y dimensions to determine the random start location as shown below.

Table 2
Random Numbers

Random #, X Axis	Random #, Y Axis
0.171333	0.779592

Survey Dimensions: X (E/W) = 40.0 meters
Y (N/S) = 49.4 meters

Random Start Location X = (0.171333)(40.0) = 6.9 meters
With SW Corner Origin: Y = (0.779592)(49.4) = 38.5 meters

The survey unit origin is located in Grid 342 of the site coordinate system at X=10.0 meters, Y= 5.0 meters. The random start location for this survey is located in Grid 269 at X= 6.9 meters Y= 38.5 meters.

Sample Spacing

Samples are located in a systematic square grid pattern with sample spacing determined by the following:

$$L = \sqrt{\frac{A}{n}}, \quad \textit{where } A = \text{area of survey unit } \textit{and}$$

$$n = \text{number of samples.}$$

$$L = \sqrt{\frac{1776}{18}} = 9.9 \text{ meters}$$

With sample spacing established at 9.9 meters, 18 data point locations are available for survey as identified in Attachment 1.

QA/QC Sampling

A minimum of 5% of the sample population and 5% of the scan survey area are required to be selected for QA/QC verification in accordance with BRP Procedure RM-79, *Final Status Survey Quality Control.* As a conservative measure, three (3) soil samples and 10% of the scan survey area will be selected for QA/QC evaluation. Data point locations for soil sampling will be determined by random number selection.

The starting point and track direction for QA/QC scanning are also determined by random number selection. The first random data point selected will identify the scanning start point and the second random data point will determine the direction in which the scan will track. QA/QC location results are provided in Table 3.

Table 3
Random Numbers Generated for QA/QC

QA/QC Soil Samples	Random Sample Number	Verification Scan	Random Sample Number
Split Sample:	**7**	**Start Point:**	**2**
Sample Recount:	**12**	**Scan Towards :**	**16**
Sample Recount:	**8**	**Minimum Scan Area Requirement:**	**178 m^2**

Surface Scanning

The coverage requirement for surface scanning in this Class 1 area is 100%. The Scan $_{MDC}$ has been established at fractional values of the $DCGL_W$ for typical background activity levels at Big Rock Point. Scan $_{MDC}$ values for varying backgrounds are provided in Attachment 2.

The investigation level for identification of potential areas of elevated activity in this survey area will be the Scan $_{DCGL}$ as defined by the following:

$$SCAN_{DCGL} = \text{Detector Rating } \frac{CPM}{uR/hr} * \text{Exposure Model } \frac{uRi/hr}{pCi/g} * DCGL_w$$

Scan $_{DCGL}$ for Co-60 = 1818 cpm

Scan $_{DCGL}$ for Cs-137 = 3518 cpm

Where:[1]

$$\text{Detector Rating} = \frac{1200\ CPM}{uR/hr}_{Cs-137} \text{ and } \frac{565\ CPM}{uR/hr}_{Co-60}$$

$$\text{Exposure Model} = \frac{1.229\ uRi/hr}{5\ pCi/g}_{Cs-137} \text{ and } \frac{5.029\ uRi/hr}{5\ pCi/g}_{Co-60}$$

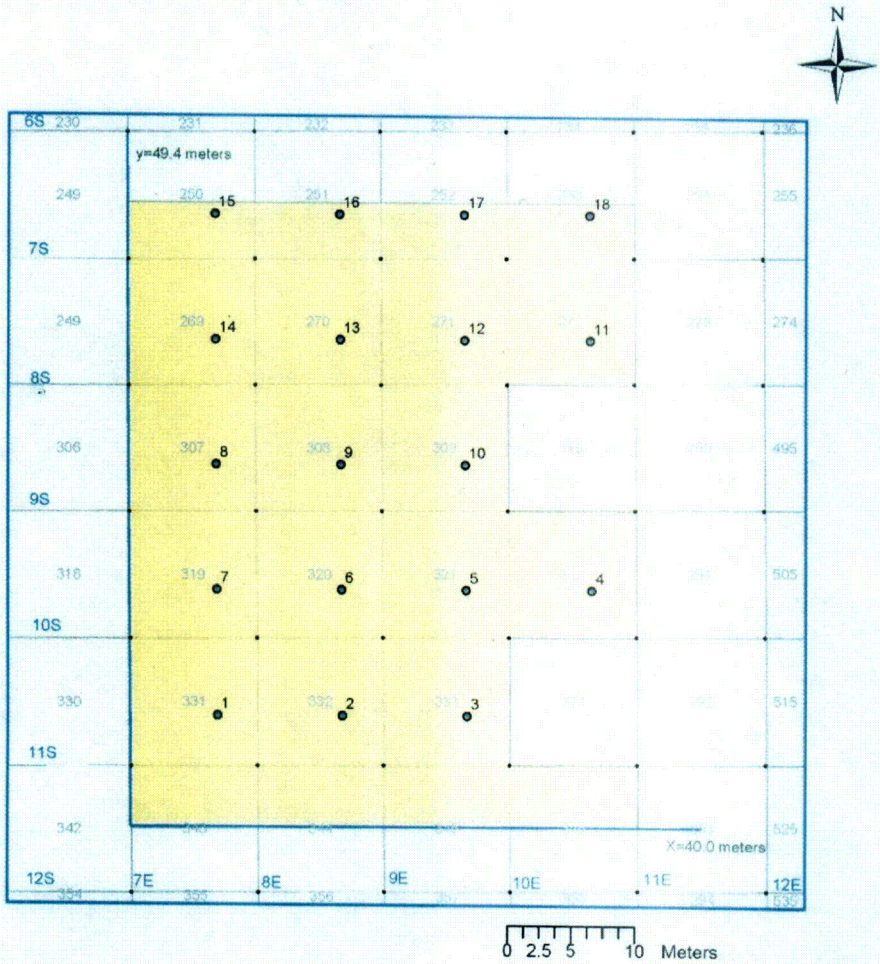
$DCGL_w$ = 11.93 pCi/g Cs-137 and 3.21 pCi/g Co-60

The $DCGL_w$ for Co-60 is the most limiting value for scanning measurements performed to identify areas of potentially elevated activity. Scanning conducted for this Final Status Survey will assume all residual radioactivity to originate from Co-60 and the instrument response at the Co-60 $DCGL_w$ (1818 cpm) will be used as the scanning investigation level for Survey EastTBC_{q1}1.

[1] These values established in EA-BRP-SC-0201, *NaI Scanning Sensitivity For Open Land Survey*

Attachment 1
Soil Sample Locations

Release Record East $TBC_{q1}1$
Turbine Building Excavation Area



Legend

- Soil Sample Locations
- SurveyArea
- Numbered Local Coordinate Grid, 10X10 meters

Sample No.	Grid Number	X Coord.	Y Coord.
1	331	6.9	3.8
2	332	6.8	3.8
3	333	6.7	3.8
4	322	6.6	3.7
5	321	6.7	3.7
6	320	6.8	3.7
7	319	6.9	3.7
8	307	6.9	3.6
9	308	6.8	3.6

Sample No.	Grid Number	X Coord.	Y Coord.
10	309	6.7	3.6
11	272	6.6	3.5
12	271	6.7	3.5
13	270	6.8	3.5
*14	269	6.9	3.5
15	250	6.9	3.4
16	251	6.8	3.4
17	252	6.7	3.4
18	253	6.6	3.4

**Sample no. 14 is the random start location*

Sample spacing is 9.9 meters

C01

Attachment 2
Scan MDC In Varying Backgrounds

Release Record East $TBC_{q1}1$
Turbine Building Excavation Area

				CPM	MDER uR/hr		Scan MDC pCi/g	
Background	d'	t	s_i	$MDCR_{surveyor}$	Cs-137	Co-60	Cs-137	Co-60
2000	2.48	4	28.64	607.47	0.51	1.08	2.06	1.07
2500	2.48	4	32.02	679.18	0.57	1.20	2.30	1.20
3000	2.48	4	35.07	744.00	0.62	1.32	2.52	1.31
3500	2.48	4	37.88	803.61	0.67	1.42	2.72	1.41
4000	2.48	4	40.50	859.10	0.72	1.52	2.91	1.51
4500	2.48	4	42.95	911.21	0.76	1.61	3.09	1.60
5000	2.48	4	45.28	960.50	0.80	1.70	3.26	1.69
5500	2.48	4	47.49	1,007.38	0.84	1.78	3.42	1.77
6000	2.48	4	49.60	1,052.17	0.88	1.86	3.57	1.85
6500	2.48	4	51.63	1,095.14	0.91	1.94	3.71	1.93
7000	2.48	4	53.57	1,136.48	0.95	2.01	3.85	2.00
7500	2.48	4	55.45	1,176.37	0.98	2.08	3.99	2.07
8000	2.48	4	57.27	1,214.95	1.01	2.15	4.12	2.14
8500	2.48	4	59.04	1,252.34	1.04	2.22	4.25	2.20
9000	2.48	4	60.75	1,288.65	1.07	2.28	4.37	2.27
9500	2.48	4	62.41	1,323.96	1.10	2.34	4.49	2.33
10000	2.48	4	64.03	1,358.35	1.13	2.40	4.61	2.39
10500	2.48	4	65.61	1,391.90	1.16	2.46	4.72	2.45
11000	2.48	4	67.16	1,424.65	1.19	2.52	4.83	2.51
11500	2.48	4	68.67	1,456.67	1.21	2.58	4.94	2.56
12000	2.48	4	70.14	1,488.00	1.24	2.63	5.04	2.62
12500	2.48	4	71.59	1,518.68	1.27	2.69	5.15	2.67
13000	2.48	4	73.01	1,548.76	1.29	2.74	5.25	2.73
13500	2.48	4	74.40	1,578.26	1.32	2.79	5.35	2.78
14000	2.48	4	75.77	1,607.22	1.34	2.84	5.45	2.83
14500	2.48	4	77.11	1,635.67	1.36	2.89	5.55	2.88
15000	2.48	4	78.42	1,663.63	1.39	2.94	5.64	2.93
Modeled Exposure (uR/hr) @ 5 pCi/g								
	Cs-137	1.23E+00						
	Co-60	5.03E+00						

Attachment 3
Area Factors for Open Land Survey Evaluation

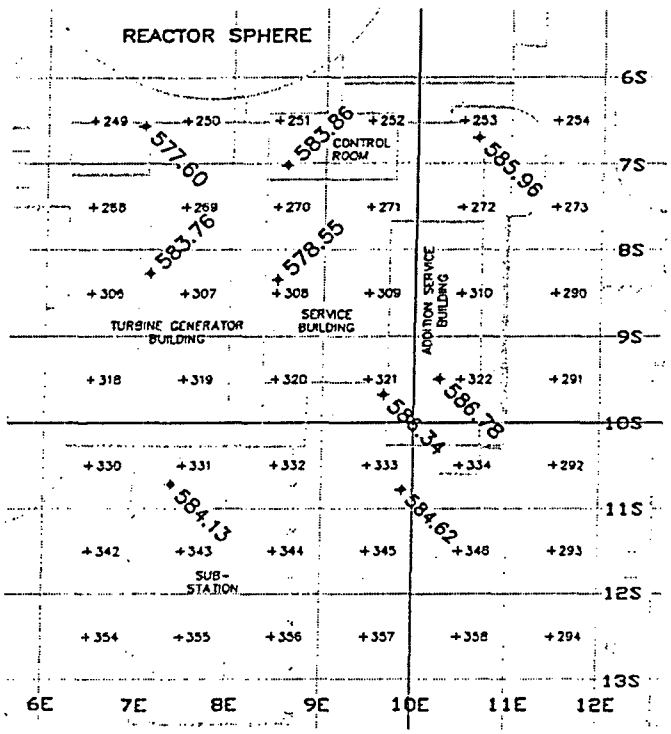
Release Record East $TBC_{q1}1$
Turbine Building Excavation Area

Contaminated Area (m^2)	Calculated Area Factors at Time of Peak Dose								
	H-3	Mn-54	Fe-55	Co-60	Sr-90	Cs-137	Eu-152	Eu-154	Eu-155
8094	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4047	1.00	1.01	1.00	1.01	1.00	1.02	1.02	1.01	1.02
2024	1.00	1.03	1.00	1.03	1.00	1.03	1.03	1.03	1.03
1012	1.35	1.04	1.00	1.04	1.00	1.04	1.05	1.04	1.04
506	2.91	1.09	1.98	1.08	1.98	1.13	1.07	1.07	1.06
253	6.05	1.14	3.95	1.13	3.94	1.20	1.11	1.11	1.09
126	12.4	1.20	7.93	1.20	7.87	1.29	1.17	1.16	1.14
63	24.9	1.30	15.8	1.30	15.6	1.41	1.27	1.26	1.23
32	49.2	1.49	31.2	1.49	30.5	1.62	1.44	1.45	1.39
16	98.9	1.78	62.0	1.78	59.9	1.93	1.72	1.73	1.63
8	198	2.38	123	2.38	117	2.58	2.30	2.31	2.14
4	397	3.61	243	3.62	230	3.91	3.49	3.52	3.19
2	794	5.68	473	5.75	452	6.14	5.48	5.55	4.90
1	1590	9.57	905	9.73	887	10.3	9.24	9.39	7.88

Attachment 4
Survey Grade Elevations

Release Record East $TBC_{q1}1$
Turbine Building Excavation Area

SITE LOCAL COORDINATE GRID SYSTEM AND EXCAVATED GRADES
SEPTEMBER 13, 2005



+584.13 ELEVATION DENOTES MEASURED GRADE AFTER EXCAVATION. ALL MEASURED GRADES ARE AT OR BELOW ORIGINAL DESIGN BOTTOM OF FOOTINGS ELEVATIONS AS DEPICTED ON THE TURBINE BUILDING FOUNDATION PLAN PREPARED FOR BECHTEL CORPORATION (DRAWING #0740G20251 REV. B) DATED 12-01-1967.

JOHN E. FERGUSON P.S. No. 24595

FIELD: CDH, GS	DRAWN: DDH	SCALE: 1"=50'
JOB: BIG ROCK POINT	DATE: 9-13-05	

FERGUSON & CHAMBERLAIN ASSOCIATES, INC.
PROFESSIONAL SURVEYORS
103 W. UPRIGHT STREET, CHARLEVOIX, MICHIGAN 49720
(231) 547-6882 – FAX (231) 547-0021
EMAIL: survey@freeway.net

RM-76-5
FINAL STATUS SURVEY APPROVAL
AND AUTHORIZATION FOR IMPLEMENTATION

Survey Code East $TBC_{q1}1$

Survey Area Description:

Survey East $TBC_{q1}1$ encompasses 1776 m^2 of the Turbine Building excavation area immediately south of Containment. This area is an open excavation approximately four meters below grade located that results from demolition and removal of the Turbine Building and all subsurface structures and components.

The survey area is authorized for Final Status Survey Implementation.

Designed by — Date 9/19/05

Technical Review by — Date 9/19/05

Implementation

RM-77-1
SURVEY IMPLEMENTATION CHECKLIST
Page 1 of 3

Step (✓)		Initial	Date
1.0	PREPARATION FOR SURVEY East $TBC_{g1}1$ (Survey #)	[illegible]	9/19/05

1.1 Survey Area Status:

✓ a. Final Status Survey Design has been approved for implementation (see RM-76-5, Final Status Survey Approval and Authorization for Supplementation).

1. Survey area walkdown complete
2. Survey area determined ready for FSS
3. Decommissioning activities that may impact the environmental status of the survey area have been completed.
4. Survey area environment is controlled by barriers and postings or other approved method to restrict access. — [illegible] ESSG 9/19/05

✓ b. Survey area has been turned over to the Environmental Services Survey Group (ESSG) in acceptable condition for FSS. — [illegible] ESSG 9/19/05

1.2 Field Preparation:

✓ a. Survey unit boundaries delineated (Step 6.1.1)
✓ b. Statistical soil samples predetermined in the survey design are located and marked within the survey unit. (Step 6.1.2)
✓ c. Soil sample locations verified (Step 6.1.2.c)
✓ d. Instruments and equipment have been collected and calibrated for data measurement and collection (Step 6.1.3)
✓ e. Field documentation is prepared (Step 6.1.4) — [illegible] ESSG 9/20/05

RM-77-1
SURVEY IMPLEMENTATION CHECKLIST
Page 2 of 3

		Initial	Date
2.0	DATA COLLECTION		
2.1	Soil Survey:		
✓	All soil samples collected and controlled (Step 6.2.1).	ESSG	9/20/05
2.2	Surface Scan:		
✓	Surface Scan complete. Action response requirements have been conducted on any identified areas exceeding the investigation level (Step 6.3).	ESSG	9/20/05
2.3	Judgmental Soil Samples:		
✓	a. Judgmental soil samples have been collected and controlled (Step 6.2.3).		
N/A	b. Deep core profiles performed in areas identified to contain elevated residual activity (Step 6.2.3).	ESSG	9/20/05
3.0	SAMPLE PREPARATION AND LABORATORY ANALYSIS		
3.1	Sample Preparation (Step 6.4.1):		
✓	a. Soil samples are homogenous		
✓	b. Soil samples are visibly dry prior to packing		
✓	c. Non-soil materials have been removed from sample		
✓	d. Soil samples have been transferred to one-liter Marinelli containers and are labeled and sealed.	ESSG	9/22/05

RM-77-1
SURVEY IMPLEMENTATION CHECKLIST
Page 3 of 3

		Initial	Date
3.2	Laboratory Analysis:		
✓	Isotopic analyses are complete. The spectroscopy report requires a signature of completion by the laboratory analyst and a signature of evaluation documenting that a second level review has been performed (Step 6.4.2).	JLR ESSG	09/22/05
3.3	Sample Control and Documentation:		
✓	Chain of custody documentation exhibits control of soil samples (Step 6.4.3).	JLR ESSG	09/22/05

[illegible] Reviewed by — 9/27/05 Date

ATTACHMENT RM-59-1
SAMPLING AND ANALYSIS REPORT

Date: 09-20-05	Time: 1645	Location: Turbine Building Excavation Area	Tech: Jodie Reed

SURVEY IDENTIFICATION / DESCRIPTION

Survey East $TBC_{q1}1$ encompasses 1776 m^2 of the Turbine Building demolition area immediately south of Containment. The survey area is an open excavation approximately four meters below grade that results from demolition and removal of the Turbine Building and all subsurface structures and components.

SURVEY TYPE

Survey Type:
- ___ Characterization
- ✓ Remediation
- ✓ Final
- ✓ Scan (Motive)
- ___ Scan (Static)
- ___ Trenching and Digging (use RM-59-4)

SURVEY DESIGN

Sample Collection: ___ Judgmental ___ Random ✓ Systematic ___ Large Container Assay
Scan Coverage: 100 %

ANALYSIS

Inst./Serial No. 186201/186192	DAILY CHECK: ✓	SAT	UNSAT	INIT: JR
Inst./Serial No. Det. #10	DAILY CHECK: ✓	SAT	UNSAT	INIT: JR
Investigation of Unidentified Peaks:	✓	SAT	UNSAT	INIT: JR
Minimum Detectable Activity (Section 5.3.2)	✓	SAT	UNSAT	INIT: JR

COMMENTS

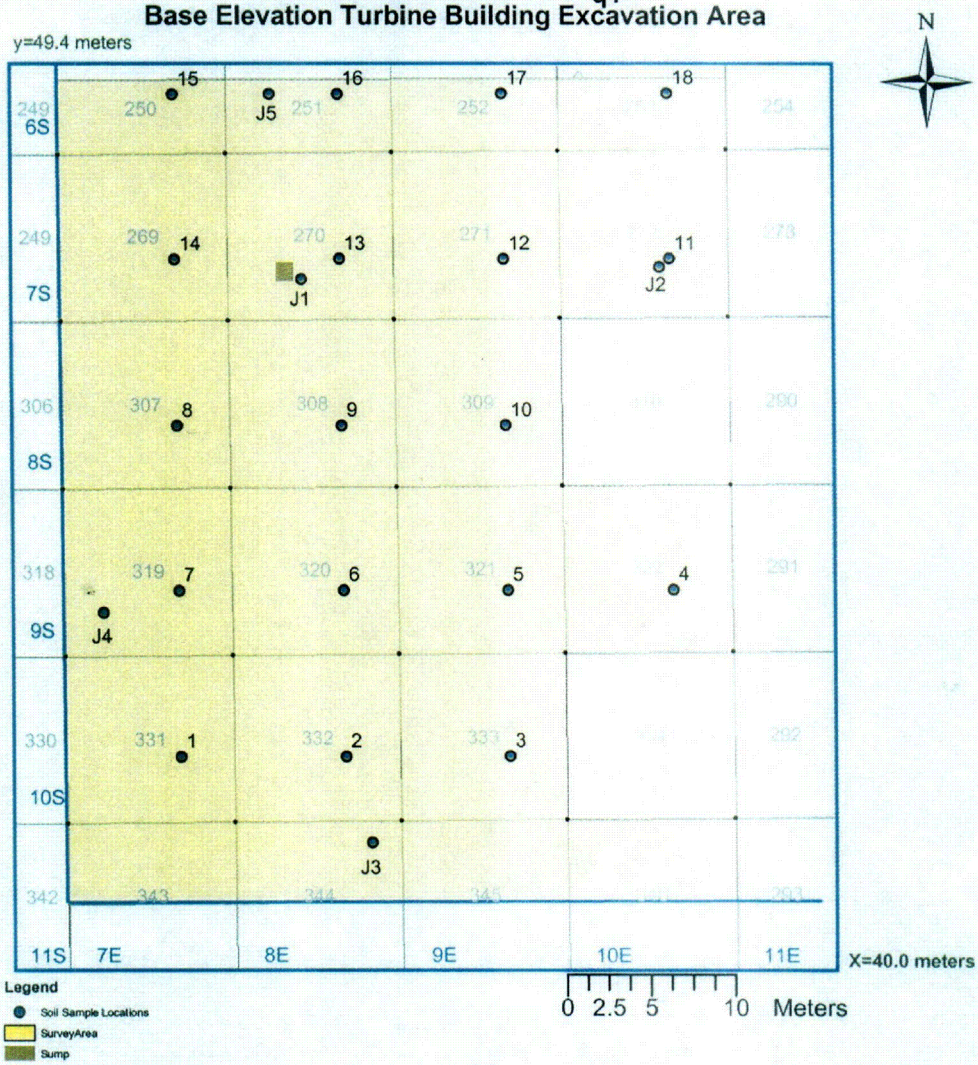
Survey East $TBC_{q1}1$ was performed in a random start, square grid, systematic sampling pattern with samples collected at 18 data point locations. Laboratory analyses did not identify residual radioactivity above trace levels of the DCGL value. Surface scanning at 100% coverage identified no areas of elevated residual radioactivity. The results of QA/QC verification scanning (10% coverage) were consistent with the scan values identified in the survey.

Technician Signature: Jodie L. Reed Date: 09-22-05

Second Level Review:
Signature: [illegible] Date: 9/22/05

Soil Sample Activity Summary

Release Record East $TBC_{q1}1$
Base Elevation Turbine Building Excavation Area



Sample No.	Grid No.	X Coord.	Y Coord.	Cs-137 (pCi/g) Activity	Cs-137 (pCi/g) MDA	Co-60 (pCi/g) Activity	Co-60 (pCi/g) MDA
1	331	6.9	3.8	*-0.0003	0.0344	*0.0033	0.0562
2	332	6.8	3.8	*0.0022	0.0525	*0.033	0.0725
3	333	6.7	3.8	*0.0239	0.0550	*0.0411	0.0750
4	322	6.6	3.7	*0.0144	0.0471	*-0.0407	0.0550
5	321	6.7	3.7	0.0307		*0.008	0.0524
6	320	6.8	3.7	0.0331		*-0.005	0.0544
7	319	6.9	3.7	*-0.0322	0.0393	*-0.0362	0.0509
8	307	6.9	3.6	*-0.0144	0.0386	*0.0279	0.0704
9	308	6.8	3.6	*0.0221	0.0518	*0.0126	0.0684
10	309	6.7	3.6	*-0.0006	0.0470	*-0.006	0.0579
11	272	6.6	3.5	*-0.0161	0.0399	*-0.0225	0.0594
12	271	6.7	3.5	*0.0195	0.0526	*0.0085	0.0659
13	270	6.8	3.5	0.0453		*0.0301	0.0664
14	269	6.9	3.5	*0.031	0.0586	*0.0339	0.0728
15	250	6.9	3.4	*0.0071	0.0470	*0.0022	0.0606
16	251	6.8	3.4	*-0.0002	0.0560	*0.0316	0.0822
17	252	6.7	3.4	0.2399		*0.0069	0.0605
18	253	6.6	3.4	0.0803		*0.0615	0.0615
J1	270	4.5	2.3	*-0.0002	0.0459	*0.0365	0.0653
J2	272	6.4	3.4	*0.0142	0.0466	*0.0179	0.0561
J3	344	8.3	8.6	*-0.0146	0.0445	*0.0060	0.0694
J4	319	2.4	4.4	*0.0002	0.0487	*0.0015	0.0659
J5	251	2.7	3.4	*-0.0093	0.0359	*-0.0177	0.0605

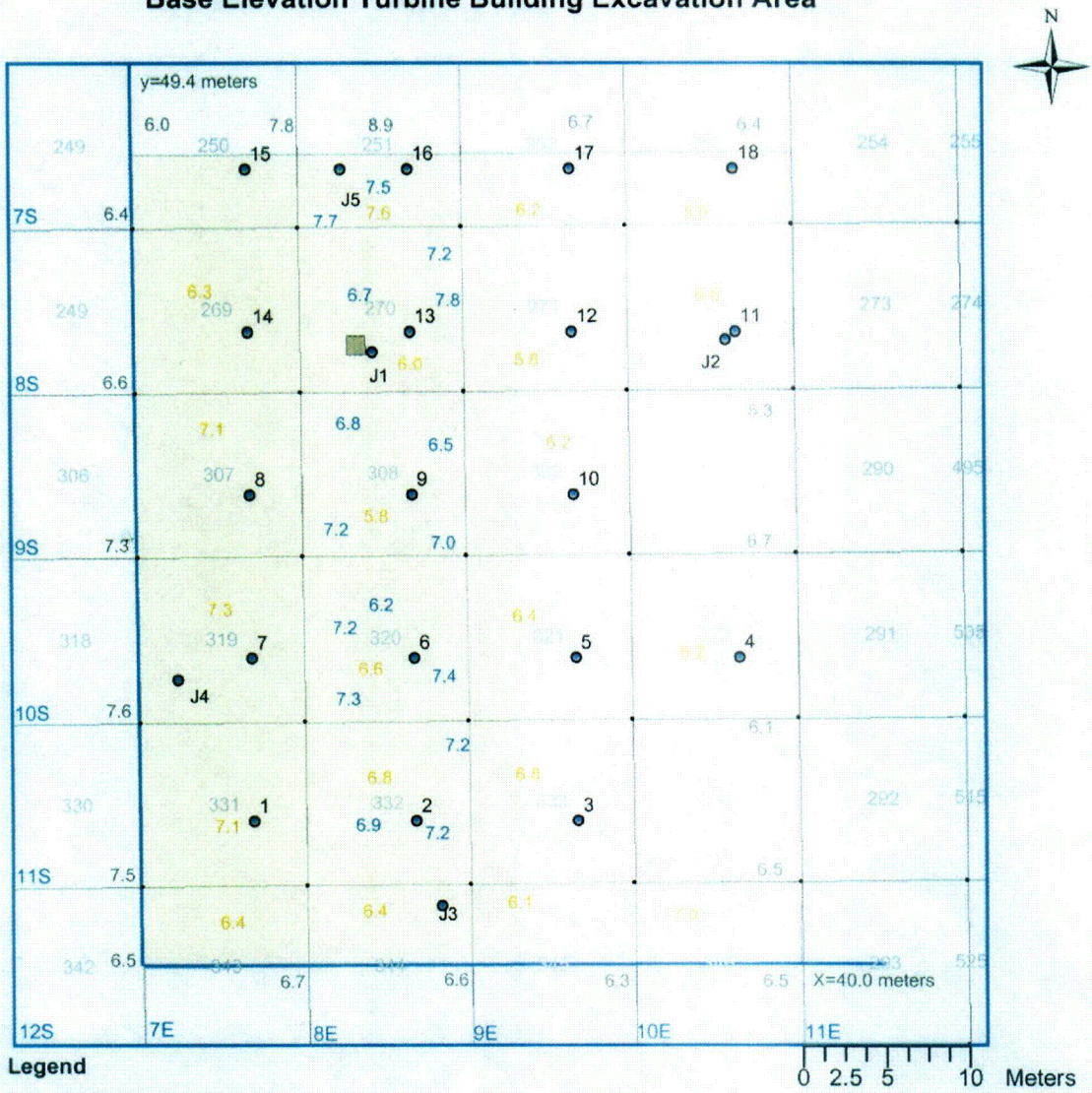
*Forced-count values

**Coordinate location relative to SW corner of survey unit where X=0 m. and Y=0 m.

C02

Surface Scan Summary

Release Record East TBC$_{q1}$1
Base Elevation Turbine Building Excavation Area



Legend

- Soil Sample Locations
- SurveyArea
- Numbered Local Coordinate Grid, 10X10 meters
- Sump

RED Values are Average Mobile Scan General Area Activity (kcpm)
BLUE Values are Average Verification Scan General Area Activity (kcpm)
GREY Values are Average General Background Area Activity (kcpm)

Primary Scan : 100 %

Technician Signature: [signature] **Date:** 9-20-05
Time: 1400

QC Verification Scan: 10 %

Technician Signature: [signature] **Date:** 9-20-05
Time: 1645

C03

FSS East TBC Q1

RM-72-1

CHAIN-OF-CUSTODY RECORD

Sample Number	Sampling Location	Date	Time	Final Disposition of Sample
1	Grid #331 (6.9)(3.8)	09/20/05	0852	Permanent Storage Locker
2	Grid #332 (6.8)(3.8)	09/20/05	0855	
3	Grid #333 (6.7)(3.8)	09/20/05	0857	
4	Grid #322 (6.6)(3.7)	09/20/05	0907	
5	Grid #321 (6.7)(3.7)	09/20/05	0901	
6	Grid #320 (6.8)(3.7)	09/20/05	0908	
7	Grid #319 (6.9)(3.7)	09/20/05	0912	
7 split	Grid #319 (6.9)(3.7)	09/20/05	0912	
* 8	Grid #307 (6.9)(3.6)	09/20/05	0918	
9	Grid #308 (6.8)(3.6)	09/20/05	0921	
10	Grid #309 (6.7)(3.6)	09/20/05	0928	
11	Grid #272 (6.6)(3.5)	09/20/05	0933	
* 12	Grid #271 (6.7)(3.5)	09/20/05	0936	
13	Grid #270 (6.8)(3.5)	09/20/05	0941	
14	Grid #269 (6.9)(3.5)	09/20/05	0944	
15	Grid #250 (6.9)(3.4)	09/20/05	0945	
16	Grid #251 (6.8)(3.4)	09/20/05	0958	
17	Grid #252 (6.7)(3.4)	09/20/05	1000	
18	Grid #253 (6.6)(3.4)	09/20/05	1005	✓
~~J1~~	~~Grid #270 (4.5)(2.3)~~	~~09/20/05~~	~~1044~~	~~JLR 9/20/05~~

(Samples may be analyzed and stored, shipped for offsite evaluation or analyzed and disposed of.)

1. Relinquished by:	Date	Time	Received in good condition by:
Jodie L. Reed	09/20/05	10:32	Locked in chem Lab oven
2. Relinquished by:	Date	Time	Received in good condition by:
Jodie L. Reed	09/21/05	~~09:05 JLR~~ 16:58 9/21/05	Locked in Chem Lab Locker
3. Relinquished by:	Date	Time	Received in good condition by:
Jodie L. Reed	09/22/05	10:00	Locked in Env. Sea van For permanent storage
4. Relinquished by:	Date	Time	Received in good condition by:

FSS East TBC Q.1
RM-72-1
CHAIN-OF-CUSTODY RECORD

Sample Number	Sampling Location	Date	Time	Final Disposition of Sample
J1	Grid # 270 (4.5)(2.3)	09/20/05	1044	Permanent Storage Locker
J2	Grid # 272 (6.4)(3.4)	09/20/05	1114	
J3	Grid # 344 (8.3)(8.6)	09/20/05	1127	
J4	Grid # 319 (2.4)(4.4)	09/20/05	1139	
J5	Grid # 251 (2.7)(3.4)	09/20/05	1152	

(Samples may be analyzed and stored, shipped for offsite evaluation or analyzed and disposed of.)

1. Relinquished by:	Date	Time	Received in good condition by:
Jackie L. Reed	09/20/05	12:10	Locked in chem. lab oven.
2. Relinquished by: Jackie L. Reed	Date 09/21/05	Time 16:58	Received in good condition by: Locked in Chem. Lab Locker
3. Relinquished by: Jackie L. Reed	Date 09/22/05	Time 10:00	Received in good condition by: Locked in Env. Sector For Permanent Storage
4. Relinquished by:	Date	Time	Received in good condition by:

Assessment

RM-78-3
DATA ASSESSMENT REPORT
Page 1 of 8

FINAL STATUS SURVEY: East TBC Q1

1.0 DATA VERIFICATION

1.1 Data Acceptance

✓ Review the Implementation Checklist (RM-77-1) to verify that survey isolation and control measures were executed prior to FSS and are being maintained.

✓ Review RM-77, Final Status Survey Implementation, to verify that methods, techniques, and survey activities required for FSS have been applied in accordance with the appropriate procedures.

1.2 Field QC Records:

✓ Review all assessments, Condition Reports and audits to ensure that identified issues have been resolved.

Comments: _____

✓ Verify scan instrumentation was in calibration and the QC source checks were performed prior to and after surveys.

✓ Verify daily QC source checks for Canberra gamma spectroscopy detector properly logged prior to soil sample analysis.

1.3 Review Verification:

✓ Verify that the Data Quality Objectives are complete.

✓ Verify that the survey design has been technically reviewed.

RM-78-3
DATA ASSESSMENT REPORT
Page 2 of 8

✓ Verify that gamma spectroscopy results have received a technical review.

✓ Verify the Sample and Analysis Report (RM-59-1) is completed and reviewed.

Data Verification Completed: (Yes) No

Comments _____

Jodie L Reed
Assessor

9-22-05
Date

RM-78-3
DATA ASSESSMENT REPORT
Page 3 of 8

2.0 DATA VALIDATION

2.1 Documentation Review:

Perform documentation review for quality control purposes and validate the data collected is complete and appropriate for use as defined by the survey design. Documentation includes:

- ✓ Field measurement records
- ✓ Chain-of-custody
- ✓ Quality Control (QC) measurement records
- ✓ Current qualification of survey personnel
- ✓ Corrective Action Reports
- ✓ Data inputs (laboratory spectroscopy)
- ✓ Sample preparation techniques

2.2 Detection Limit Review:

- ✓ Scan MDCs are below established site DCGLs.
- ✓ Forced-count values are assigned as necessary when activity is not detected in a sample.
- ✓ Minimum Detectable Concentration (MDC) values of gamma spectroscopy are below established DCGLs.

2.3 Quality Control (QC) Data Review:

- ✓ Quality Control (QC) data results have received required reviews and are complete and consistent.
- ✓ Results of judgmental samples have been reviewed and evaluated.
- ✓ Review to ensure that the analytical results of judgmental samples do not impact the evaluation for unrestricted release of the survey area.

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DATA ASSESSMENT REPORT
Page 4 of 8

2.4 Qualification of Data:

Statistical radionuclide-specific measurements for completeness. Evaluate the survey for determination of data usability and confirm that sufficient qualified data are present for the decision process.

a. Total number of statistical samples planned for the survey: 15

b. Total number of statistical samples determined as valid: 18

c. Calculate % Completeness: $\frac{b \times 120}{a}$ = 144 %

✓ Qualified data are ≥100% completeness and are sufficient to support the Sign Test requirement for determination of unrestricted release.

Data Validation Completed: (Yes) No

Comments: _____

Jodie L. Reed
Assessor

9-22-05
Date

RM-78-3
DATA ASSESSMENT REPORT
Page 5 of 8

3.0 DATA QUALITY ASSESSMENT

3.1 Review the DQOs and Survey Design:

✓ Confirm that all inputs to the decision have been reviewed and are complete.

✓ Verify that boundaries or constraints identified in the survey area have not affected the quality of the data.

✓ Review the Statement of Hypothesis and confirm that it remains relevant.

✓ Confirm that Type I and Type II error limits are consistent with DQOs.

✓ Confirm that the survey design is consistent with DQOs and that the appropriate number of data points were obtained.

3.2 Preliminary Review:

3.2.1 Preliminary Evaluation:

N/A Quality Assessment (QA) reports consistent with procedure RM-79, Final Status Survey Quality Control.

✓ Survey is of sufficient intensity to satisfy classification requirement.

✓ Potential trends of radioactivity levels in the survey area do not impact a decision for unrestricted release.

Comments: _____

RM-78-3
DATA ASSESSMENT REPORT
Page 6 of 8

3.2.2 Calculate Basic Statistical Quantities:

a. Number of qualified data points 18

b. Calculation of the Mean 0.0056

c. Calculation of the Median 0.0054

d. Calculation Standard Deviation 0.0106

NA Attach graphic representation of the data if any radionuclide-specific measurements exceed 50% of the DCGL.

✓ Sample QA/QC measurements consistent with FSS data

3.3 Statistical Evaluation:

NOTE: If all measurement data are less than the $DCGL_w$, statistical testing in not required and the survey unit meets the regulatory requirement for unrestricted release.

✓ All survey measurements are below the $DCGL_w$.

3.3.1 Verify Assumptions of the Statistical Test

NA Review the posting plot to verify that the if data exhibits spatial independence. Spatial trends must be investigated and resolved prior to further assessment.

NA Review to verify dispersion symmetry. The appearance of skewed data must be investigated for cause and documented prior to further assessment.

RM-78-3
DATA ASSESSMENT REPORT
Page 7 of 8

NA Review the dataset standard deviation and range for data variance. Questionable data must be investigated for cause and documented prior to further assessment.

NA Compare the prospective power curve with the retrospective power curve. Verify that the data exhibits adequate power and confirm that the sample size is sufficient to satisfy the DQOs.

3.4 Draw Conclusions from the Data:

3.4.1 Investigation Levels and Response Actions

✓ Determine if data results have exceeded any investigation level. Document findings. No investigation levels exceeded

3.4.2 Evaluation for Unrestricted Release

Select applicable conclusion:

✓ Survey area acceptance criteria met and survey area satisfies the requirements for unrestricted release:

✓ All concentrations are less than the $DCGL_w$. The Null Hypothesis is rejected.

NA The mean concentration of the survey area is below the $DCGL_w$ but individual measurements in the survey unit exceed the $DCGL_w$. The Sign Test and EMC evaluation are successful and the Null Hypothesis is rejected.

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DATA ASSESSMENT REPORT
Page 8 of 8

NA Survey area acceptance criteria not met and survey area fails to satisfy the requirements for unrestricted release:

NA The mean concentration in the survey area exceeds the $DCGL_w$. and the null hypothesis is confirmed.

NA The mean concentration of the survey area is below the $DCGL_w$ but individual measurements in the Unit exceed the $DCGL_w$.. The Sign Test and EMC evaluation are unsuccessful and the null hypothesis is confirmed.

Data Quality Assessment Completed: Yes No

Comments Statistical quantities provided in Attachment 1

Jodie L. Reed — Assessor — 12-6-05 Date

Reviews:

Technical Review — 12-6-05 Date

ES Superintendent — 1/3/06 Date

RP&ES Manager — 1-23-06 Date

RM 78-3, Attachment 1
Statistical Quantities

Release Record East TBCq$_1$1
Base Elevation Turbine Building Excavation Area

Sample Number	Results*		Statitical Calculations			
	Cs-137 (pCi/g)	Co-60 (pCi/g)	Weighted Sum (SOR)	Wt Sum < DCGLw? **	DCGLw - Wt Sum	Sign
1	-0.0003	0.0033	0.0010	yes	0.9990	+1
2	0.0022	0.0330	0.0105	yes	0.9895	+1
3	0.0239	0.0411	0.0148	yes	0.9852	+1
4	0.0144	-0.0407	-0.0115	yes	0.9885	+1
5	0.0307	0.0080	0.0051	yes	0.9949	+1
6	0.0331	-0.0050	0.0012	yes	0.9988	+1
7	-0.0322	-0.0362	-0.0140	yes	0.9860	+1
8	-0.0144	0.0279	0.0075	yes	0.9925	+1
9	0.0221	0.0126	0.0058	yes	0.9942	+1
10	-0.0006	-0.0060	-0.0019	yes	0.9981	+1
11	-0.0161	-0.0225	-0.0084	yes	0.9916	+1
12	0.0195	0.0085	0.0043	yes	0.9957	+1
13	0.0453	0.0301	0.0132	yes	0.9868	+1
14	0.0310	0.0339	0.0132	yes	0.9868	+1
15	0.0071	0.0022	0.0013	yes	0.9987	+1
16	-0.0002	0.0316	0.0098	yes	0.9902	+1
17	0.2399	0.0069	0.0223	yes	0.9777	+1
18	0.0803	0.0615	0.0259	yes	0.9741	+1

Mean:	0.0270	0.0106	0.0056
Std. Dev.:	0.0590	0.0269	0.0106
Median:	0.0170	0.0083	0.0054
Maximum:	0.2399	0.0615	0.0259

Number of Positive Differences (S+):	n/a
Critical Value, *k*, Table I.3 of *Marssim*:	n/a
S+ > than *k*?:	n/a
Survey Unit Pass or Fail:	***PASS***

**Note: Forced-Count values are used for samples with activity levels below the MDA.*

***Note: If all measurement data are less than the DCGL$_w$, the Sign Test is not required.*

QA/QC

RM-79-1
FSS QUALITY CONTROL EVALUATION RESULTS

FSS Package # East TBC 91 QC Package # East TBC 91

QC Measurement Type	Acceptance Criteria Met*?	Reference
✓ 1. Replicate Scan	(Yes) / No	Step 5.1.3
2. Sample Recounts		Step 5.1.4.1
✓ a. In-house	(Yes) / No	
NA b. Third party	Yes / No	
3. Split Samples		Step 5.1.4.2
✓ c. In-house	(Yes) / No	
NA d. Third party	Yes / No	

*NOTE: If Acceptance Criteria is not met, completion of Attachment RM-79-2, FSS Quality Control Investigation Results, is required.

Comments:
Findings of independent in-process surveys were consistent with the BRP evaluation for unrestricted release. (NRC Inspection Report 050-00155/05-004) See Audits

Reviews:

Evaluator — Date: 9-27-05

Technical Review — Date: 12-6-05

QA Verification Worksheet
In-House Sample Recounts

Release Record East $TBC_{q1}1$
Base Elevation Turbine Building Excavation Area

Date: 9/20/05

QA Package: East $TBC_{q1}1$ Turbine Building Excavation Area

QA Type: Sample Recounts

Lab: In-House

Table 1:
NRC 84750 Criteria

Resolution	Ratio
<4	N/A
4-7	0.5-2.0
8-15	0.6-1.66
16-50	0.75-1.33
51-200	0.8-1.25
>200	0.85-1.18

			A	B	C		D	E	F	G	
Sample No.	Plant Nuclide	BRP Result Below MDA	BRP Results (pCi/g)	BRP 1-sigma Error (pCi/g)	BRP Resolution (pCi/g) A/B	Recount Results Below MDA	Recount Results (pCi/g)	Ratio A/D	Resolution (Compare C w/ Table 1)	Ratio (Table 1)	*Results in Agreement (Compare E with G)
8	Co-60	<	0.0704	n/a	n/a	<	0.0619	1.1373	<4	n/a	YES
8	Cs-137	<	0.0386	n/a	n/a	<	0.0440	0.8773	<4	n/a	YES
12	Co-60	<	0.0658	n/a	n/a	<	0.0668	0.9850	<4	n/a	YES
12	Cs-137	<	0.0526	n/a	n/a		0.0368	1.4293	<4	n/a	YES

< Indicates results less than the MDA; recorded results are MDA values.

**Note: All analyses comparisons not in agreement must be investigated per RM-79.*

QA Verification Worksheet
In-House Split Sample Comparison

Release Record East $TBC_{q1}1$
Base Elevation Turbine Building Excavation Area

Date: 9/20/05

QA Package: East $TBC_{q1}1$ Turbine Building Excavation Area

QA Type: Split Sample

Lab: In-House

Table 1:
NRC 84750 Criteria

Resolution	Ratio
<4	N/A
4-7	0.5-2.0
8-15	0.6-1.66
16-50	0.75-1.33
51-200	0.8-1.25
>200	0.85-1.18

			A	B	C		D	E	F	G	
Sample No.	Plant Nuclide	BRP Result Below MDA	BRP Results (pCi/g)	BRP 1-sigma Error (pCi/g)	BRP Resolution (pCi/g) A/B	Recount Results Below MDA	Recount Results (pCi/g)	Ratio A/D	Resolution (Compare C w/ Table 1)	Ratio (Table 1)	*Results in Agreement (Compare E with G)
7	Co-60	<	0.0509	n/a	n/a	<	0.0711	0.7159	<4	n/a	YES
7	Cs-137	<	0.0393	n/a	n/a	<	0.0455	0.8637	<4	n/a	YES

< Indicates results less than the MDA; recorded results are MDA values.

**Note: All analyses comparisons not in agreement must be investigated per RM-79.*

Additional Sampling Requirements

Tritium in Soil

Release Record East $TBC_{Q1}1$
Base Elevation Turbine Building Excavation Area

Sample Number	Tritium in Soil pCi/g
7	0.366
8	0.839
12	0.373

Mean: 0.526
Median: 0.373
St. Dev: 0.271

Note: The DCGL for Tritium is 327 pCi/g.
Sample results are less than 0.3% of the DCGL

GENERAL ENGINEERING LABORATORIES, LLC

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Certificate of Analysis Report for
for
ROCK001 Big Rock Nuclear Facility

Client SDG: 146545 GEL Work Order: 146545

Sample(s) Contained within this report:

Lab Sample ID	Client Sample ID	Sample Description	Collected
146545001	East TBC Q11 #7	N/A	09/20/2005 12:00
146545002	East TBC Q11 #8	N/A	09/20/2005 12:00
146545003	East TBC Q11 #12	N/A	09/20/2005 12:00
146545004	East TBC Q11 #7	N/A	09/20/2005 12:00
146545005	East TBC Q11 #8	N/A	09/20/2005 12:00
146545006	East TBC Q11 #12	N/A	09/20/2005 12:00

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

This data report has been prepared and reviewed in accordance with General Engineering Laboratories, LLC standard operating procedures. Please direct any questions to your Project Manager, Cheryl Jones.

Reviewed by

GENERAL ENGINEERING LABORATORIES, LLC

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10 CFR Part 50/61 Certificate of Analysis

GEL Sample ID:	146545001	Client:	Big Rock Nuclear Facility
Client Sample ID:	East TBC Q11 #7	Collect Date:	September 20, 2005
Matrix:	Soil	Receive Date:	September 27, 2005
Amount of Sample Received:		Report Date:	October 11, 2005

Analyte	Aliquot (g)	Run Date	Activity[2]	Uncertainty	MDA[1]	RL	Units	Qualifier
H-3	8.27E+02	10/07/05	5.78E+03	3.02E+02	2.74E+02	5.00E+02	pCi/L	3

Note(s):1. Calculated MDAs are a-posteriori values.

2. Activity concentration net +/- 2 sigma overall on reference date.

3. Results are statistically positive at the 99.9% confidence level (activity is greater than three times the one sigma uncertainty)

H Analytical holding time exceeded.

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10 CFR Part 50/61 Certificate of Analysis

GEL Sample ID:	146545002	Client:	Big Rock Nuclear Facility
Client Sample ID:	East TBC Q11 #8	Collect Date:	September 20, 2005
Matrix:	Soil	Receive Date:	September 27, 2005
Amount of Sample Received:		Report Date:	October 11, 2005

Analyte	Aliquot (g)	Run Date	Activity[2]	Uncertainty	MDA[1]	RL	Units	Qualifier
H-3	8.06E+02	10/07/05	1.21E+04	4.00E+02	2.68E+02	5.00E+02	pCi/L	3

Note(s):1. Calculated MDAs are a-posteriori values.

2. Activity concentration net +/- 2 sigma overall on reference date.

3. Results are statistically positive at the 99.9% confidence level (activity is greater than three times the one sigma uncertainty)

H Analytical holding time exceeded.

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10 CFR Part 50/61 Certificate of Analysis

GEL Sample ID:	146545003	**Client:**	Big Rock Nuclear Facility
Client Sample ID:	East TBC Q11 #12	**Collect Date:**	September 20, 2005
Matrix:	Soil	**Receive Date:**	September 27, 2005
Amount of Sample Received:		**Report Date:**	October 11, 2005

Analyte	Aliquot (g)	Run Date	Activity[2]	Uncertainty	MDA[1]	RL	Units	Qualifier
H-3	8.47E+02	10/07/05	5.76E+03	3.03E+02	2.76E+02	5.00E+02	pCi/L	3

Note(s):1. Calculated MDAs are a-posteriori values.

2. Activity concentration net +/- 2 sigma overall on reference date.

3. Results are statistically positive at the 99.9% confidence level (activity is greater than three times the one sigma uncertainty)

H Analytical holding time exceeded.

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10 CFR Part 50/61 Certificate of Analysis

GEL Sample ID:	146545004	Client:	Big Rock Nuclear Facility
Client Sample ID:	East TBC Q11 #7	Collect Date:	September 20, 2005
Matrix:	Soil	Receive Date:	September 27, 2005
Amount of Sample Received:		Report Date:	October 11, 2005

Analyte	Aliquot (L)	Run Date	Activity[2]	Uncertainty	MDA[1]	RL	Units	Qualifier
H-3	1.00E-02	10/07/05	3.66E-01	1.91E-02	1.73E-02	6.00E+00	pCi/g	3
Moisture		09/28/05	6.30E+00				percent	H

Note(s):1. Calculated MDAs are a-posteriori values.

2. Activity concentration net +/- 2 sigma overall on reference date.

3. Results are statistically positive at the 99.9% confidence level (activity is greater than three times the one sigma uncertainty)

H Analytical holding time exceeded.

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10 CFR Part 50/61 Certificate of Analysis

GEL Sample ID:	146545005	Client:	Big Rock Nuclear Facility
Client Sample ID:	East TBC Q11 #8	Collect Date:	September 20, 2005
Matrix:	Soil	Receive Date:	September 27, 2005
Amount of Sample Received:		Report Date:	October 11, 2005

Analyte	Aliquot (L)	Run Date	Activity[2]	Uncertainty	MDA[1]	RL	Units	Qualifier
H-3	1.00E-02	10/07/05	8.39E-01	2.76E-02	1.85E-02	6.00E+00	pCi/g	3
Moisture		09/28/05	7.25E+00				percent	H

Note(s):1. Calculated MDAs are a-posteriori values.

2. Activity concentration net +/- 2 sigma overall on reference date.

3. Results are statistically positive at the 99.9% confidence level (activity is greater than three times the one sigma uncertainty)

H Analytical holding time exceeded.

GENERAL ENGINEERING LABORATORIES, LLC

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10 CFR Part 50/61 Certificate of Analysis

GEL Sample ID:	*146545006*	**Client:**	**Big Rock Nuclear Facility**
Client Sample ID:	**East TBC Q11 #12**	**Collect Date:**	**September 20, 2005**
Matrix:	**Soil**	**Receive Date:**	**September 27, 2005**
Amount of Sample Received:		**Report Date:**	**October 11, 2005**

Analyte	Aliquot (L)	Run Date	Activity[2]	Uncertainty	MDA[1]	RL	Units	Qualifier
H-3	1.00E-02	10/07/05	3.73E-01	1.96E-02	1.79E-02	6.00E+00	pCi/g	3
Moisture		09/28/05	6.26E+00				percent	H

Note(s):1. Calculated MDAs are a-posteriori values.

2. Activity concentration net +/- 2 sigma overall on reference date.

3. Results are statistically positive at the 99.9% confidence level (activity is greater than three times the one sigma uncertainty)

H Analytical holding time exceeded.

GENERAL ENGINEERING LABORATORIES, LLC

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QC Summary

Report Date: October 11, 2005
Page 1 of 2

Big Rock Nuclear Facility
10269 US 31 North
Charlevoix, Michigan

Contact: Mr. Chuck Barsy

Workorder: 146545

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Rad Liquid Scintillation										
Batch 467482										
QC1200947468 146545001 DUP										
Tritium		5780 +/-302		5800 +/-302	pCi/L	0		(0%-20%)	MXP1	10/07/05 20:57
QC1200947470 LCS										
Tritium	7560			6690 +/-312	pCi/L		89	(75%-125%)		10/07/05 23:03
QC1200947467 MB										
Tritium			U	76.4 +/-160	pCi/L					10/07/05 19:55
QC1200947469 146545001 MS										
Tritium	15200	5780 +/-302		22000 +/-522	pCi/L		107	(75%-125%)		10/07/05 22:00
Batch 467484										
QC1200947480 146545004 DUP										
Tritium		0.366 +/-0.0191		0.367 +/-0.0191	pCi/g	0		(0%-20%)	MXP1	10/07/05 20:57
QC1200947482 LCS										
Tritium	7.56			6.69 +/-0.312	pCi/g		89	(75%-125%)		10/07/05 23:03
QC1200947479 MB										
Tritium			U	0.0764 +/-0.160	pCi/g					10/07/05 19:55
QC1200947481 146545004 MS										
Tritium	0.959	0.366 +/-0.0191		1.39 +/-0.033	pCi/g		107	(75%-125%)		10/07/05 22:00

Notes:
The Qualifiers in this report are defined as follows:

- ** Indicates the analyte is a surrogate compound.
- B Target analyte was detected in the sample as well as the associated blank.
- BD Results below the MDC or low tracer recovery.
- E Concentration of the target analyte exceeds the instrument calibration range.
- H Analytical holding time exceeded.
- J Indicates an estimated value.
- U Target analyte was analyzed for but not detected above the MDL or LOD.
- UI Uncertain identification for gamma spectroscopy.
- X Lab-specific qualifier-please see case narrative, data summary package or contact your project manager for details.
- d The 2:1 depletion requirement was not met for this sample
- h Sample preparation or preservation holding time exceeded.

QC Summary

Workorder: 146545

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

FSS East TBC$_{Q2}$1

RM-72-2

CHAIN-OF-CUSTODY RECORD FOR SAMPLES SHIPPED OFF-SITE

Sample Number	Sampling Location	Date	Time	Final Disposition of Sample
East TBC$_{Q2}$1-#7	Grid #319 (6.9)(3.7)	09/20/05	0912	GEL
East TBC$_{Q2}$1-#8	Grid #307 (6.9)(3.6)	09/20/05	0918	GEL
East TBC$_{Q2}$1-#12	Grid #271 (6.7)(3.5)	09/20/05	0936	GEL

Comments: Samples for Tritium analysis + % moisture.

1. Relinquished by:	Date	Time	Received in good condition by:
Jordie L. Reed	09/20/05	1032	Locked in chem. lab locker.
2. Relinquished by:	Date	Time	Received in good condition by:
Jordie L. Reed	9/22/05	1415	Sheila McKinney

RETURN THIS FORM WITH
ANALYSIS RESULTS TO:

CHARACTERIZATION SUPERVISOR
CONSUMERS ENERGY
BIG ROCK POINT
10269 U.S. 31 NORTH
CHARLEVOIX, MICHIGAN 49720

Page: 1 of 1
Project #:
GEL Quote #:
COC Number (1):
PO Number:

GEL Chain of Custody and Analytical Request

General Engineering Laboratories, LLC
2040 Savage Road
Charleston, SC 29407
Phone: (843) 556-8171
Fax: (843) 766-1178

Client Name: Duke Power Phone #: 231-547-8120
Project/Site Name: Big Rock Point Fax #: 231-547-2594
Address: 10269 US 31 N. Charlevoix, MI 49720
Collected by: J.L. Reed Send Results To: C. Barry

Sample Analysis Requested (5) (Fill in the number of containers for each test)

Sample ID	Date Collected (mm-dd-yy)	Time Collected (Military) (hhmm)	QC Code (2)	Field Filtered (3)	Sample Matrix (4)	Radioactive	TSCA Regulated	Total number of containers	Tritium		% Moisture									<-- Preservative Type (6)	Comments Note: extra sample is required for sample specific QC
									3		3										
East TBC #7	09-20-05	0912						1	X		X										
East TBC #8	9-20-05	0918						1	X		X										
East TBC #12	09-20-05	0936						1	X		X										

TAT Requested: Normal: ____ Rush: X Specify: 14 d (Subject to Surcharge) Fax Results: (Yes) / No Circle Deliverable: C of A / (QC Summary) / Level 1 / Level 2 / Level 3 / Level 4

Remarks: Are there any known hazards applicable to these samples? If so, please list the hazards

Tritium via vacuum extraction. Report tritium as pCi/gm in soil; report tritium as pCi/L in water using a mass of 1500 g/L. Also report % moisture

Chain of Custody Signatures

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
1 Jodie Reed	9/20/05	1415	1 Sheila McKinney	9/20/05	1415
2			2		
3			3		

Sample Shipping and Delivery Details

GEL PM:
Method of Shipment: Date Shipped:
Airbill #:
Airbill #:

1.) Chain of Custody Number = Client Determined
2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite
3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.
4.) Matrix Codes: DW = Drinking Water, GW = Groundwater, SW = Surface Water, WW = Waste Water, W = Water, SO = Soil, SD = Sediment, SL = Sludge, SS = Solid Waste, O = Oil, F = Filter, P = Wipe, U = Urine, F = Fecal, N = Nasal
5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B/7470A - 1).
6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

For Lab Receiving Use Only
Custody Seal Intact? YES NO
Cooler Temp: ____ C

WHITE = LABORATORY YELLOW = FILE PINK = CLIENT

Audits

LC#31596 DWP
CC: KEP, WJT, LRP, SJL
ISRC
DCC File
Docket File

#8580
C.D
IR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

November 21, 2005

Mr. Kurt M. Haas
General Manager
Big Rock Point Nuclear Plant
Consumers Energy Company
10269 U.S. 31 North
Charlevoix, MI 49720

SUBJECT: BIG ROCK POINT INSPECTION REPORT 050-00155/05-004(DNMS)

Dear Mr. Haas:

On November 10, 2005, the NRC completed inspection activities at the Big Rock Point Nuclear Plant. The purpose of the inspection was to determine whether decommissioning activities were conducted safely and in accordance with NRC requirements. Specifically, during on-site inspections on August 22 through 25, and September 19 through 21, 2005, the inspector evaluated decommissioning and demolition activities, management oversight of decommissioning activities, radioactive waste management, final status surveys, and radiological safety. At the conclusion of on-site inspections on August 25 and September 21, 2005, the inspector discussed the inspection findings with you and members of your staff. On November 10, 2005, the inspector completed an in-office review of laboratory analysis results for soil samples collected during the September 19 through 21 inspection. The inspector conducted a telephone exit interview with members of your staff on November 10, 2005, to discuss the results of the in-office review of the laboratory results.

This inspection consisted of an examination of decommissioning activities at the Big Rock Point Nuclear Plant as they relate to safety and compliance with the Commission's rules and regulations. Areas examined during the inspection are identified in the enclosed report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities in progress, and interviews with personnel.

Based on the results of this inspection, the NRC did not identify any violations.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). The NRC's document system is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

We will gladly discuss any questions you may have regarding this inspection.

Sincerely,

Jamnes L. Cameron, Chief
Decommissioning Branch

Docket No.: 050-00155
License No.: DPR-6

Enclosure: Inspection Report 050-00155/05-004(DNMS)

cc w/encl: R. A. Fenech, Senior Vice President, Nuclear, Fossil, and Hydro Operations
John King, Michigan Public Service Commission
L. Shekter Smith, Michigan Department of Environmental Quality
Chief, Nuclear Facilities Unit, Michigan Department of Environmental Quality
Department of Attorney General (MI)
Emergency Management Division, Michigan Department of State Police

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.:	050-00155
License No.:	DPR-6
Report No.:	050-00155/05-004(DNMS)
Licensee:	Consumers Energy Company
Facility:	Big Rock Point Restoration Project
Location:	10269 U.S. 31 North Charlevoix, MI 49720
Dates:	August 22 through 25, 2005 (on-site), September 19 through 21, 2005 (on-site), and November 10, 2005 (in-office)
Inspector:	William G. Snell, Senior Health Physicist
Approved by:	Jamnes L. Cameron, Chief Decommissioning Branch, Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Consumers Energy Company
Big Rock Point Restoration Project
NRC Inspection Report 050-00155/05-004(DNMS)

This routine decommissioning inspection involved a review of the Consumers Energy Company's and its contractors' performance related to decommissioning and demolition activities, management oversight of decommissioning activities, radioactive waste management, inspection of final status surveys, and radiological safety. During this inspection period, major activities included demolition, decontamination, and scabbling of concrete surfaces inside containment and at the radwaste vaults, and final status surveys of the location of the former turbine, service and administration buildings.

Organization, Management and Cost Controls

- The inspector determined that the licensee was actively pursuing ways to maintain the restoration project on schedule while minimizing costs. (Section 1.0)

Decommissioning Performance and Status Review

- The inspector determined that the licensee was effective in ensuring that management's expectations for work performance were being communicated to the workforce. Although a considerable amount of work was being performed, the workforce was working safely and in accordance with license requirements. (Section 2.0)

Maintenance and Surveillance

- The licensee was doing an adequate job of preparing the containment building for the sphere dismantlement effort. (Section 3.0)

Occupational Radiation Exposure

- The inspector concluded that the radiological work practices of the licensee and contractor staff were adequate. (Section 4.0)

Inspection of Final Surveys

- Residual radioactive contamination in the turbine building excavation area was less than the licensee's unrestricted release limit of 5 picocuries per gram (pCi/g) as described in the approved License Termination Plan. The licensee's radioanalytical capability to determine residual radioactivity in soil samples was adequate. (Section 5.0)

Solid Radioactive Waste Management and Transportation

- The inspector determined that the licensee adequately controlled and stored radioactive waste in the radwaste building and radwaste yard. (Section 6.0)

Report Details[1]

1.0 Organization, Management and Cost Controls (36801)

1.1 Inspection Scope

The inspector evaluated the licensee's decommissioning planning, scheduling, and cost expenditure.

1.2 Observations and Findings

The licensee determined that the decline in background radiation levels in the containment building had slowed appreciably even though scabbing and other remediation activities were continuing. This was because most of the high dose areas had already been remediated or shielded, and the ongoing removal of surface material containing low levels of contamination was having a minimal impact on lowering the overall background radiation level. Because the background was remaining higher than expected, the licensee was unable to conduct adequate scanning to verify that building surfaces were remediated to less than 5000 disintegrations per minute (dpm) per 100 square centimeters (cm^2) that was required by the License Termination Plan (LTP). Since material verified as less than 5000 dpm/100 cm^2 could potentially be disposed of in a local landfill, the inability to conduct the verification meant concrete and debris would have to be disposed of as radioactive waste at a considerably higher cost. This has left the licensee with the option either to continuing to work to reduce the background, or disposing of the containment building concrete and other debris as radioactive waste. To continue to remediate to lower the background levels could delay the dismantlement of the containment structure and extend the site restoration effort by several months or longer, which would add to the cost of the project. However, disposing of the concrete and debris as radioactive waste would also increase the cost of the project. While both options will add millions of dollars in costs to the restoration project, at the time of the on-site inspections the licensee was moving toward the option of shipping the concrete and debris as radioactive waste. This would maintain the current schedule for completing the restoration project by late 2006. The licensee also indicated to the inspector that the LTP would have to be revised to reflect any change in the decommissioning planning and scheduling.

1.3 Conclusion

The inspector determined that the licensee was actively pursuing ways to maintain the restoration project on schedule while minimizing costs.

2.0 Decommissioning Performance and Status Review (71801)

2.1 Inspection Scope

The inspector attended and observed the conduct of licensee meetings regarding decommissioning activities, including daily management team meetings. The inspector

[1]A list of acronyms used in the report is included at the end of the Report Details.

performed plant tours to assess field conditions and decommissioning activities, and to verify that the licensee and its contracted workforce conducted work safely and in accordance with license requirements, and that radioactively contaminated material was controlled.

2.2 Observations and Findings

The inspector observed that licensee management representatives routinely toured the site to observe work and evaluate progress. Observations from these tours were discussed during the daily morning management meetings to ensure that expectations were being communicated to the work force and that managers and workers were focused on the same issues and concerns.

During site tours, the inspector observed licensee staff conducting decontamination of structural surfaces, demolition activities, and radiological surveys. The inspector noted that even though there was a significant amount of work being conducted by numerous work crews, the workers were attentive to other work being performed nearby.

2.3 Conclusion

The inspector determined that the licensee was effective in ensuring that management's expectations for work performance were being communicated to the workforce. Although a considerable amount of work was being performed, the workforce was working safely and in accordance with license requirements.

3.0 Maintenance and Surveillance (62801)

3.1 Inspection Scope

The inspector walked down areas of the containment building to assess the material condition of the facility and equipment.

3.2 Observations and Findings

The licensee's work force was focused on scabbling, jack-hammering, and completing the remediation of surface contamination in preparation for the sphere dismantlement. Additional efforts were under way to remove scaffolding, equipment and other materials. The licensee's goal was to complete all remediation activities in the containment building by late September so that the containment could be readied to start removing the sphere in mid-October. During the sphere removal no workers will be allowed inside the containment building. The inspector observed that a significant amount of material had been and was being removed from the containment building.

3.3 Conclusion

The licensee was doing an adequate job of preparing the containment building for the sphere dismantlement effort.

4.0 Occupational Radiation Exposure (83750)

4.1 Inspection Scope

The inspector evaluated the radiological work practices of licensee and contractor staff who conducted decommissioning activities.

4.2 Observations and Findings

During tours of the site, the inspector observed that workers adhered to proper radiological work practices while conducting decommissioning activities. Personnel were observed adhering to radiological boundaries, properly exiting contamination areas, wearing appropriate personal protective clothing for the work being conducted, and wearing dosimetry as required.

4.3 Conclusion

The inspector concluded that the radiological work practices of the licensee and contractor staff were adequate.

5.0 Final Status Survey (83801)

5.1 Inspection Scope

Independent radiological confirmatory surveys were conducted of the turbine building excavation area. Analyses were performed on radiologically contaminated soil samples provided by the licensee to assess the adequacy of the licensee's radioanalytical capability.

5.2 Observations and Findings

The Oak Ridge Institute for Science and Education (ORISE) conducted independent in-process confirmatory surveys for the NRC of the turbine building excavation area. The surveys included a 90 percent surface scan of the area using sodium iodide (NaI) scintillation detectors and the collection of five surface soil samples. Following the on-site inspection the licensee provided ORISE with three additional soil samples for an inter-laboratory comparison. These three samples contained detectable levels of radiological contamination. The eight soil samples were analyzed by ORISE for tritium (hydrogen-3), cobalt-60, cesium-137, europium-152, europium-154, europium-155 and manganese-54.

The soil surface scanning identified no areas of radiological contamination in excess of background levels. The ORISE analysis of the five soil samples collected during the inspection identified no contamination in excess of the licensee's unrestricted release limit of 5 picocuries per gram (pCi/g) as described in the licensee's License Termination Plan.

The analytical results of the three surface soil samples that were provided by the license to verify the adequacy of the licensee's radiological counting capability compared acceptably with ORISE's analysis of the samples. The results of the ORISE analyses are publicly available through NRC's Agencywide Documents Access and Management System (ADAMS) under Accession No. ML053220613.

5.3 Conclusion

Residual radioactive contamination in the turbine building excavation area was less than the licensee's unrestricted release limit of 5 picocuries per gram (pCi/g) as described in the approved License Termination Plan. The licensee's radioanalytical capability to determine residual radioactivity in soil samples was adequate.

6.0 Solid Radioactive Waste Management and Transportation (86750)

6.1 Inspection Scope

The inspector toured the radwaste yard and radwaste building to verify that radioactive waste stored in those areas was adequately labeled and controlled.

6.2 Observations and Findings

Both the radwaste yard and radwaste building contained numerous containers of varying types and sizes. Most of the containers were full or partially full or radioactive waste and were being temporarily stored until they could be shipped off-site for disposal. All the containers examined had legible radiological labeling that was indicative of what was in the container.

6.3 Conclusion

The inspector determined that the licensee adequately controlled and stored radioactive waste in the radwaste building and radwaste yard.

7.0 Exit Meeting Summary

The inspector presented preliminary inspection findings to members of the licensee management team at the conclusion of on-site inspection activities on August 25 and September 21, 2005. An additional telephone exit meeting was conducted on November 10, 2005, to provide the licensee with the results of the radiological analysis of soil samples collected during the on-site inspection conducted on September 19 through 21, 2005. The licensee acknowledged the findings presented. The licensee did not identify any documents or processes reviewed by the inspector as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Consumers Energy Company
* Kurt Haas, Site General Manager
* Ken Pallagi, Radiation Protection & Environmental Services Manager
* William Trubilowicz, Cost, Scheduling and Purchase Manager

* Persons present at the exit meetings.

INSPECTION PROCEDURES USED

IP 36801	Organization, Management & Cost Controls
IP 62801	Maintenance and Surveillance
IP 71801	Decommissioning Performance and Status Review
IP 83750	Occupational Radiation Exposure
IP 83801	Inspection of Final Surveys at Permanently Shutdown Reactors
IP 86750	Solid Radioactive Waste Management and Transportation of Radioactive Materials

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened	None
Closed	None
Discussed	None

PARTIAL LIST OF DOCUMENTS REVIEWED

Licensee documents reviewed and utilized during the course of this inspection are specifically identified in the "Report Details" above.

LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
DNMS	Division of Nuclear Materials Safety
LTP	License Termination Plan
NRC	Nuclear Regulatory Commission
ORISE	Oak Ridge Institute for Science and Education