

Addendum to Appendix F

Report of the Expert Panel on the Technical Causes of the Failure of Feijão Dam I
Addendum to Appendix F

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Report of the Expert Panel on the Technical Causes of the Failure of Feijão Dam I

Addendum to Appendix F

1. INTRODUCTION

This Addendum to Appendix F of the Report of the Expert Panel on the Technical Causes of the Failure of Feijão Dam I (“Expert Report”) was prepared by the Expert Panel at the request of Vale S.A.¹

As reported in the Expert Report, in connection with the development of the 3D computer model of Dam I, the Expert Panel reviewed and considered approximately 28 satellite images of the Córrego do Feijão B-I Dam (“Dam I”) taken during the periods of 1987 and 1998-2016 (*see* Expert Report, Appendix F, Sections 1 and 3.5, and Annex 2). After the publication of the Expert Report, the Expert Panel learned of the existence of additional satellite images of Dam I and requested the review and analysis of these images by Kohn Crippen Berger Ltd. (“KCB”). The Expert Panel’s goal in examining these additional images was to evaluate whether any relevant information about Dam I could be derived from these additional satellite images and determine whether they aligned with information that was relied upon by KCB in developing the 3D computer model of Dam I, or if adjustments or modifications to that computer model are required.

Ninety-three satellite images from the period 1967 to 2005 were downloaded and adapted to useable form by Geoapp s.r.l. (“Geoapp”). One of these satellite images was a declassified Keyhole satellite image from 1967, which was before the dam’s construction, and another was a declassified Keyhole satellite image from 1977, which was shortly after the dam’s initial construction. The remaining 91 satellite images were from Landsat satellites, and multiple photos were available for each year during the period from 1984 through 2005. A list of all satellite images reviewed by the Panel is available in Table 1.

KCB reviewed and analyzed these additional 93 satellite images in the same manner that it analyzed the previously considered 28 satellite images, as described in Appendix F. The Expert Panel oversaw and considered the analysis performed by KCB. Upon completion of the review, the Expert Panel concluded that no adjustments or modifications to the 3D computer model of Dam I was warranted and that the original conclusions of the Expert Panel on the technical causes of the failure of Dam I remain unchanged. The analysis of the additional satellite images follows below.

¹ Details regarding the Expert Panel and its mandate can be found at page 1 of the Expert Report, and/or at the website www.b1technicalinvestigation.com.

2. TOOLS AND DATA SOURCES

The declassified Keyhole satellite image from 1967 was not included in this assessment because it pre-dates the dam construction. The 1977 Keyhole satellite image was reviewed but not used for extracting geometric details of the tailings facility because the image quality was poor. The remaining 91 satellite images, obtained from Landsat satellites, were reviewed as part of this assessment. The images that were reviewed are summarized in Table 1.

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Table 1: Summary of 93 Satellite Images

Stage	Dam Crest El. (m)	Satellite Image(s)		
1	874.0	(2) 1977		
2	877.0	-		
3	879.0	-		
4	884.0	(3) April 19, 1984 (6) July 24, 1984 (9) February 17, 1985 (12) June 25, 1985	(4) June 6, 1984 (7) Aug 9, 1984 (10) April 22, 1985 (13) August 12, 1985	(5) July 8, 1984 (8) February 1, 1985 (11) May 8, 1985 (14) August 28, 1985
5	889.0	(15) January 3, 1986 (18) July 14, 1986 (21) September 16, 1986 (24) November 3, 1986 (27) June 15, 1987 (30) August 2, 1987 (33) October 5, 1987 (36) March 29, 1988 (39) June 17, 1988 (42) September 21, 1988 (45) May 19, 1989 (48) August 23, 1989	(16) February 20, 1986 (19) August 15, 1986 (22) October 2, 1986 (25) February 7, 1987 (28) July 1, 1987 (31) September 3, 1987 (34) November 22, 1987 (37) April 30, 1988 (40) July 19, 1988 (43) April 1, 1989 (46) June 4, 1989 (49) September 24, 1989	(17) May 27, 1986 (20) August 31, 1986 (23) October 18, 1986 (26) April 28, 1987 (29) July 17, 1987 (32) September 19, 1987 (35) January 25, 1988 (38) May 16, 1988 (41) August 4, 1988 (44) April 17, 1989 (47) June 20, 1989 (50) October 26, 1989
6	891.5	(51) March 3, 1990 (54) July 25, 1990 (57) Sept 27, 1990	(52) April 4, 1990 (55) August 26, 1990	(53) July 9, 1990 (56) September 11, 1990
7	895.0	(58) January 1, 1991 (61) July 30, 1992	(59) April 7, 1991 (62) August 31, 1992	(60) July 12, 1991
8	899.0	(63) March 27, 1993 (66) September 19, 1993 (69) February 10, 1994 (72) June 18, 1994	(64) April 28, 1993 (67) November 6, 1993 (70) May 1, 1994 (73) August 5, 1994	(65) August 18, 1993 (68) December 8, 1993 (71) June 2, 1994 (74) September 22, 1994
9	905.0	(75) July 7, 1995 (78) July 28, 1997	(76) June 7, 1996	(77) August 26, 1996
10	910.0	(79) August 16, 1998 (82) September 22, 2000	(80) August 19, 1999 (83) April 18, 2001	(81) August 21, 2000 (84) September 9, 2001
11	916.5	(85) April 21, 2002	(86) July 26, 2002	
12	922.5	(87) August 14, 2003		
13	929.5	(88) July 31, 2004 (91) February 24, 2005	(89) August 16, 2004 (92) April 13, 2005	(90) December 6, 2004 (93) August 19, 2005
14	937.0	-		
15	942.0	-		

Note(s) 1. Image 1 (1967) not reviewed as part of the supplementary satellite image assessment because it pre-dates the dam construction.

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The satellite images were compiled and reviewed using computer aided design (CAD) software. The satellite images were set to the projection and datum listed in Table 2.

Table 2: Projection and Datum Summary

Item	Description
Projection	Universal Transverse Mercator (UTM)
Zone	23S
Datum	SIRGAS2000

3. SATELLITE IMAGE REVIEW

The additional satellite images were reviewed with the intent of checking, and updating, where necessary, the distance between the dam crest and the pond at Dam I at each stage of construction (termed “pond boundary”). To aid the review, AutoCAD Civil 3D 2018™ (Civil 3D) was used as a central repository to import the satellite images for review and interpretation. This review included estimating the pond boundaries for each satellite image, as shown in Annex I. The boundary separating the slimes from the fine and coarse tailings is referred to herein as the “Slimes boundary.” The process used in the original assessment was to define this boundary between slimes and fine and coarse tailings using an offset from the pond boundary. That offset was established based on the distance upstream of the pond boundary that the cone penetration tests (CPTs) showed evidence of slimes; in the original assessment it was determined that only the most upstream CPTs showed evidence of slimes and that those through the dam slope did not. Based on this, the Slimes boundary was positioned between these CPTs in the original assessment.

The offset between the pond boundary and Slimes boundary in the original assessment was used with the updated pond boundary in the current assessment to determine an updated Slimes boundary. The updated Slimes boundary in the current assessment was also checked for consistency with the CPTs that showed slimes and those that did not.

Using the updated pond boundary, an estimate of the beach length for each satellite image was determined. Since each construction stage spanned several years, multiple satellite images were available for a single construction stage. Each satellite image had a different beach length; therefore, the average of the measured beach lengths for a specific construction stage was used to calculate the average beach length for that stage. Using the beach length estimates of each satellite image, in combination with the data collected from the original 28 satellite images, three-dimensional pond elevation surfaces for each construction stage were modelled in Civil 3D. A summary of the revised pond elevations is presented in Table 3.

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Table 3: Summary of Pond Elevations

Stage	Dam Crest El. (m)	Pond El. (m)	Stage	Dam Crest El. (m)	Pond El. (m)
1	874.0	870.2	9	905.0	899.9
2	877.0	873.2	10	910.0	904.5 (904.9)
3	879.0	876.2	11	916.5	910.6 (910.1)
4	884.0	880.8 (880.0)	12	922.5	917.3 (917.6)
5	889.0	885.8 (885.1)	13	929.5	924.9 (924.5)
6	891.5	887.9 (887.2)	14	937.0	931.9
7	895.0	891.1 (890.5)	15	942.0	936.2
8	899.0	895.1 (894.6)			

Note(s) 1. Pond elevations summarized in Appendix F shown in bold font were updated as part of the supplementary satellite image assessment.

A revised pond boundary surface, representing the intersection between pond and beach, was created for the full height of Dam I. This boundary is presented on the three section lines used in the original assessment (termed 1-1', 2-2' and 3-3' – *see* Figure 1) on Figure 2. The Slimes boundary was also updated to reflect the updated pond boundary, as discussed above.

The results of the satellite image review indicate that the revised pond boundary is generally consistent with the original pond boundary near the right abutment (*see* Section 1-1' on Figures 1 and 2). Towards the left abutment, the pond boundary was observed to be up to 50 m closer to the dam crest in the early stages of construction (*see* Section 3-3' on Figures 1 and 2). Because the Slimes boundary is based on a constant offset from the pond boundary, this update also moves the Slimes boundary approximately 50 m downstream in the area of the left abutment. The modelled pond and slimes boundaries for each construction stage are shown on the satellite images in Annex I.

The aerial and satellite images were not used to delineate tailings downstream of the Slimes boundary into similar types of tailings (i.e., fine and coarse tailings) or to determine the boundaries between these materials. That delineation was based on CPT data in the original assessment and is not affected by the interpretation of these additional satellite images. The delineation between these materials used in the original analyses is shown on Figure 3, which also shows the revised pond and slimes boundaries.

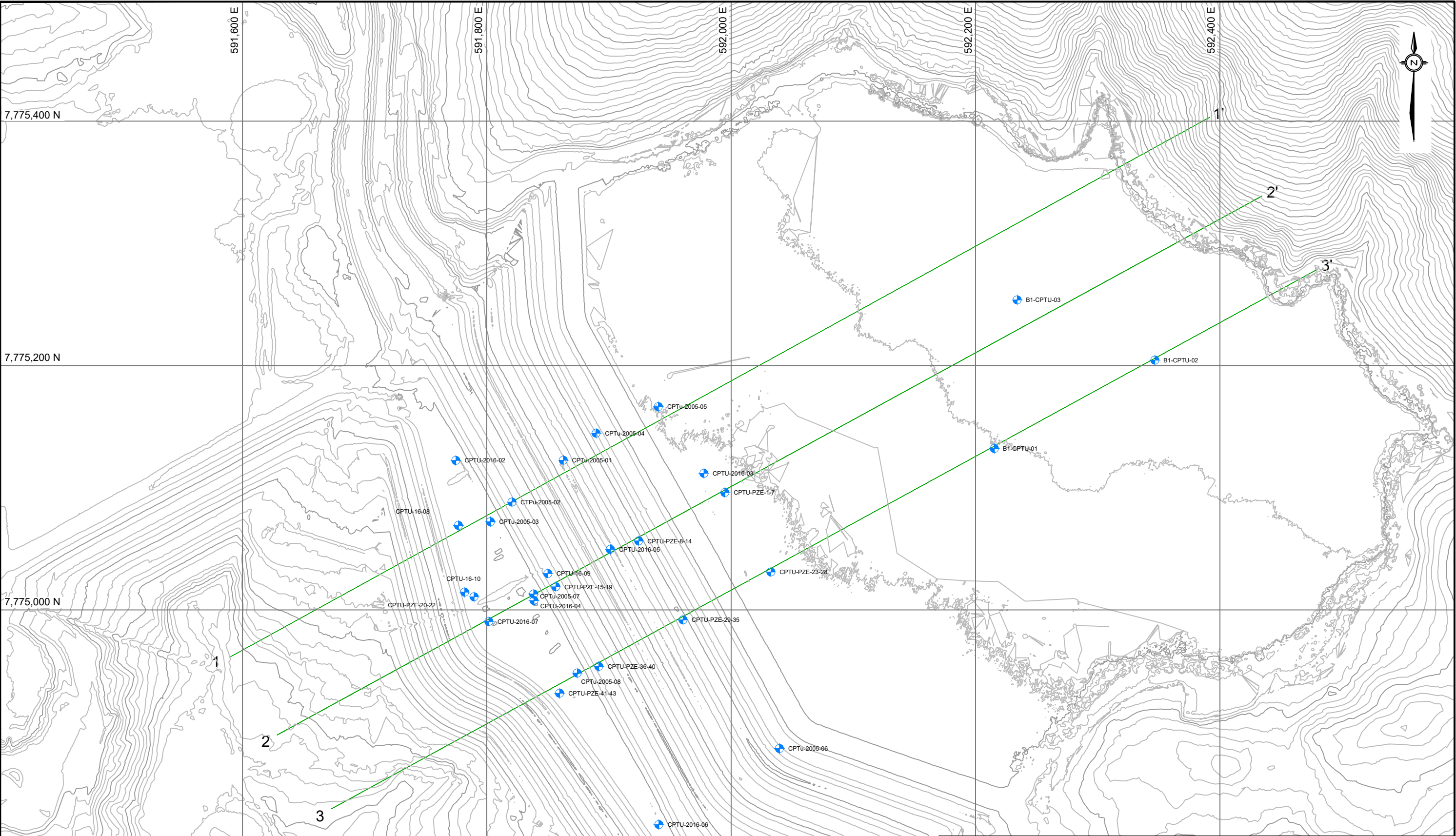
The CPT data used to delineate the fine and coarse tailings were concentrated around the three section lines shown in Figure 1. In the original assessment, the data interpreted on these sections were projected to the abutments in a direction normal to the section lines. The direction of this projection was checked against the aerial images in the original assessment. Similar checks were completed in this supplementary review and were found to be consistent.

4. RELEVANCE OF ADDITIONAL DATA

Following this review, the Expert Panel has concluded that the adjustments to the pond and slimes boundaries for the early stages of construction would not have a significant effect on the outcome of the investigation and that they do not warrant an update to the numerical modelling. The main reasons for this conclusion are:

- The adjustments to the pond boundary would not affect the delineation between fine and coarse tailings because that was based on CPT data. As discussed earlier, the CPT interpretations were made at the section lines shown in Figure 2 and extrapolated to the abutments. The additional aerial images support the extrapolation of the boundaries between these tailings types to the abutments because the conditions at the abutments were typically similar to those on the closest section lines.
- The revised pond boundary for early years of construction would not have a significant effect on the overall response of the numerical models because it would not alter the delineation of the fine and coarse tailings layers. For the same reason, the calibration of the seepage models was more heavily weighted towards data from later years of construction, the overall impact of these additional satellite images also would be minor.
- The updated Slimes boundary is too far upstream to have a significant effect on the results of the deformation modelling. The deformation analyses found that the main stress concentrations occurred beneath the slope of the dam. It can be inferred from the current aerial images that the slimes were located upstream of that region based on the approach used in the original analysis of offsetting the Slimes boundary approximately 115 m upstream of the pond boundary. This estimated Slimes boundary is supported by the CPT data.

Figures



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.

LEGEND:

- DESIGN SECTIONS
- CPTu LOCATION
- 2 m CONTOURS (JUNE 2018 TOPOGRAPHIC SURVEY)
- 10 m CONTOURS (JUNE 2018 TOPOGRAPHIC SURVEY)

1:3,000

0 30 60 m

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

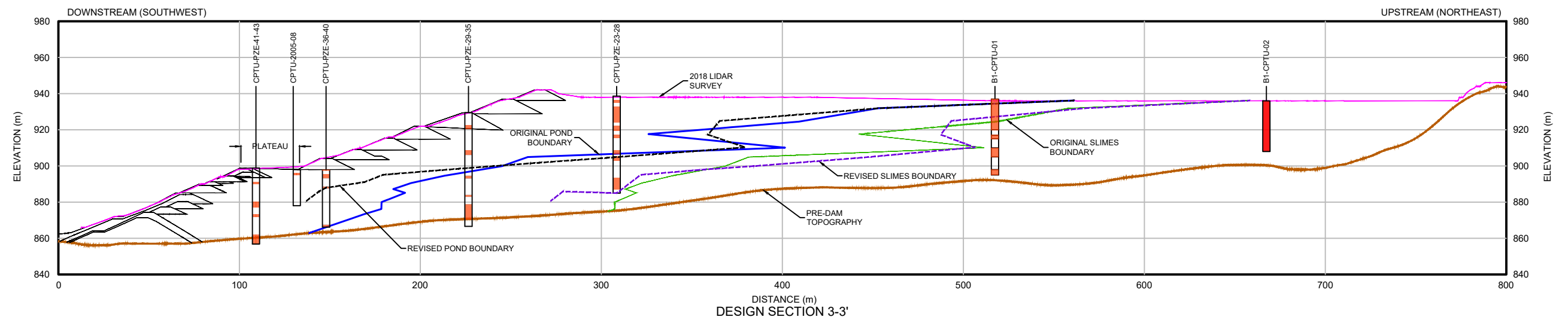
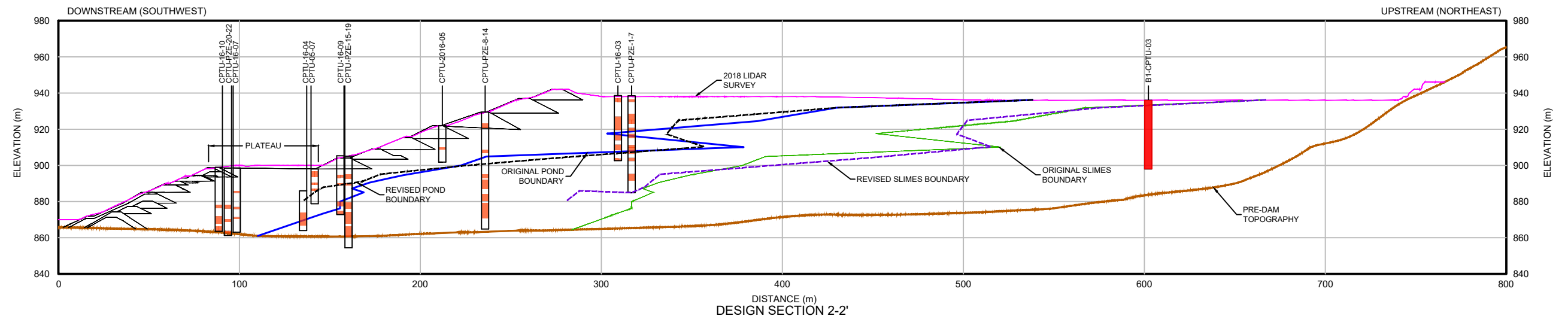
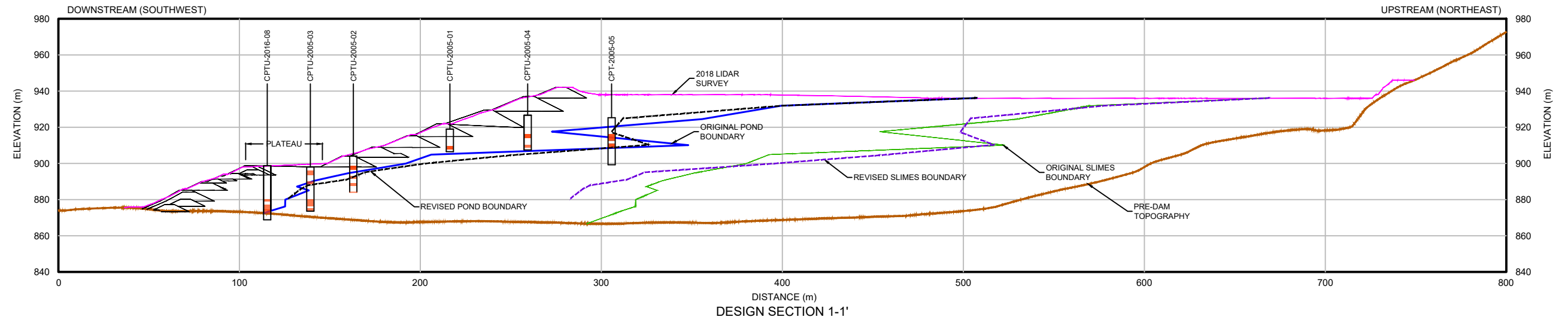
TITLE

**DAM 1 DESIGN SECTION LOCATIONS
PLAN VIEW**

SCALE
1:3,000

PROJECT No.
A03355A02

FIG. No.
FIGURE 1



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.

LEGEND:

- PRE-DAM TOPOGRAPHY
- 2018 LIDAR SURVEY
- CONTAINMENT BERMS
- ORIGINAL POND BOUNDARY
- ORIGINAL SLIMES BOUNDARY
- REVISED POND BOUNDARY
- REVISED SLIMES BOUNDARY
- FINE TAILINGS
- SLIMES

1:2,500 0 25 50 m

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

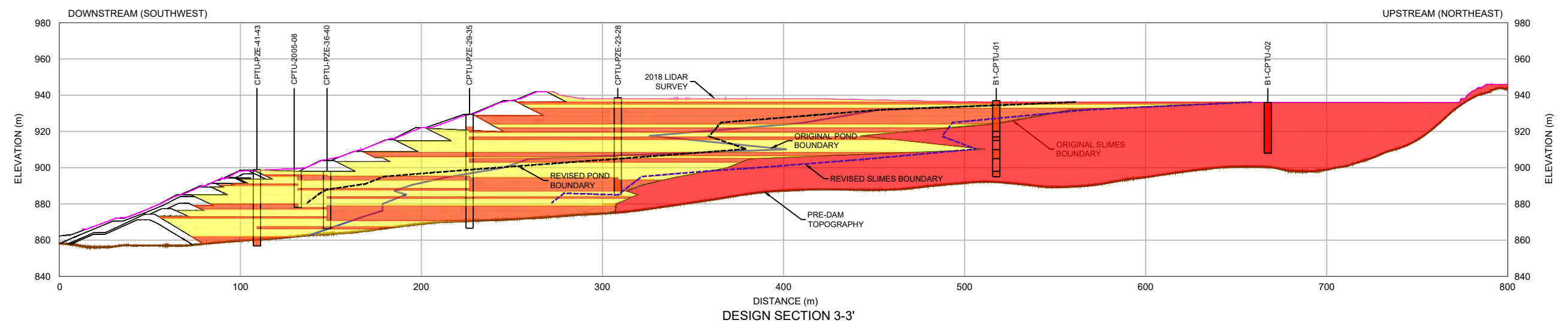
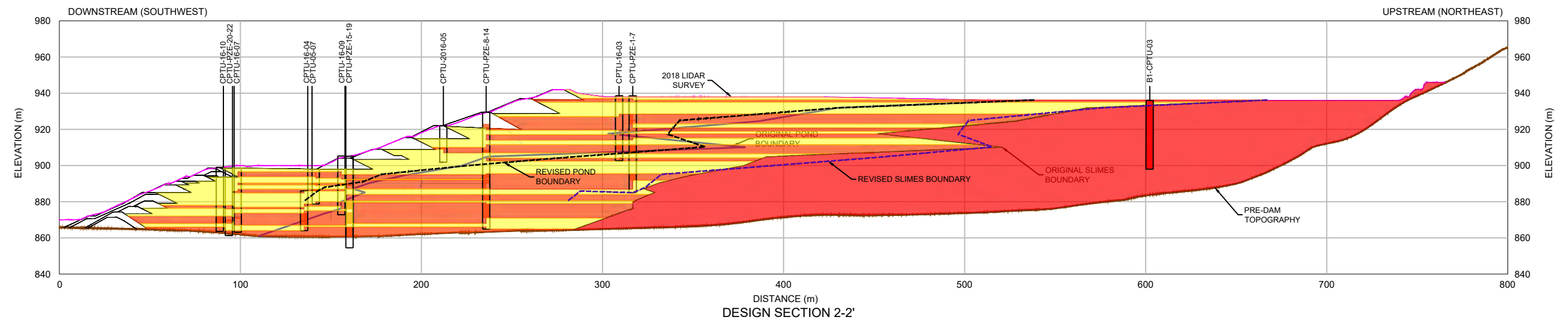
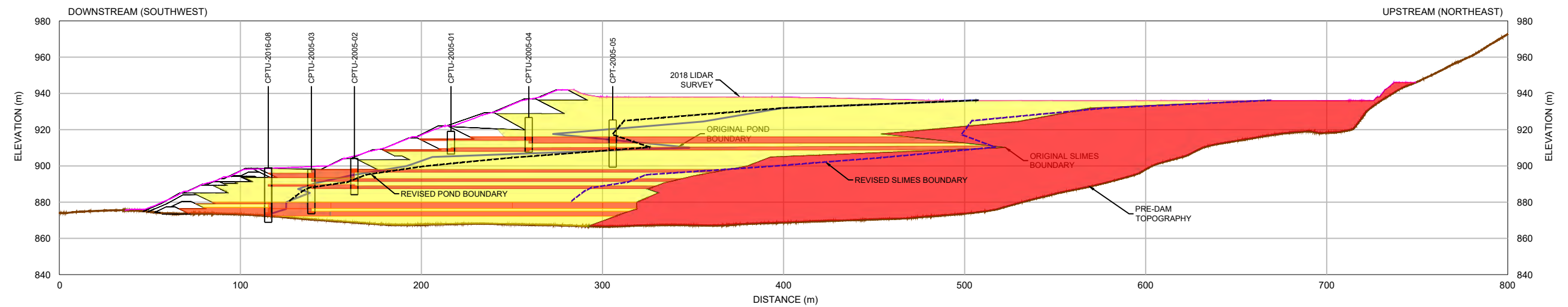
PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
TITLE

POND & SLIMES BOUNDARY PROFILES SECTIONS 1-1', 2-2' & 3-3'

SCALE
1:2,500

PROJECT No.
A03355A02

FIG. No.
FIGURE 2



1:2,500 0 25 50 m BASED ON A 11"X 17" DRAWING SIZE

NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.

LEGEND:

- | | |
|--------------------------|-------------------------|
| PRE-DAM TOPOGRAPHY | REVISED POND BOUNDARY |
| 2018 LIDAR SURVEY | REVISED SLIMES BOUNDARY |
| CONTAINMENT BERMS | FINE TAILINGS |
| ORIGINAL POND BOUNDARY | COARSE TAILINGS |
| ORIGINAL SLIMES BOUNDARY | SLIMES |

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
TITLE

2D TAILINGS DELINEATIONS MODELS
SECTIONS 1-1', 2-2' & 3-3'

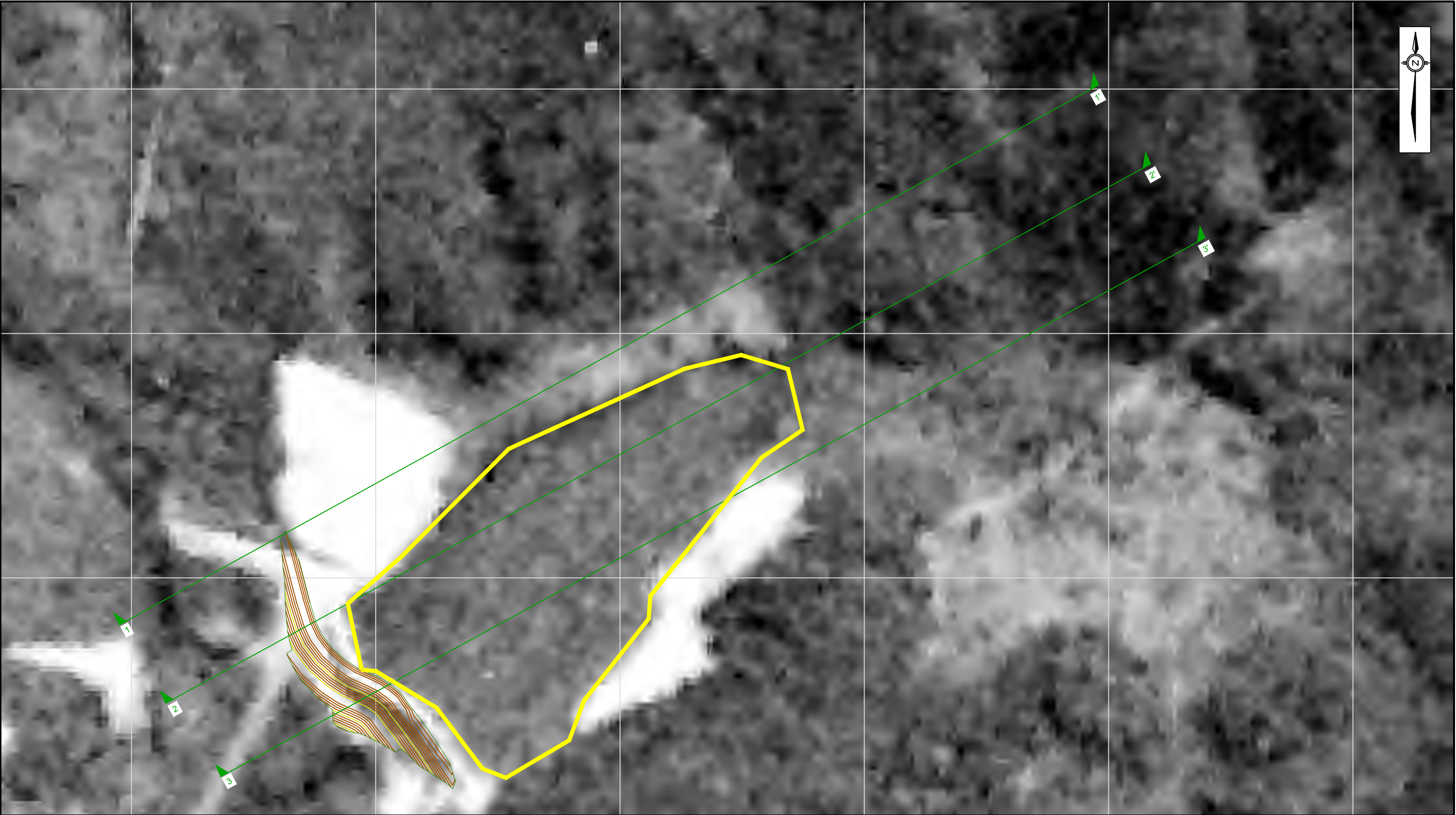
SCALE
1:2,500

PROJECT No.
A03355A02

FIG. No.
FIGURE 3

ROB-FIG-4

Annex I

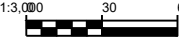


NOTES:

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
2. ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
3. ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
4. DUE TO IMAGE QUALITY LOCATION OF POND COULD NOT BE ESTABLISHED.
5. SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

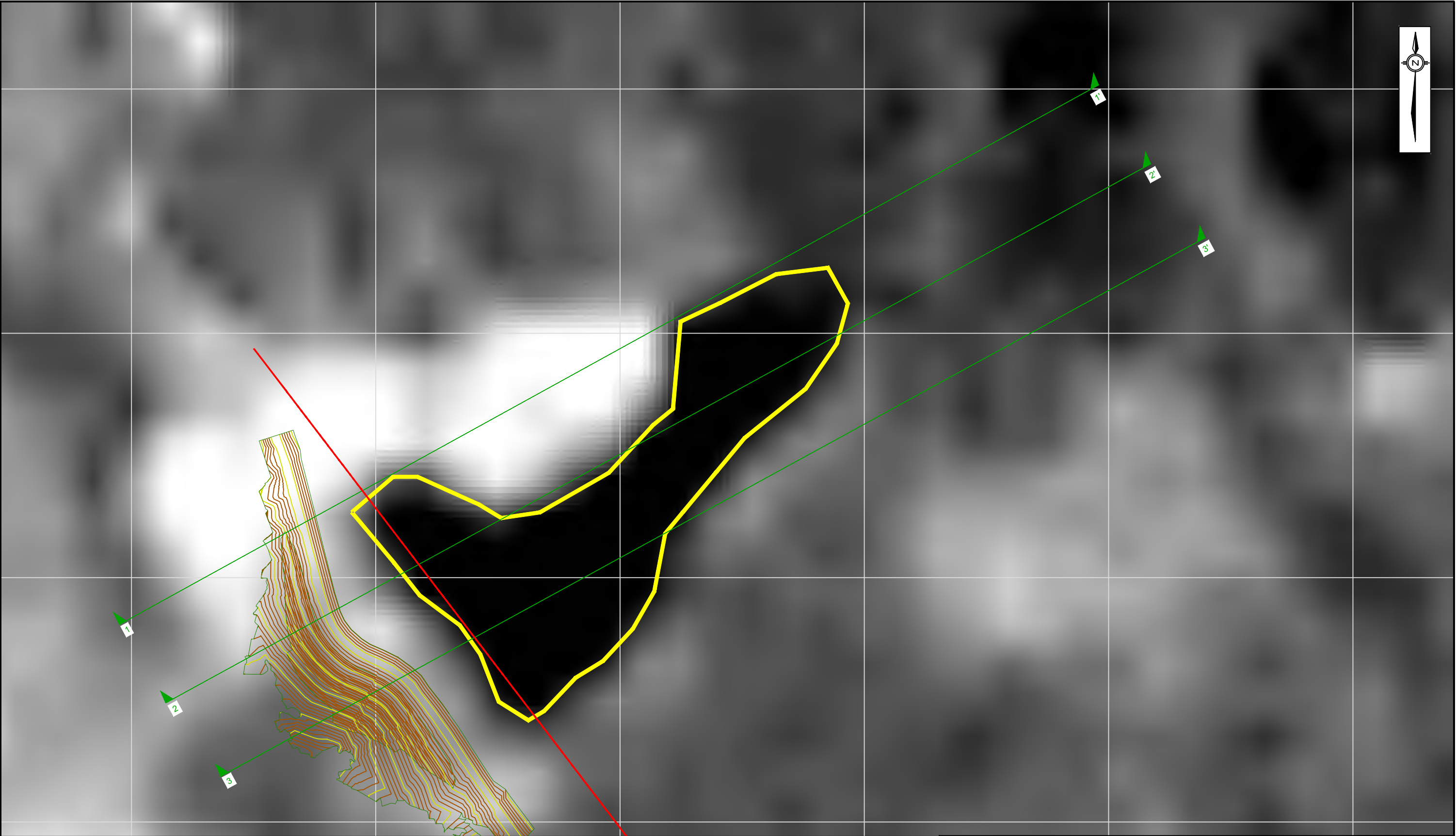
- | | |
|-----------------------|-------------------|
| DESIGN SECTIONS | 1 m CONTOURS |
| POND OUTLINE | 5 m CONTOURS |
| MODELED POND BOUNDARY | DAM RAISE OUTLINE |



BASED ON A 11"X 17"
DRAWING SIZE

CLIENT		PROJECT	
		REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
		TITLE	
		SATELLITE IMAGES 1977 (S) RAISE #1 DAM CREST EL. 874 m	
SCALE	PROJECT No.	FIG. No.	
1:3,000	A03355A02	FIGURE I-1	

ROB-FIG-1



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
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- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESMENT.

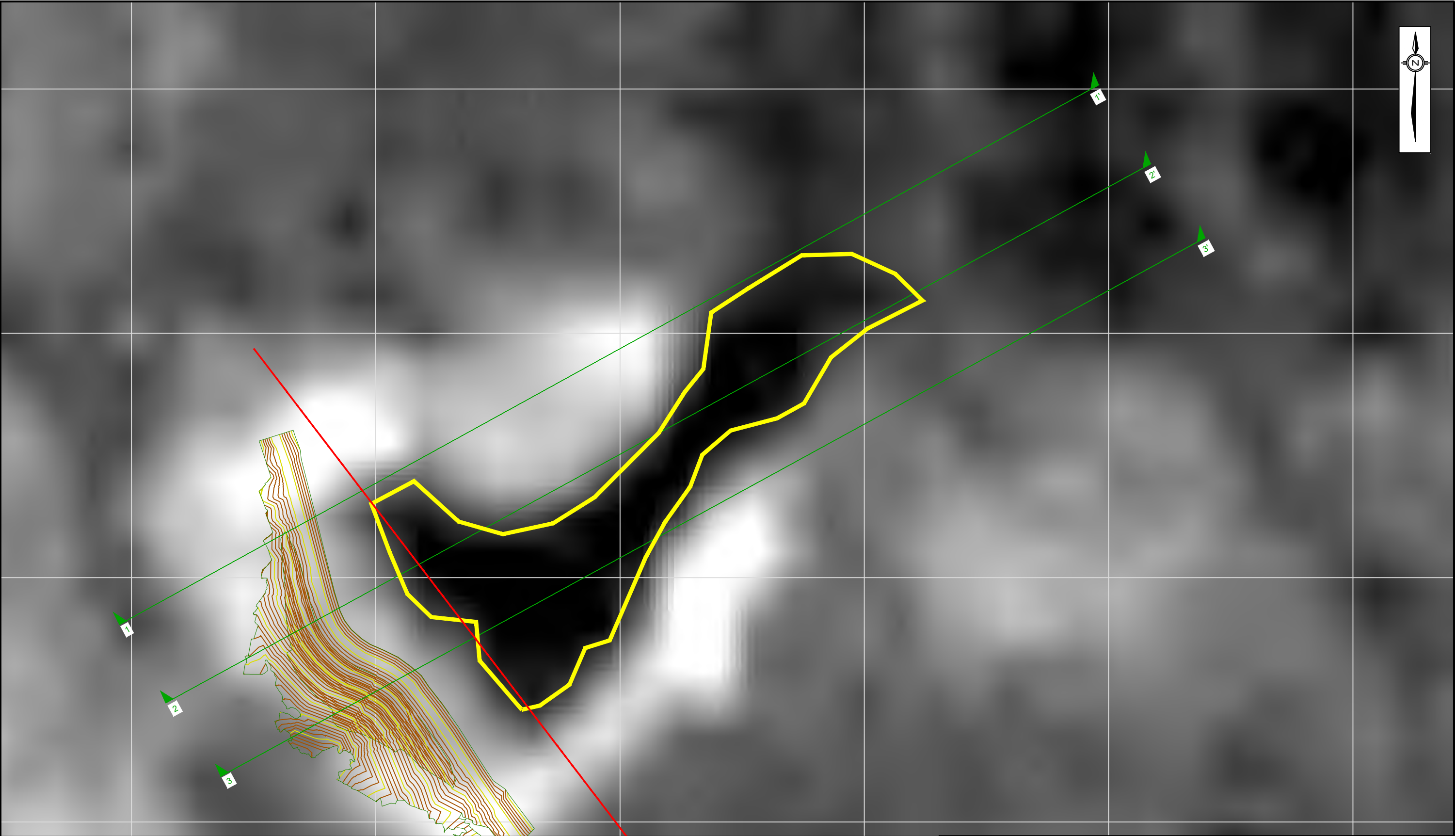
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT		PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
		TITLE SATELLITE IMAGES APRIL 19, 1984 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-2	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

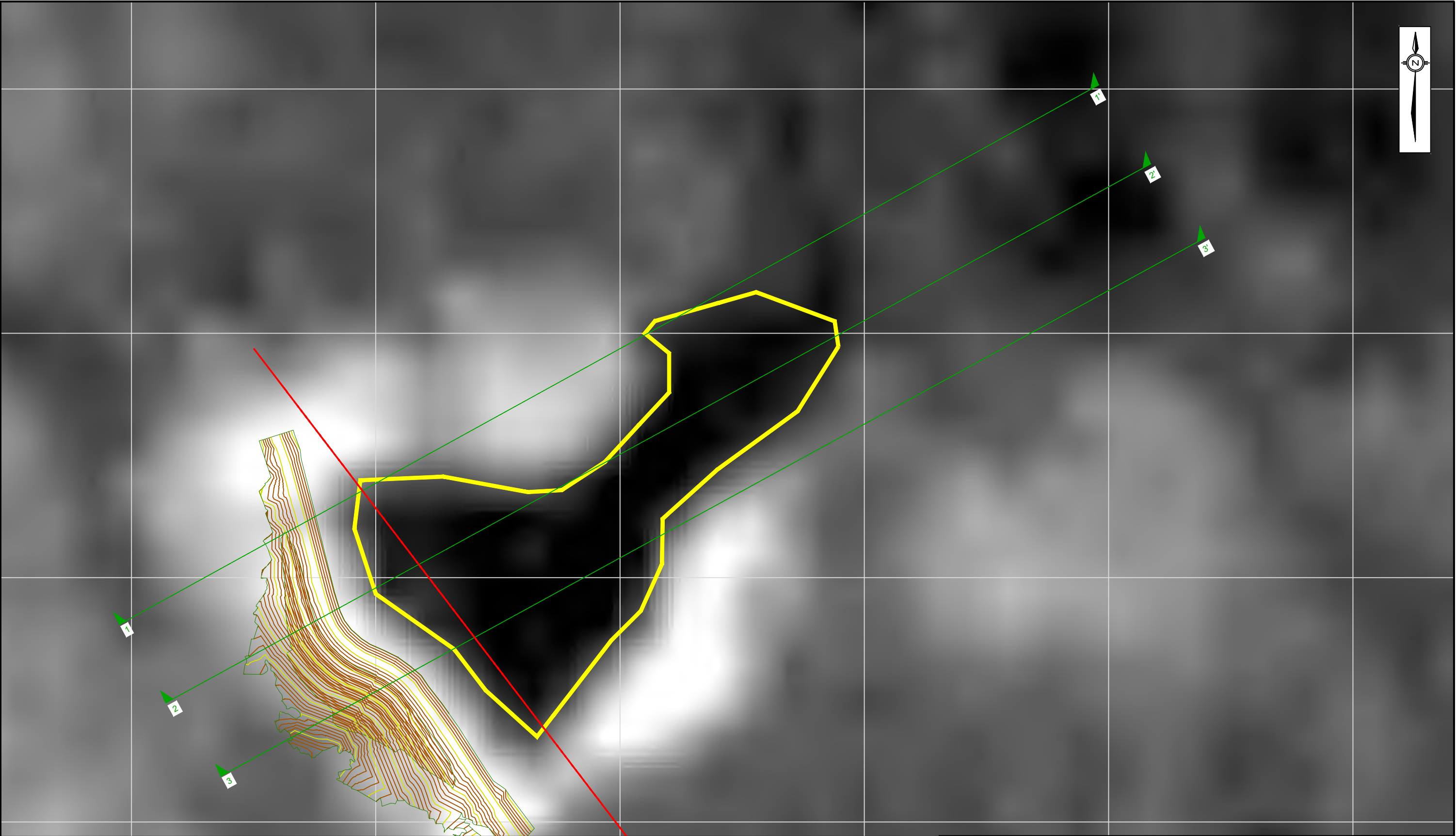
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JUNE 6, 1984 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-3	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
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- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

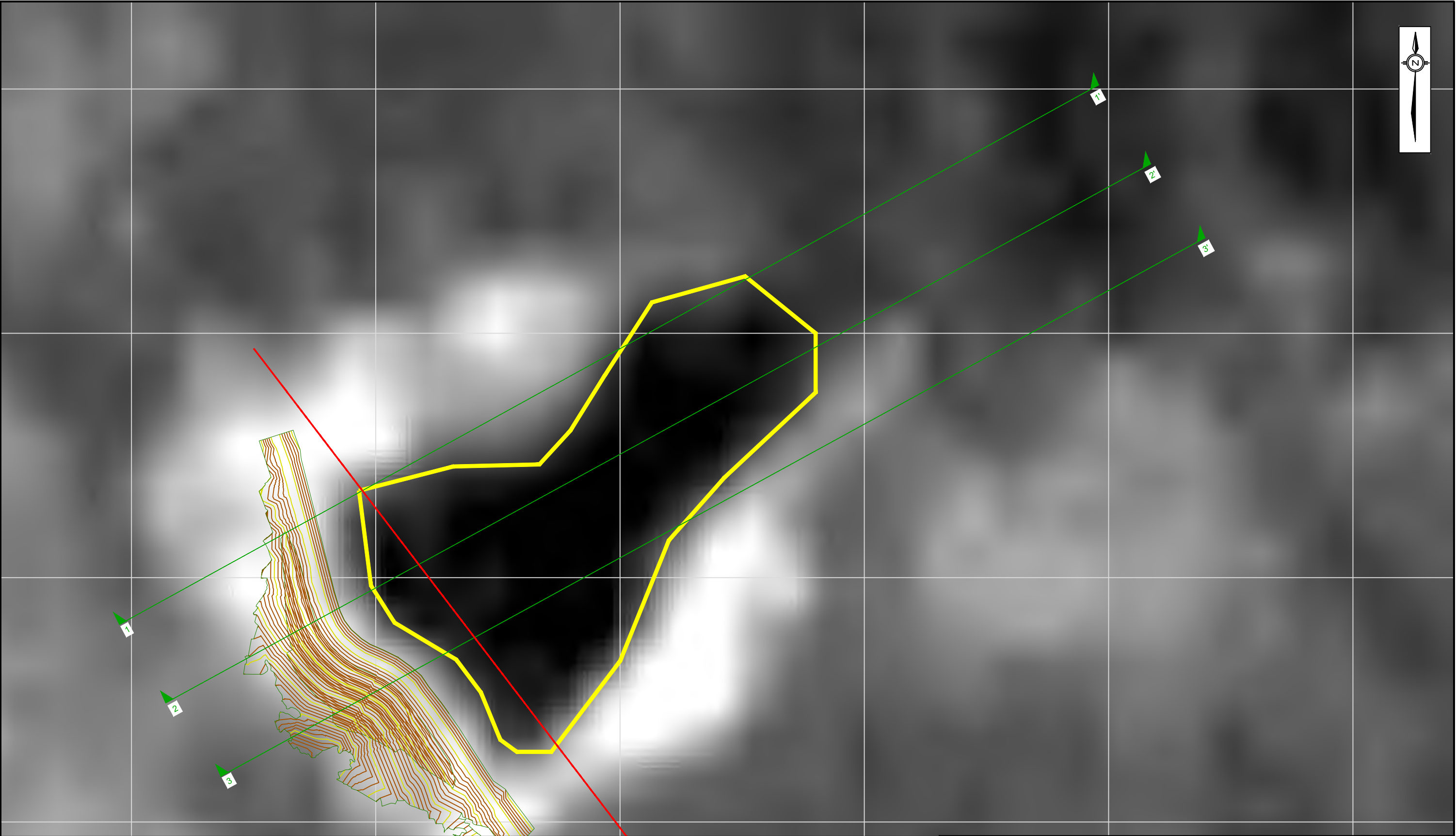
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 0 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 8, 1984 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-4	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

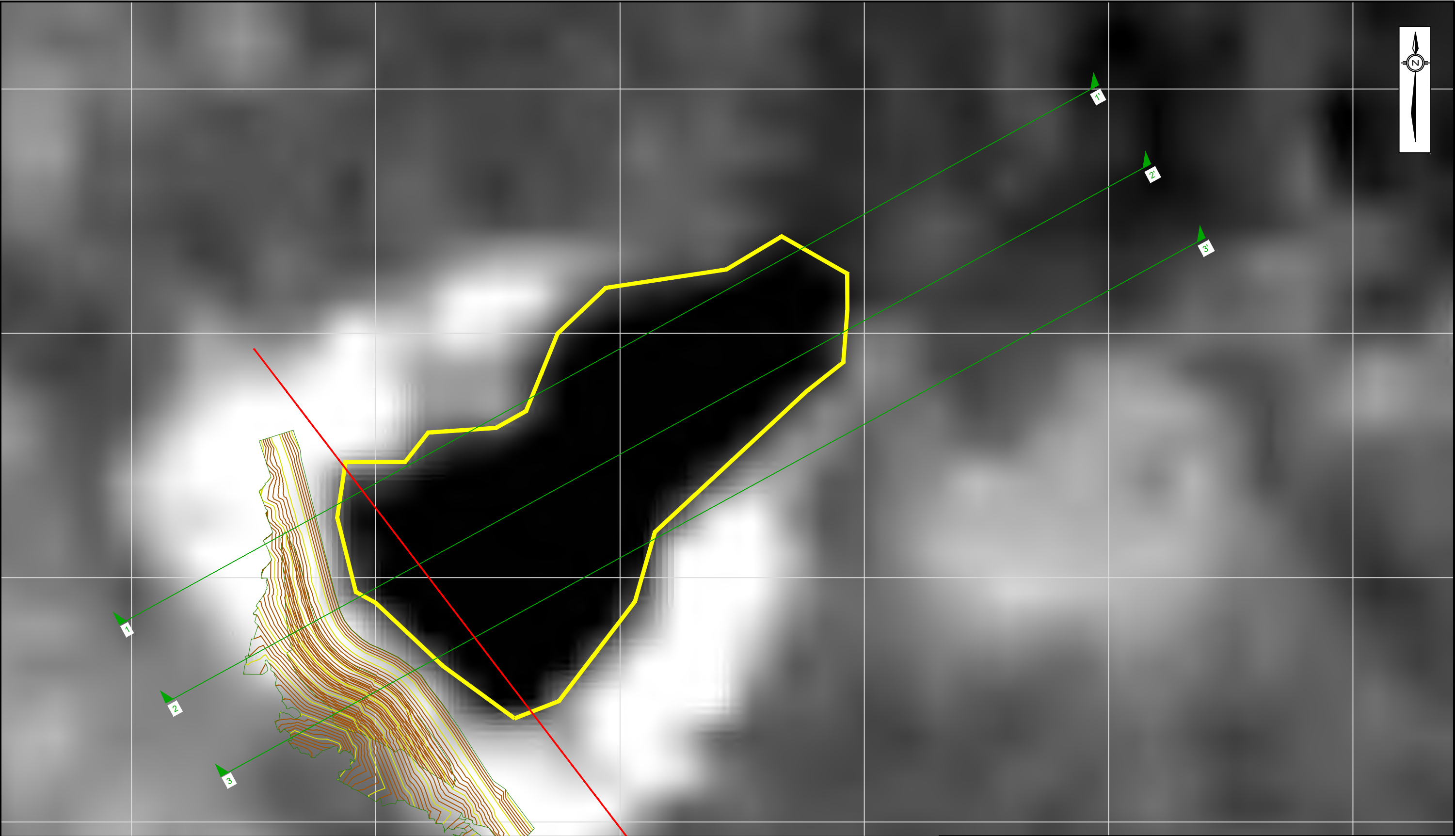
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT		PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
		TITLE SATELLITE IMAGES JULY 24, 1984 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-5	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
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- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

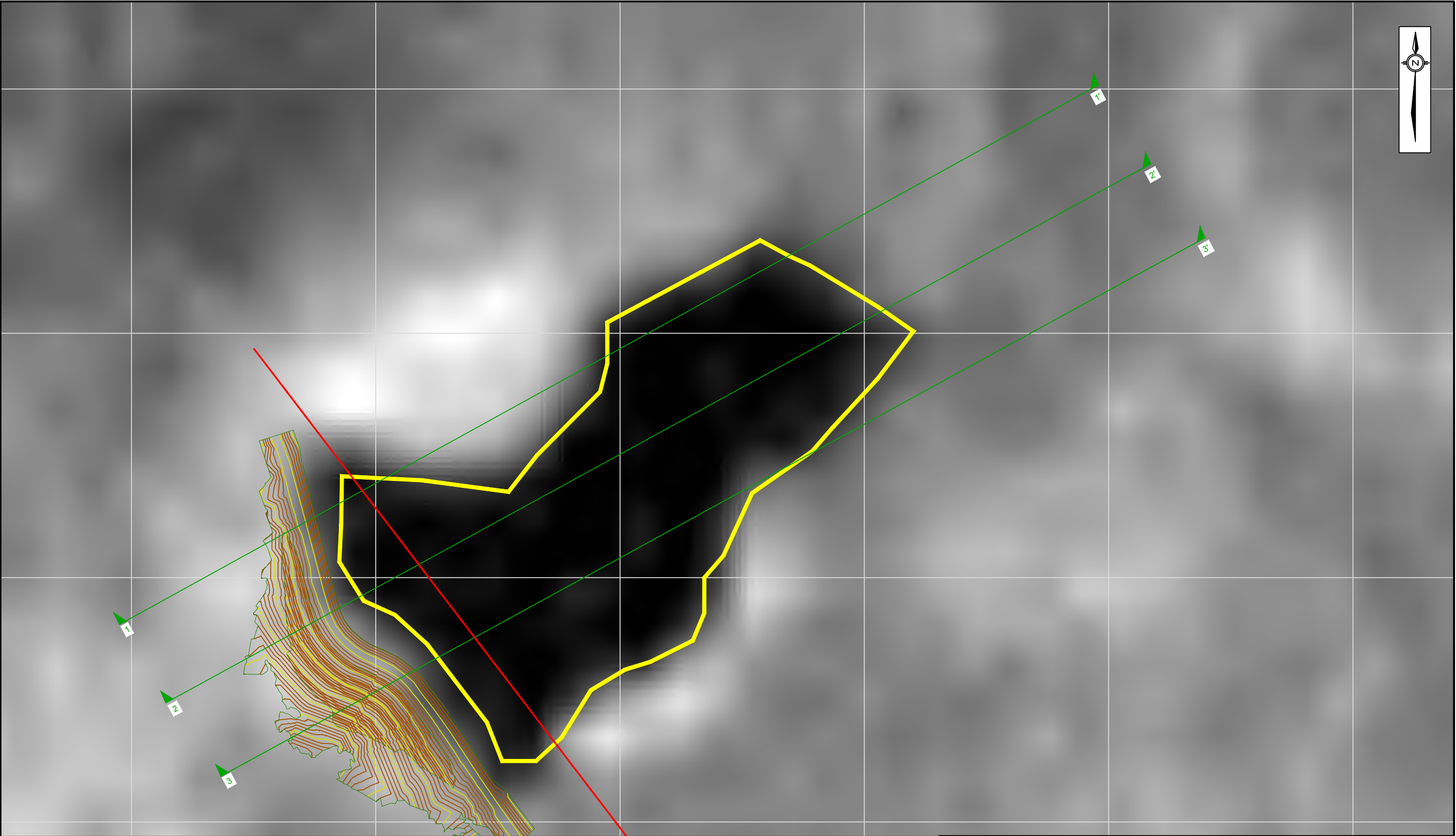
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT		PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
		TITLE SATELLITE IMAGES AUGUST 9, 1984 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-6	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

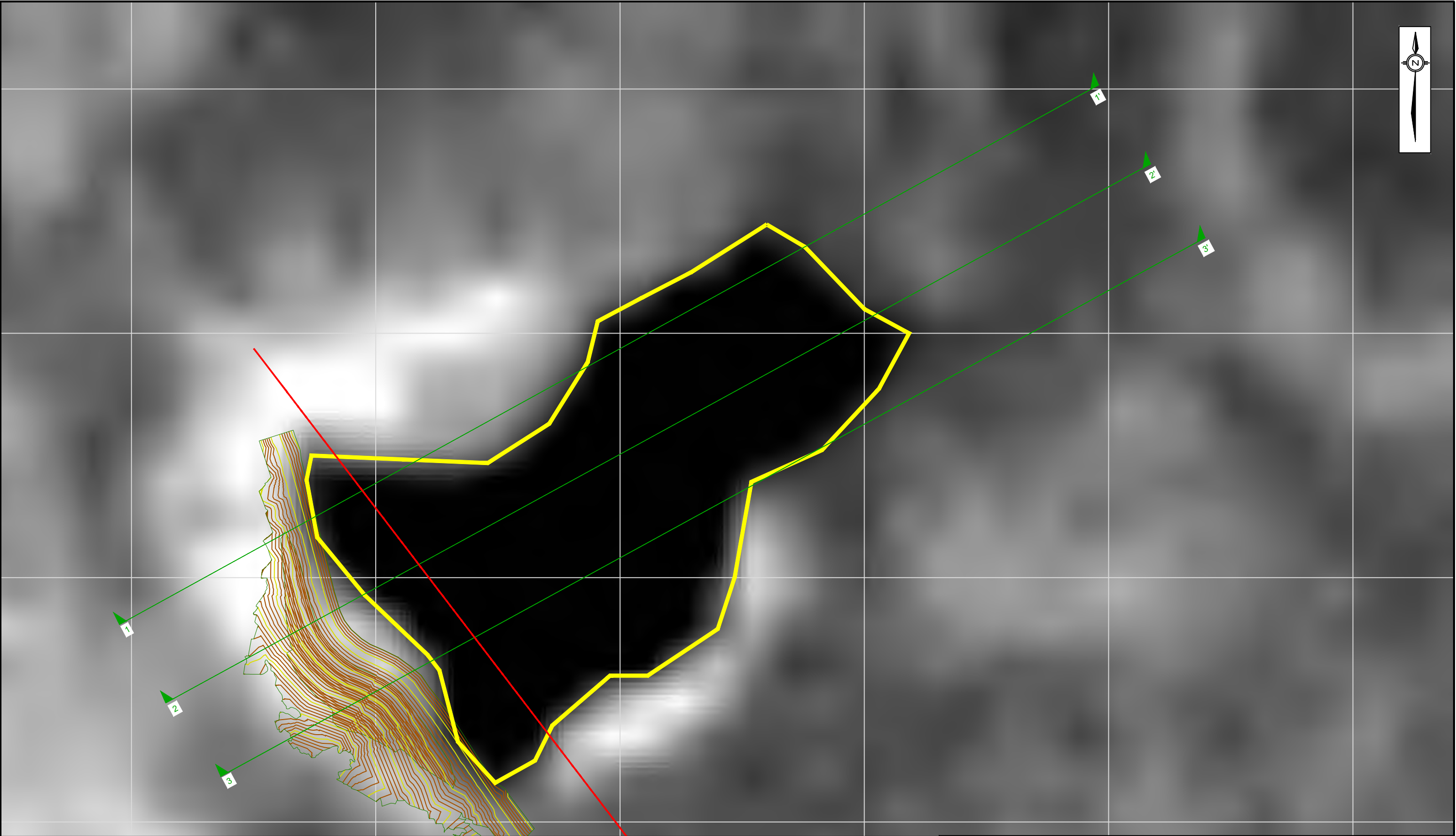
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT		PROJECT
		REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
		TITLE
		SATELLITE IMAGES FEBRUARY 1, 1985 (S) RAISE #4 DAM CREST EL. 884 m
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-7



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

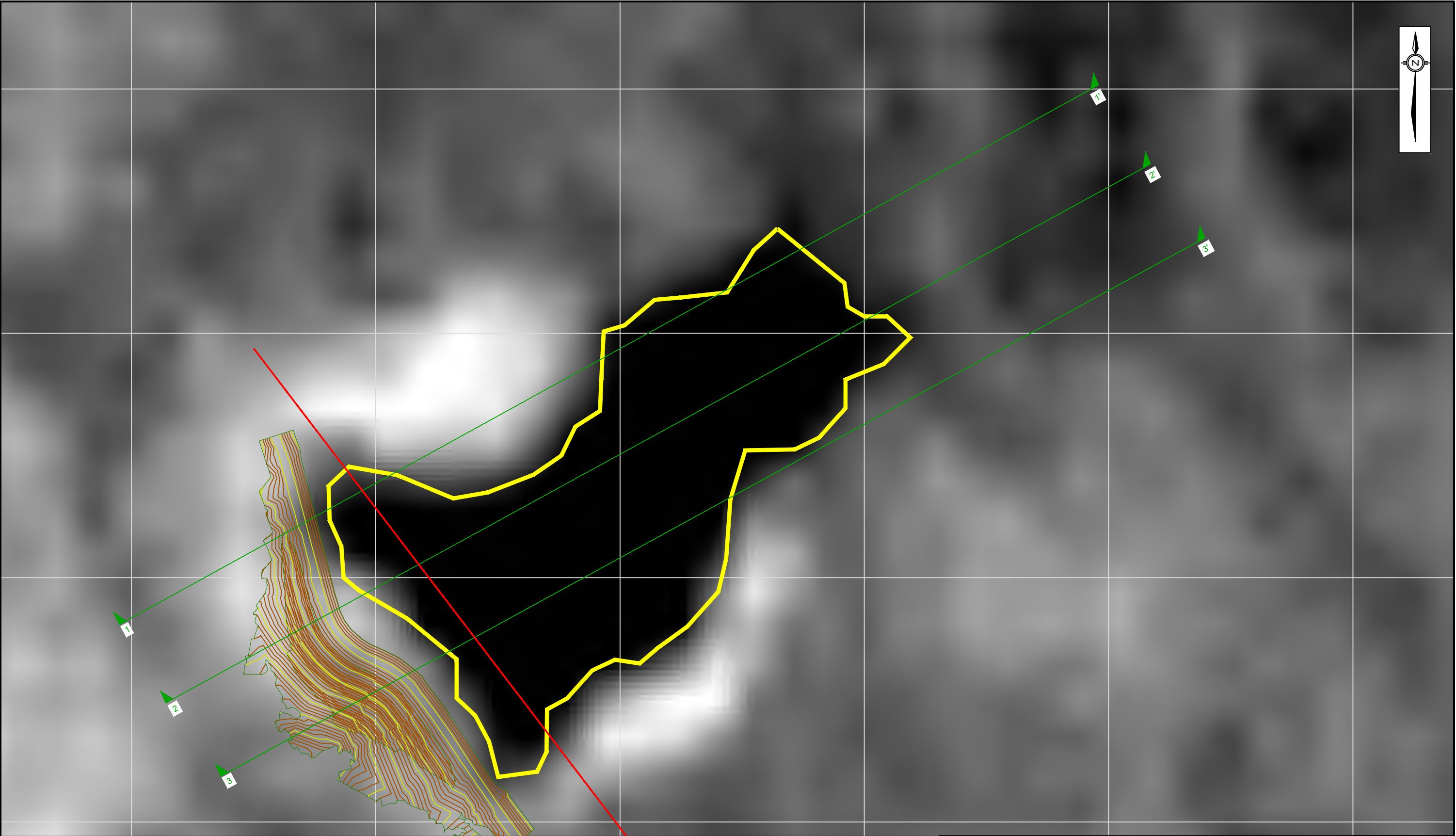
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES FEBRUARY 17, 1985 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-8	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

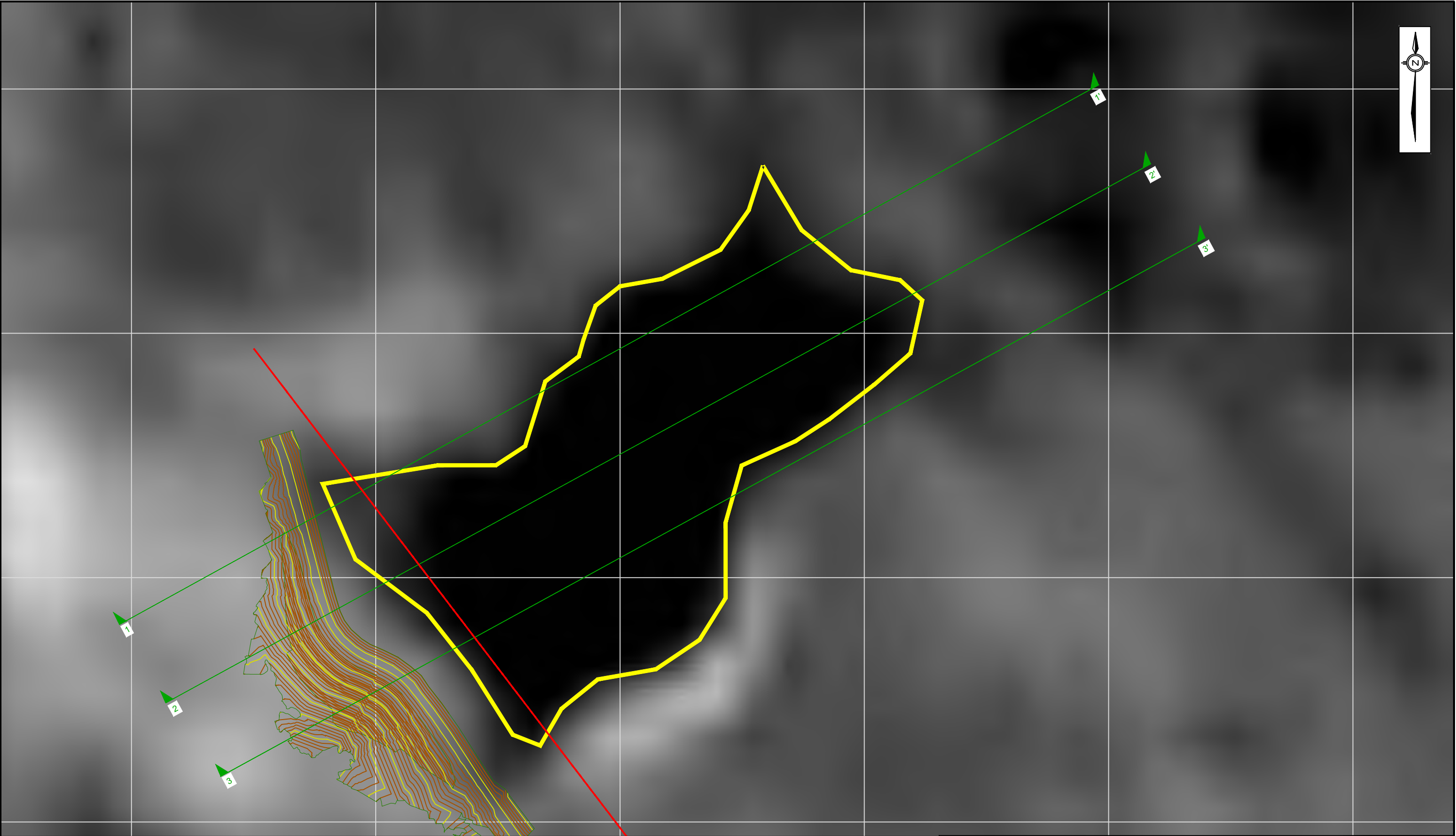
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES APRIL 22, 1985 (S) RAISE #4 DAM CREST EL. 884	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-9	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

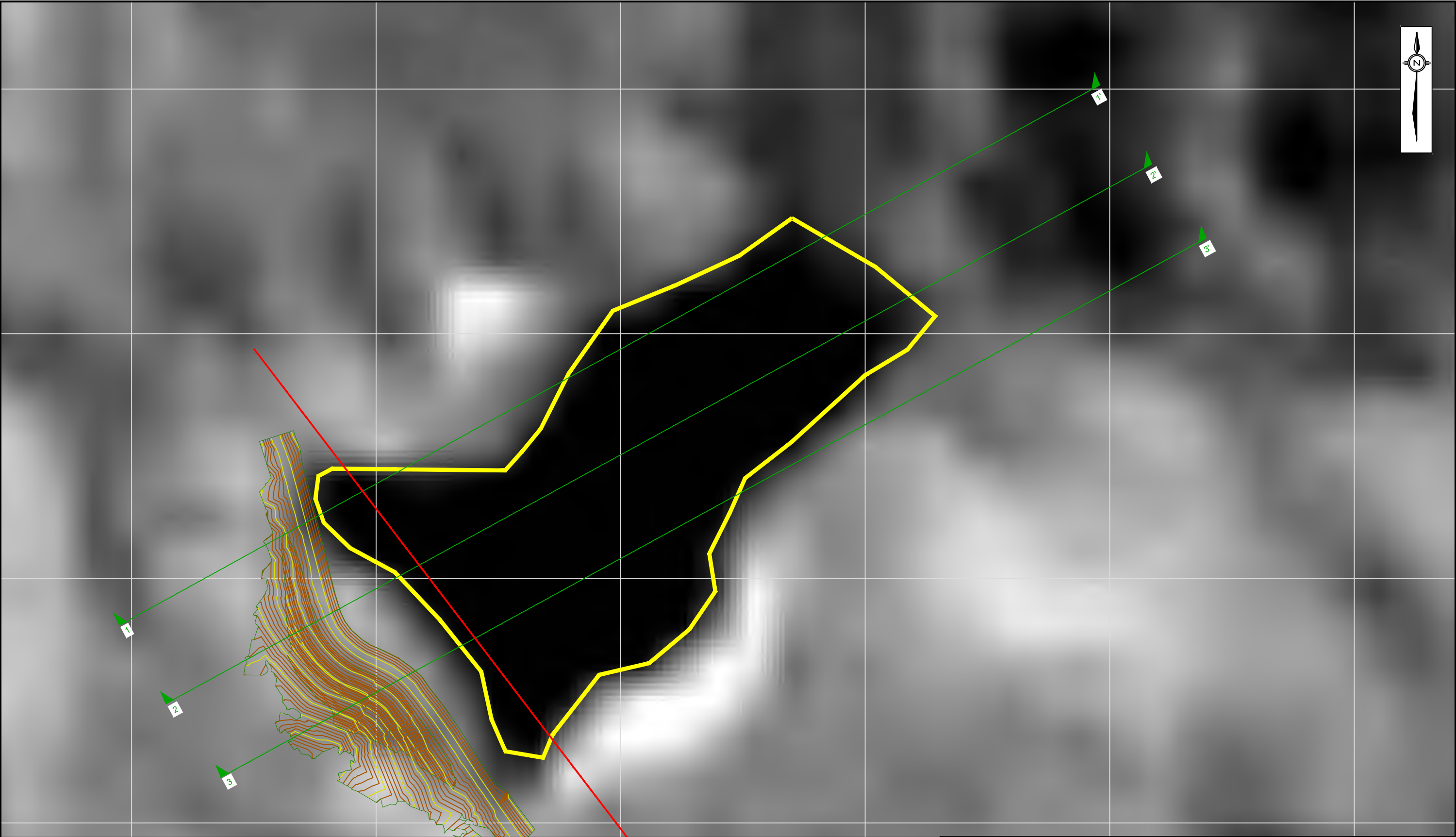
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES MAY 8, 1985 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-10	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

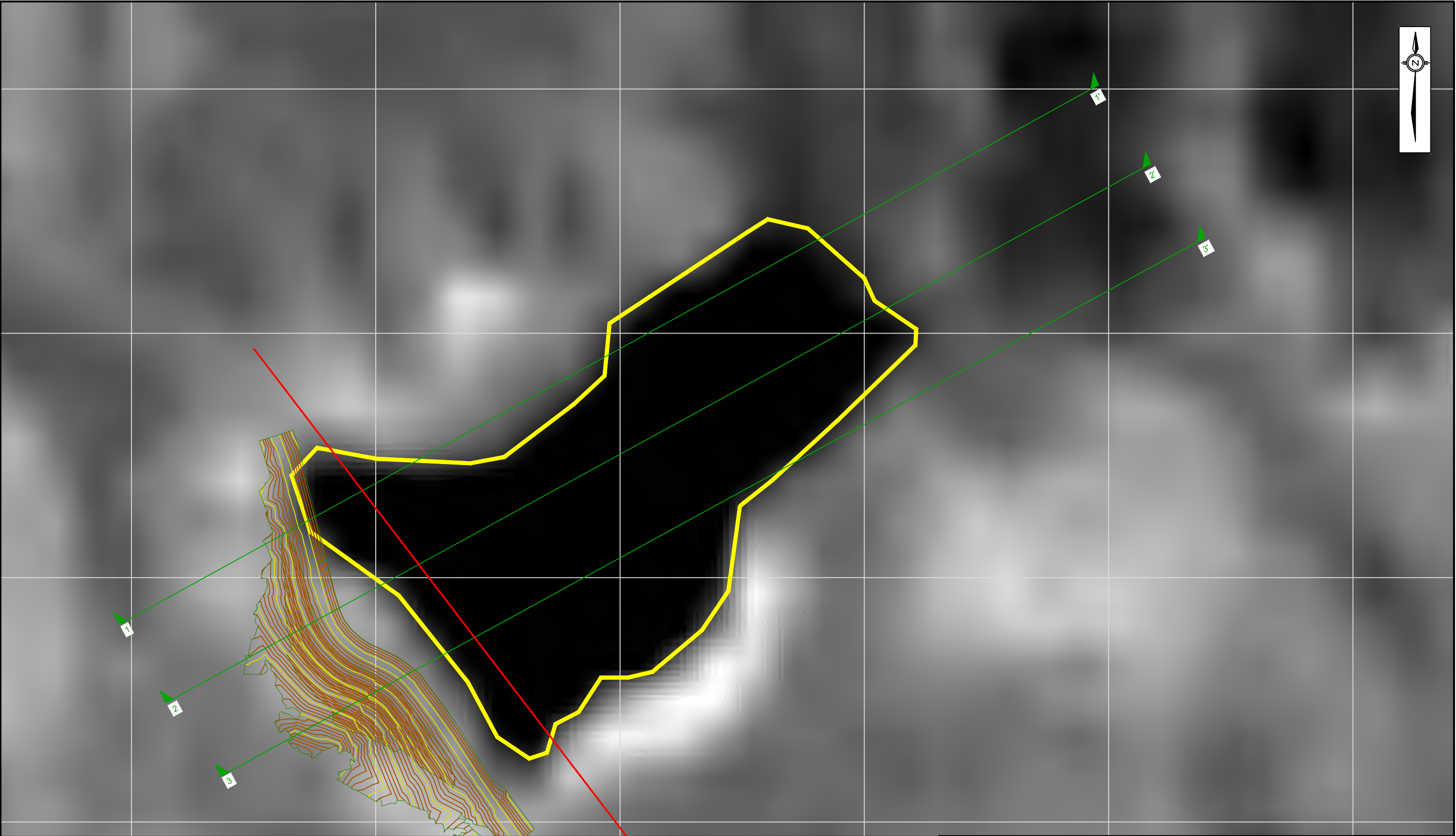
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JUNE 25, 1985 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-11	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

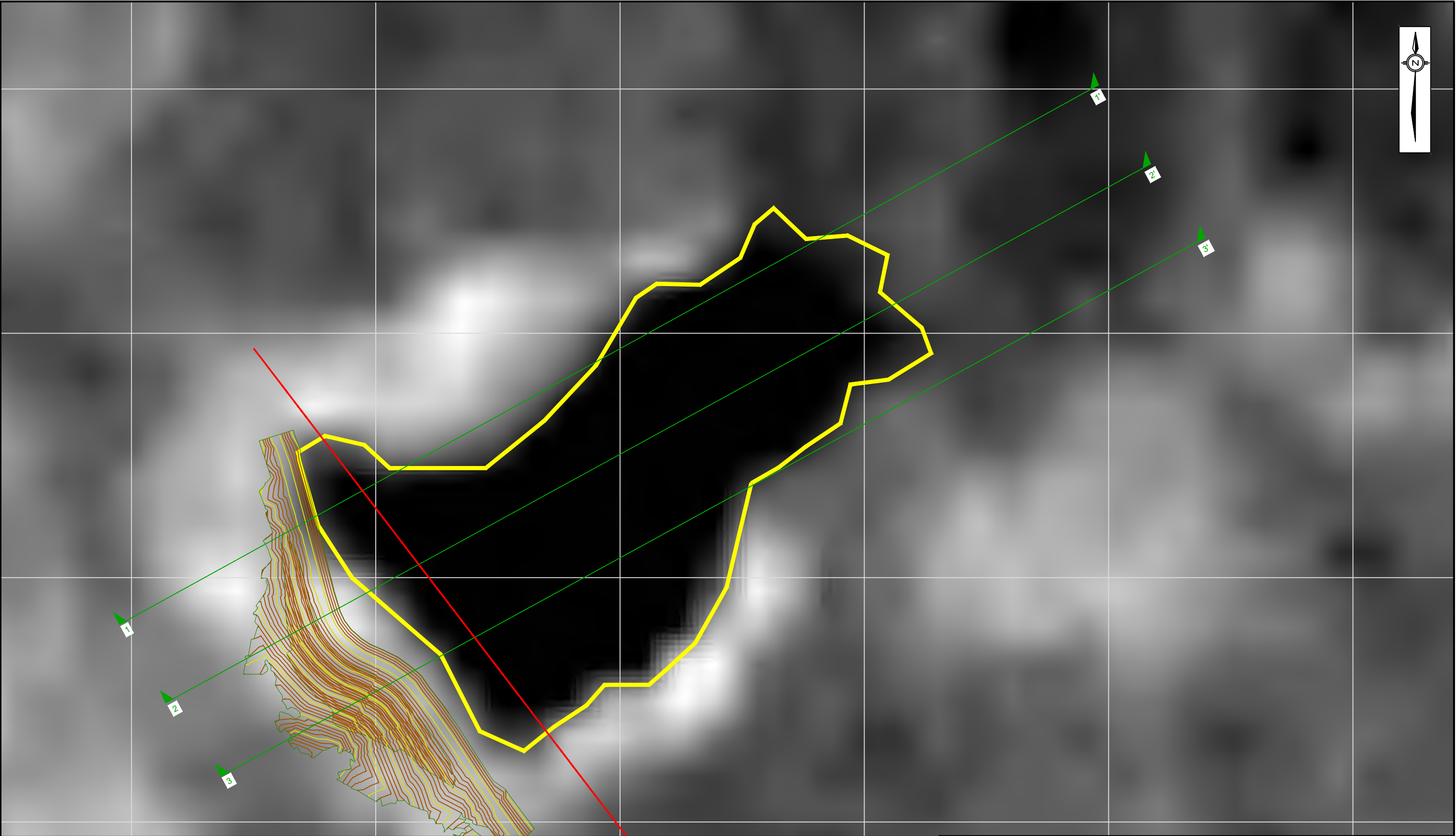
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES AUGUST 12, 1985 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-12



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

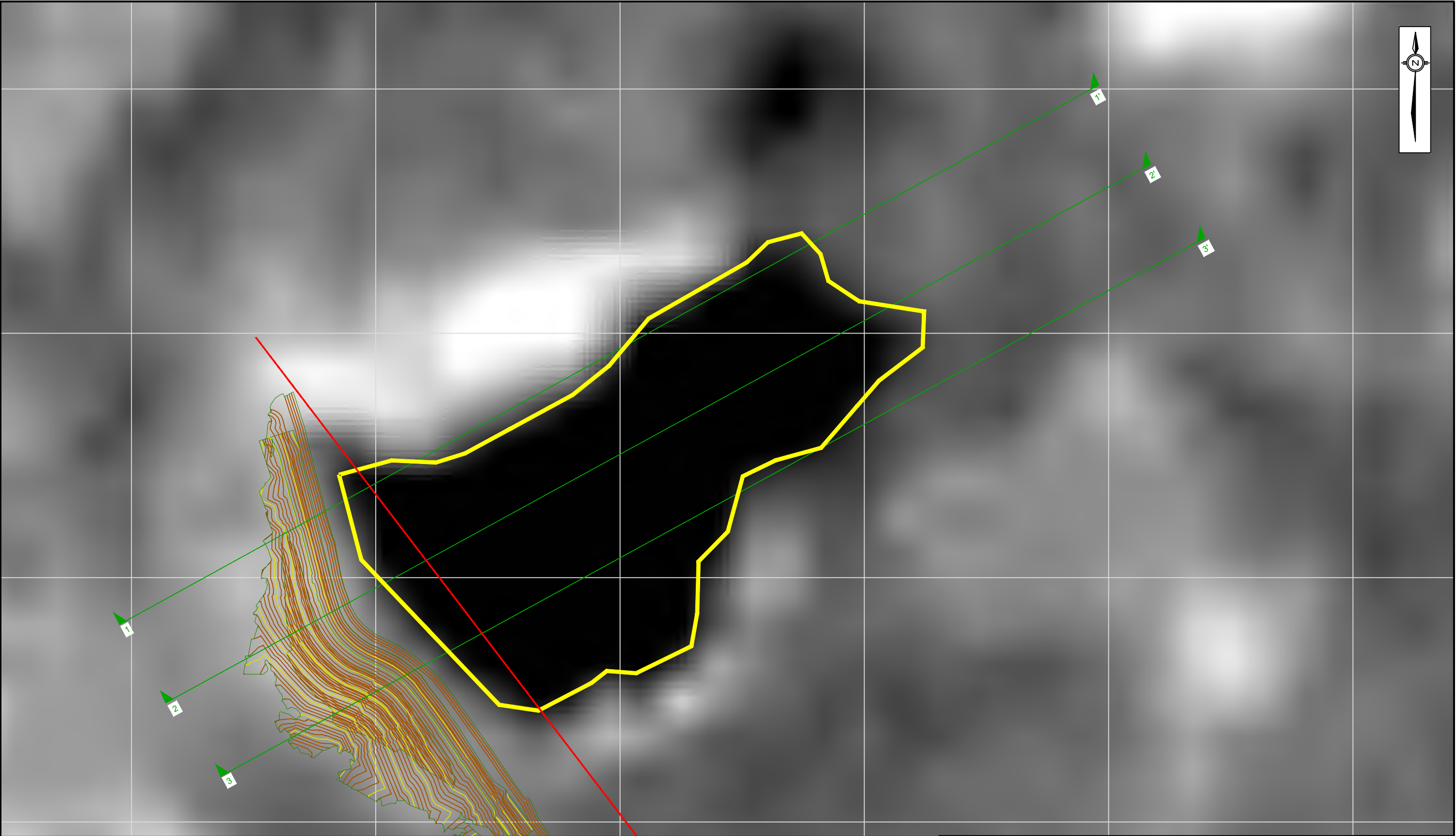
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 4)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES AUGUST 28, 1985 (S) RAISE #4 DAM CREST EL. 884 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-13	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

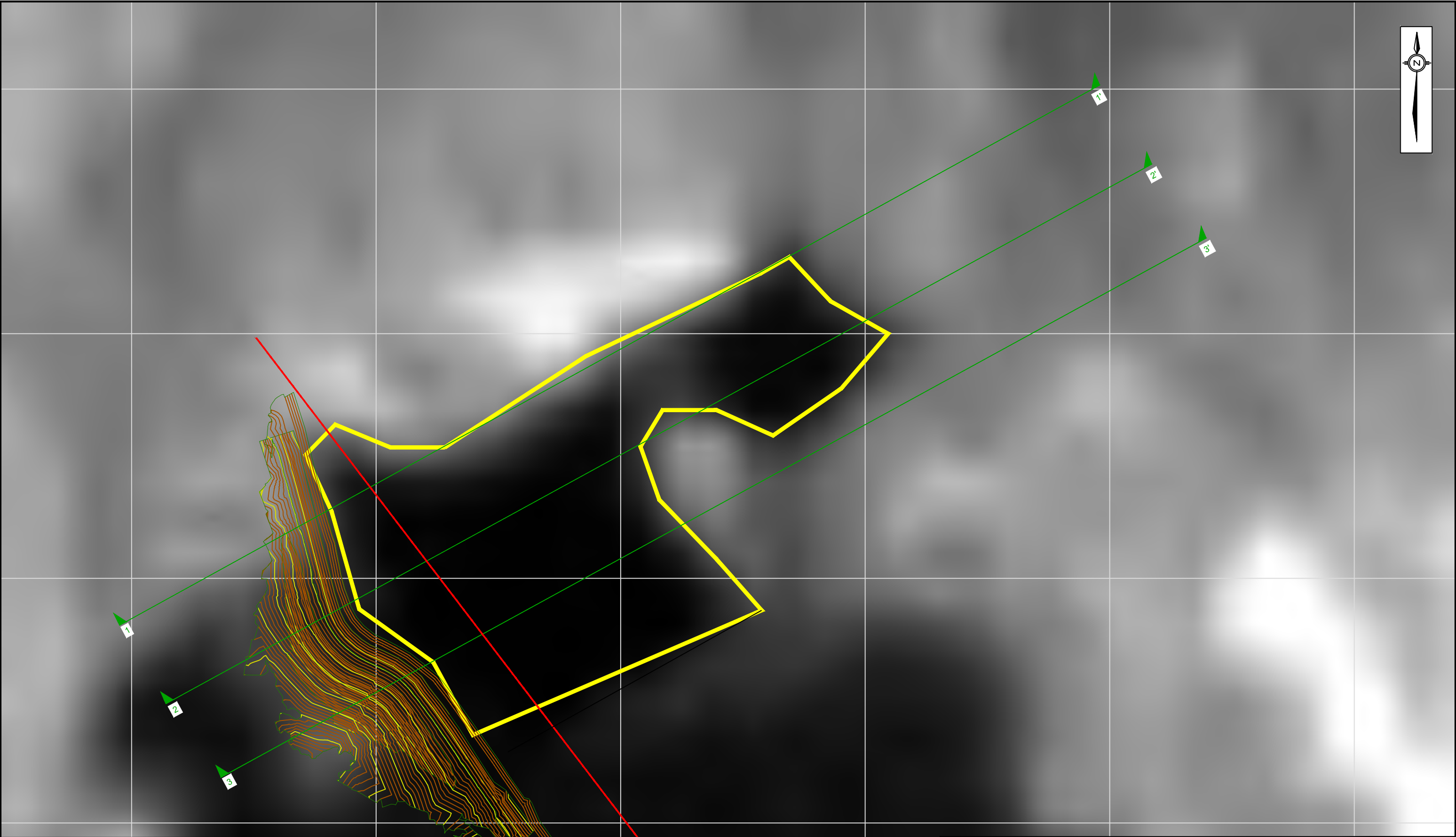
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JANUARY 3, 1986 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-14	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

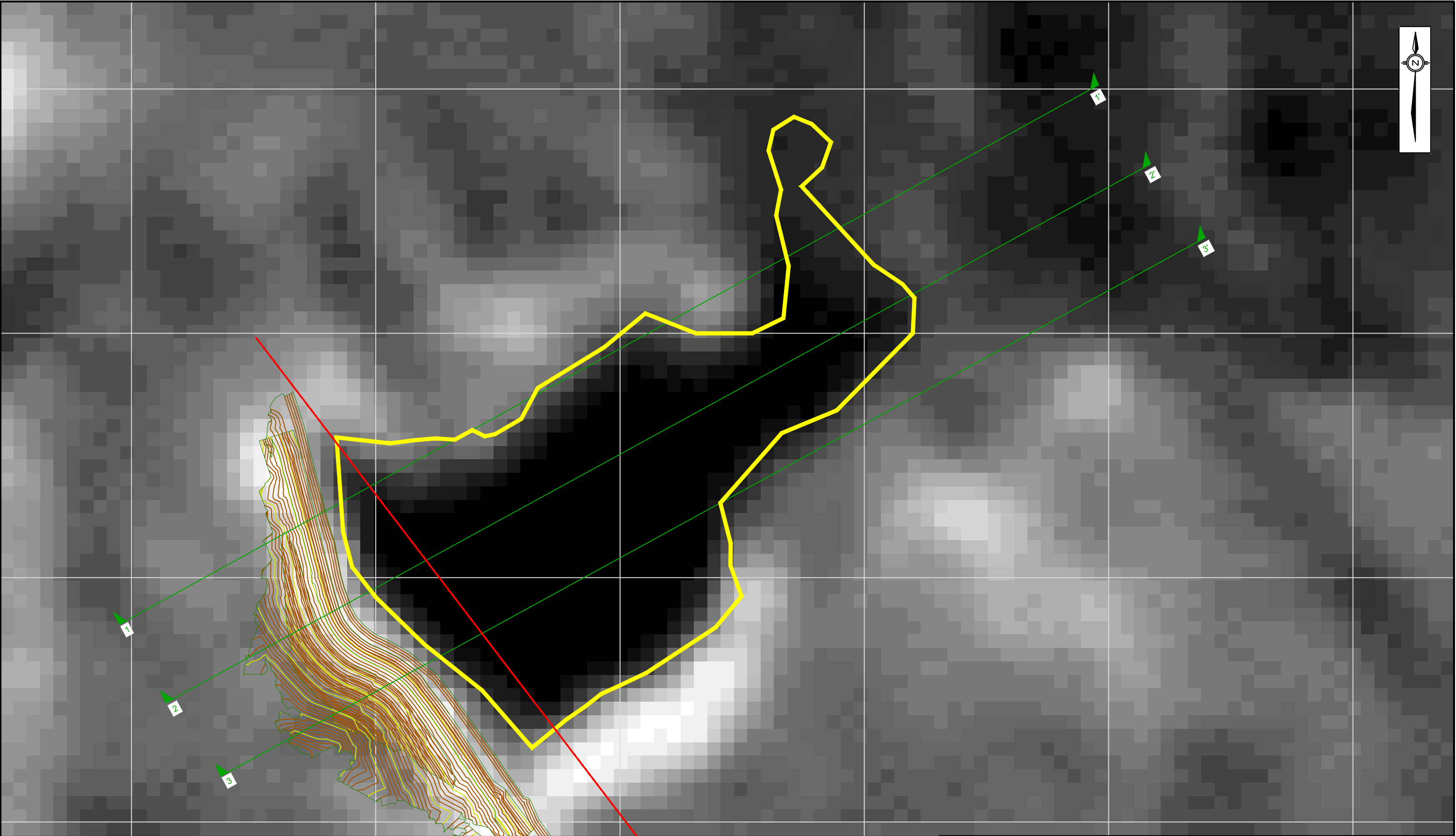
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
FEBRUARY 20, 1986 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-15
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

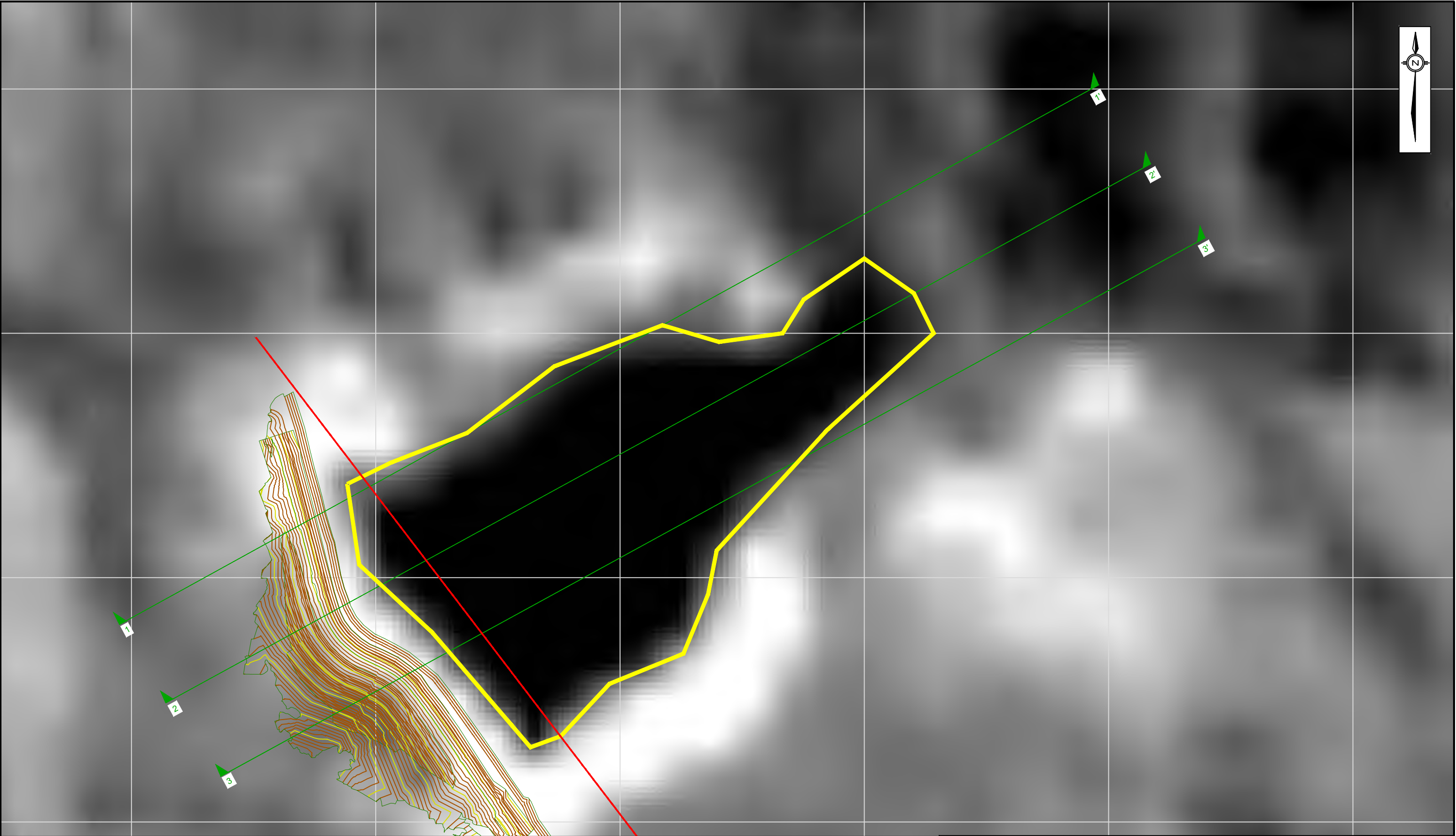
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
MAY 27, 1986 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-16
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

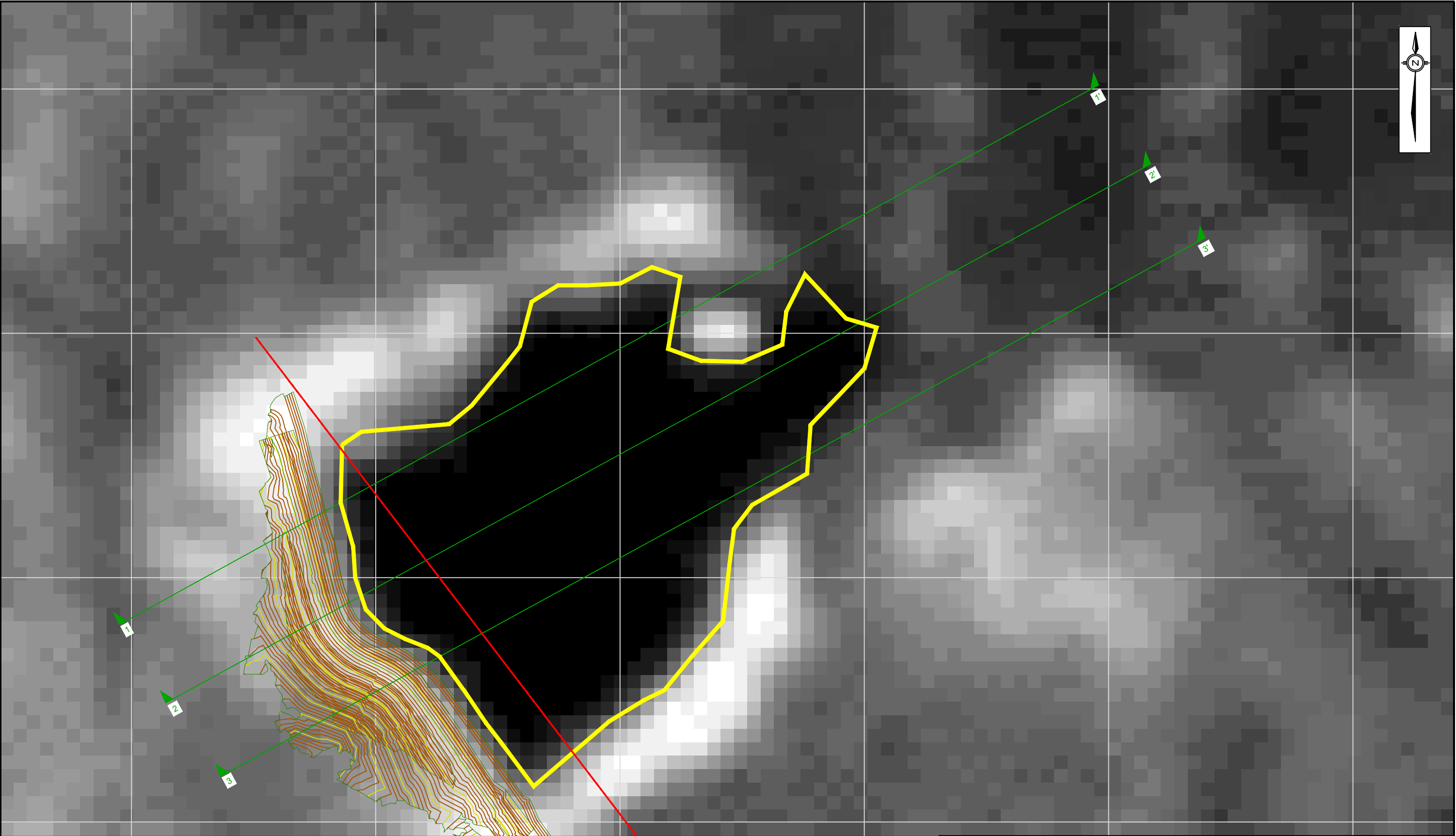
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES JULY 14, 1986 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-17



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

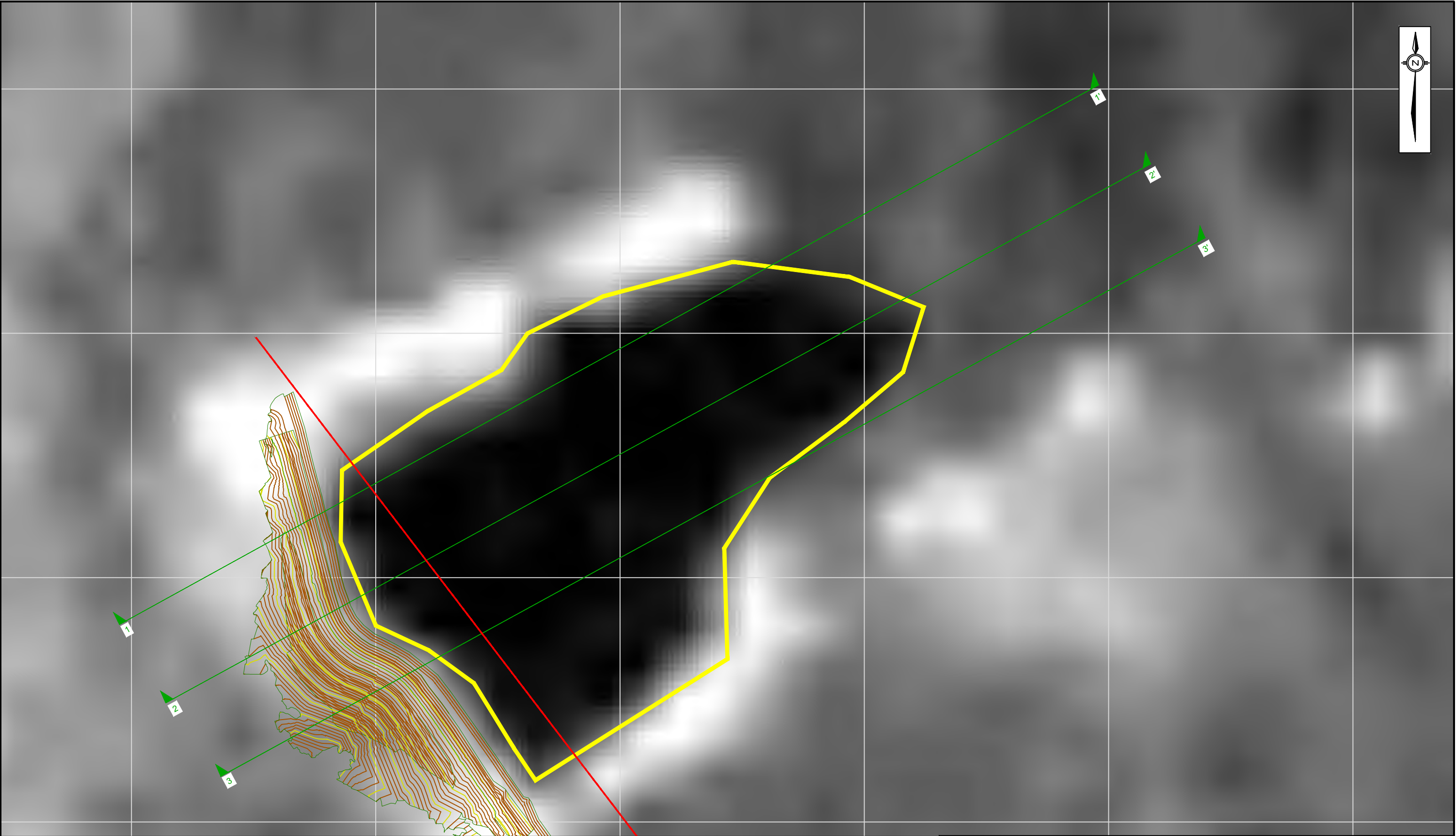
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT		PROJECT
		REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
		TITLE
		SATELLITE IMAGES AUGUST 15, 1986 (S) RAISE #5 DAM CREST EL. 889 m
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-18



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

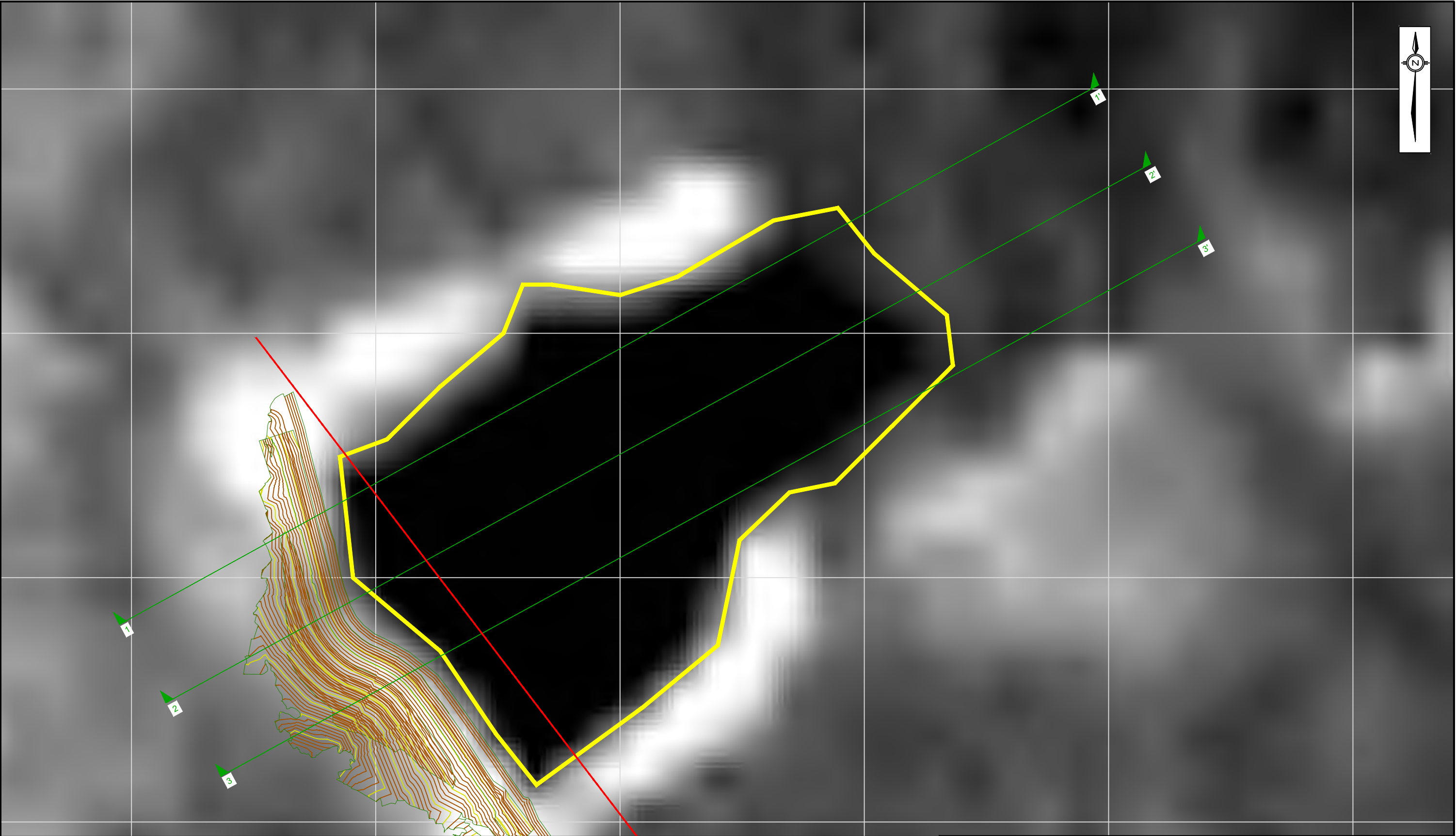
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES AUGUST 31, 1986 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-19	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

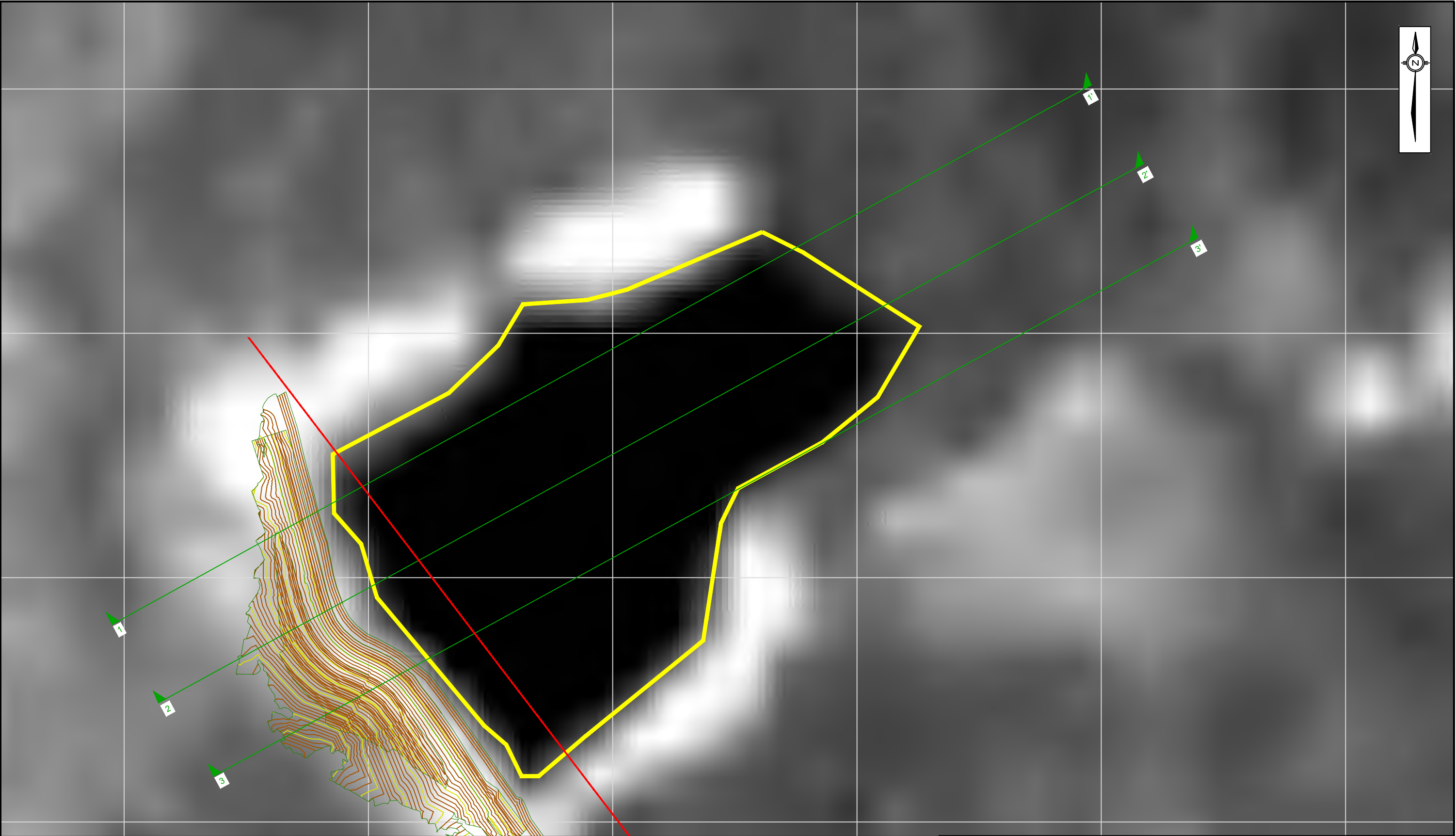
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
SEPTEMBER 16, 1986 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-20
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

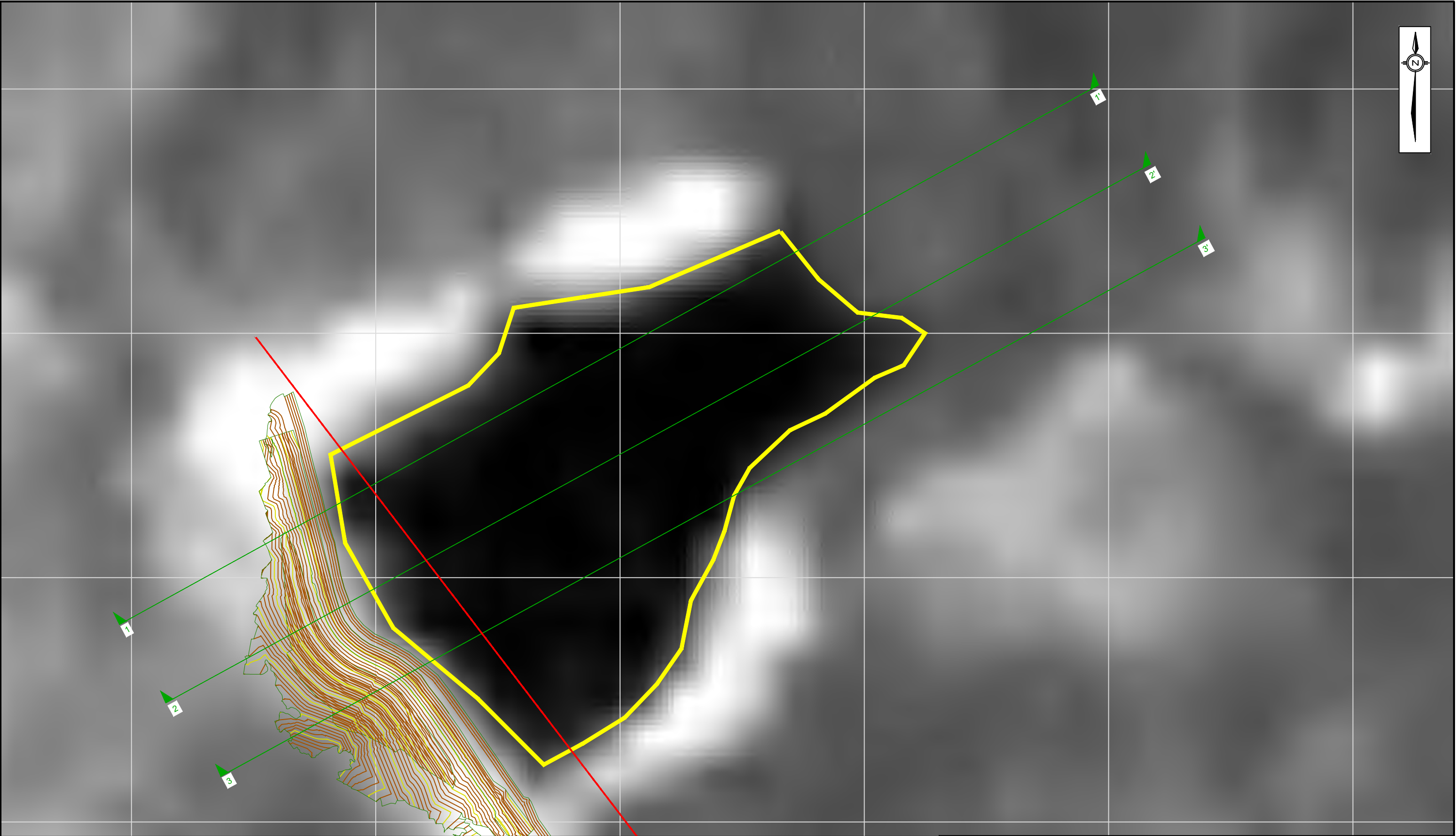
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
OCTOBER 2, 1986 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-21
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

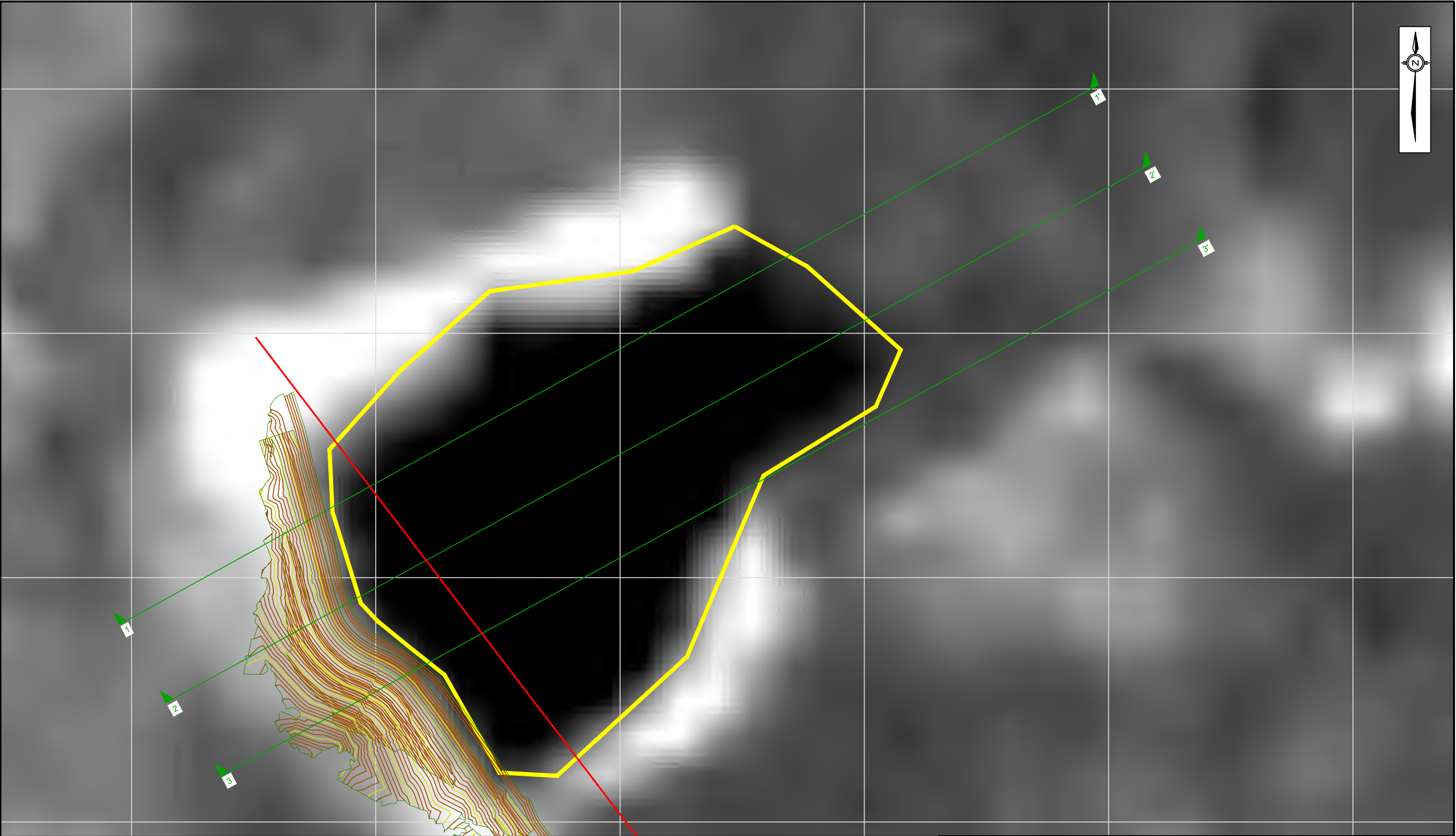
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES OCTOBER 18, 1986 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-22	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

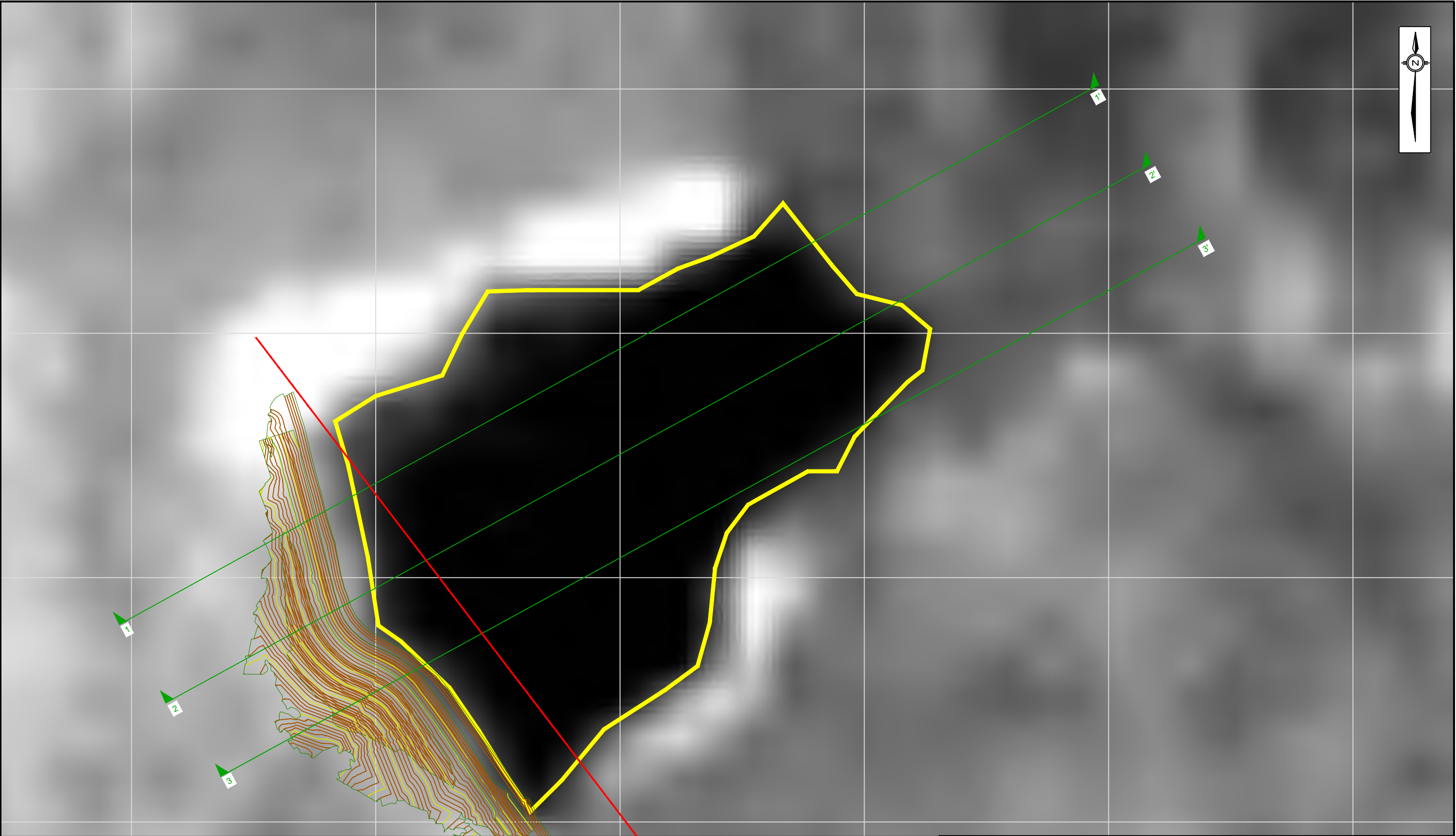
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES NOVEMBER 3, 1986 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-23	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

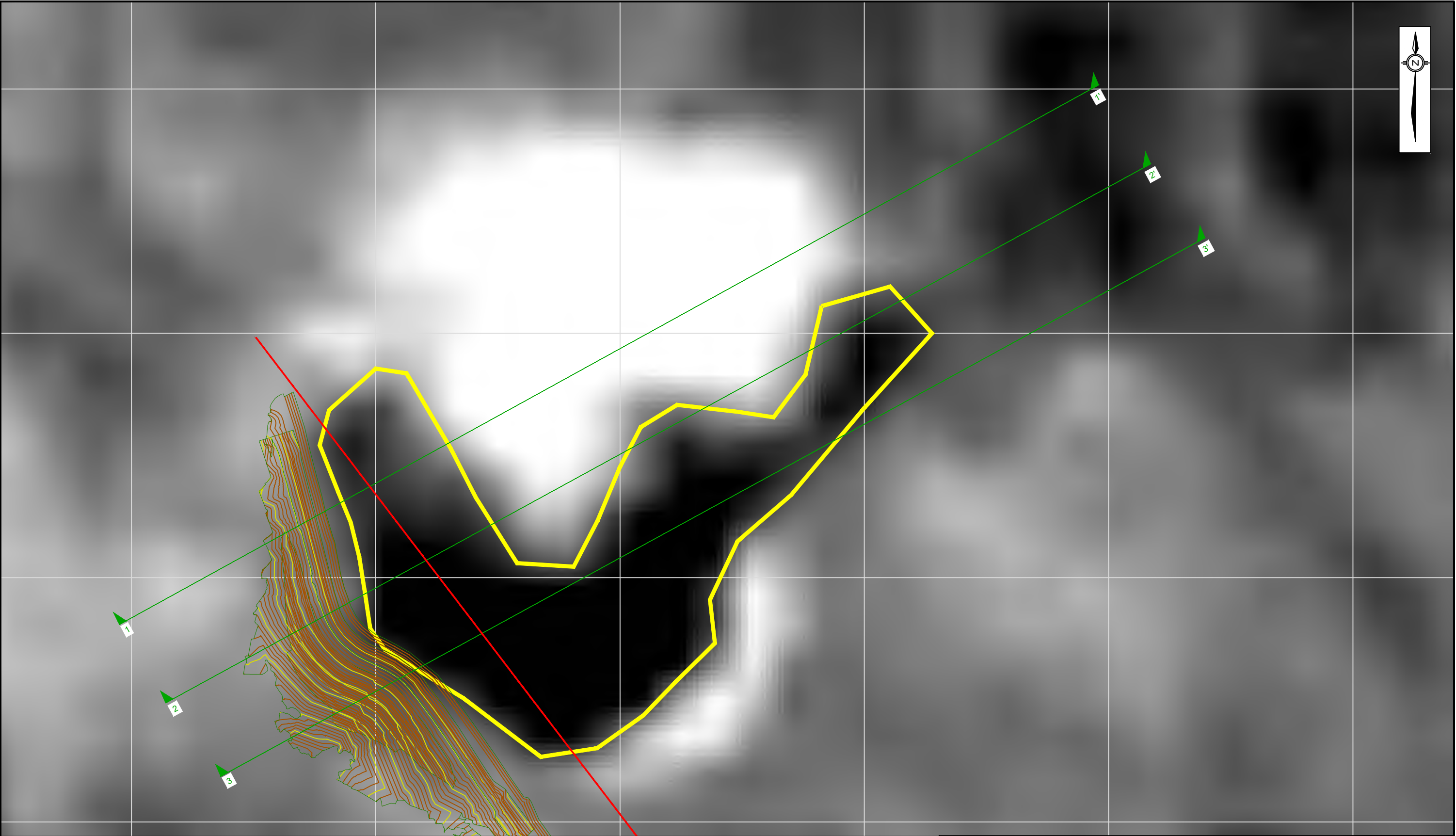
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES FEBRUARY 7, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-24	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

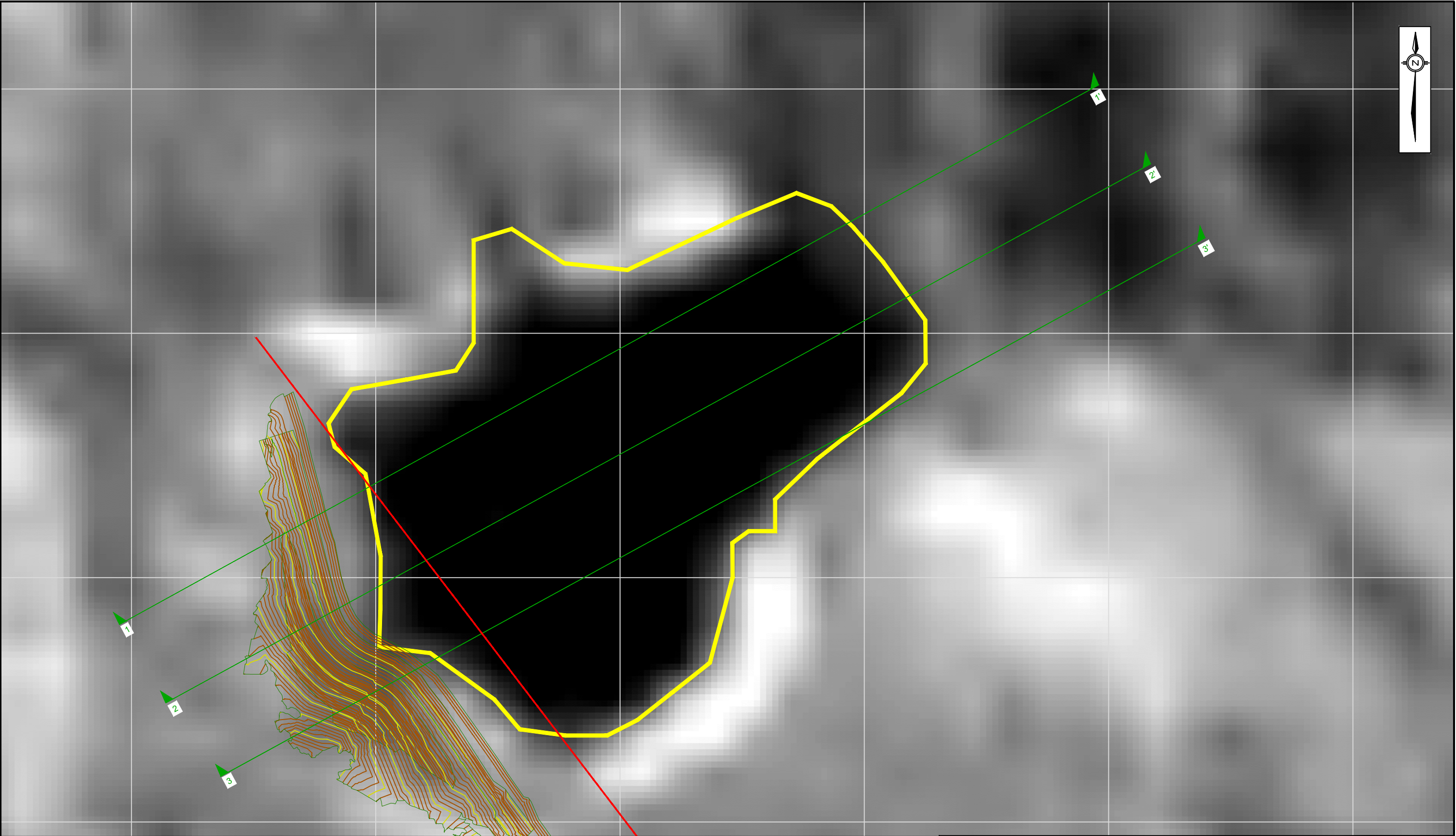
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES APRIL 28, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-25	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

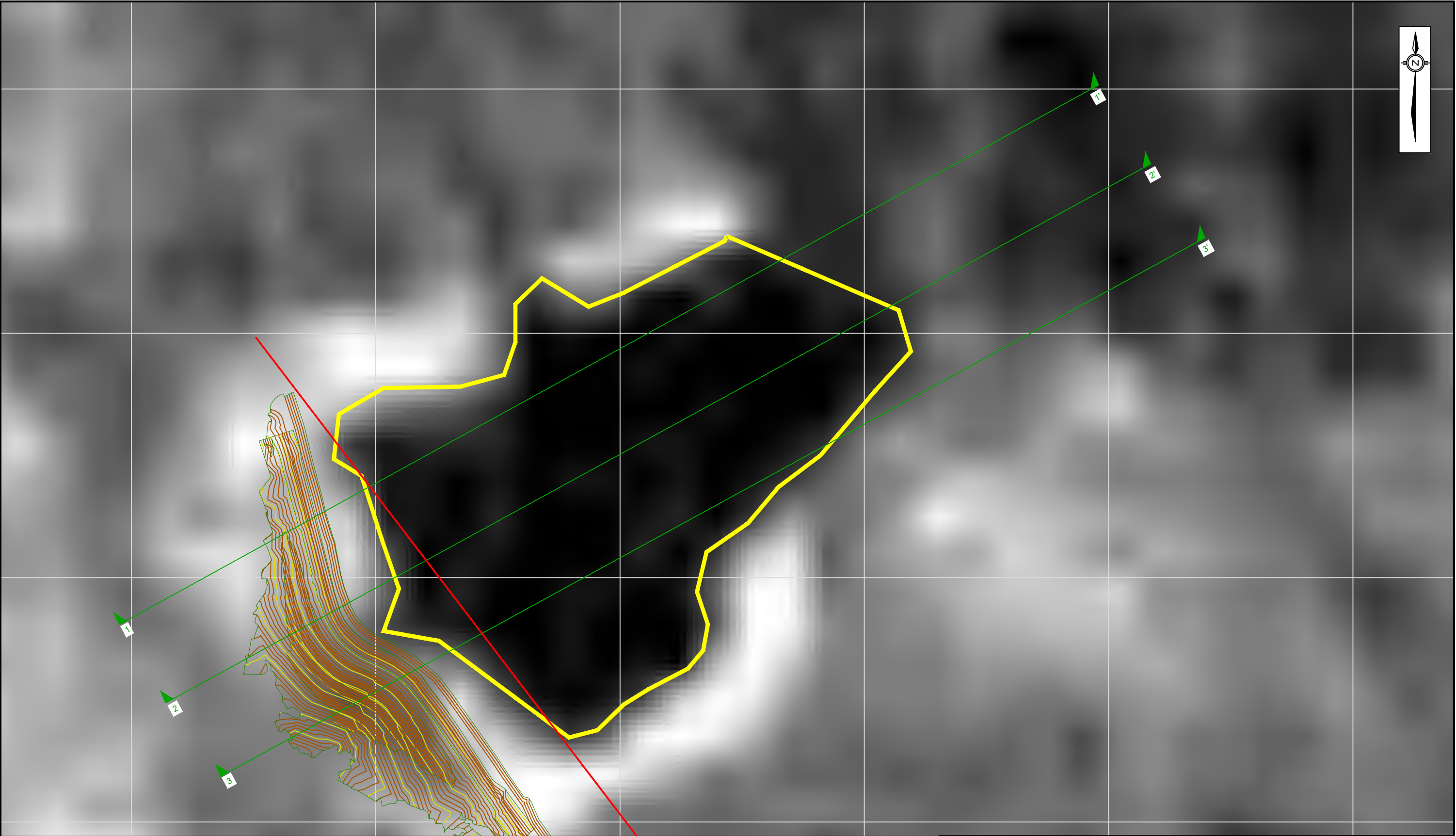
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JUNE 15, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-26	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

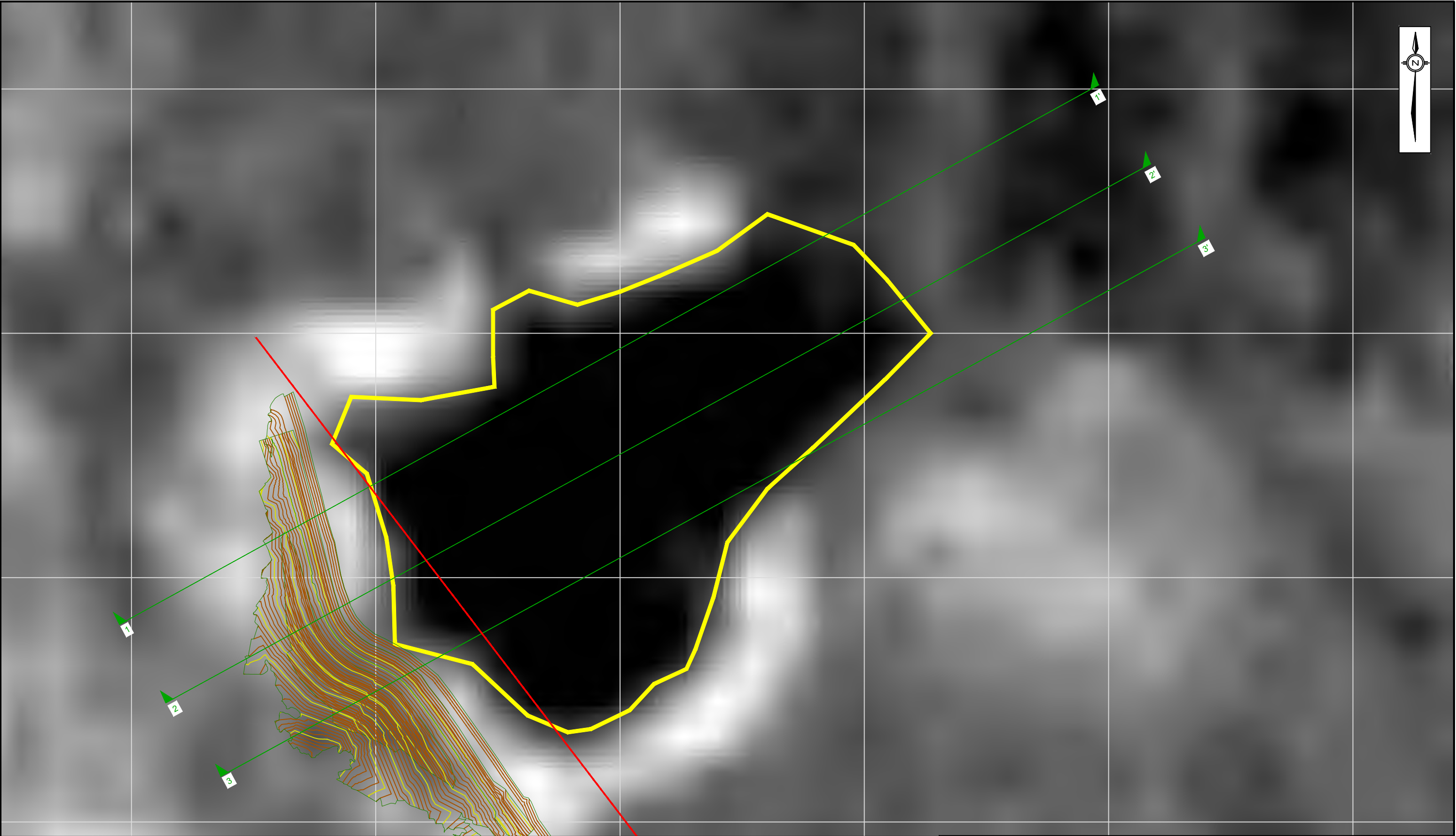
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 1, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-27	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

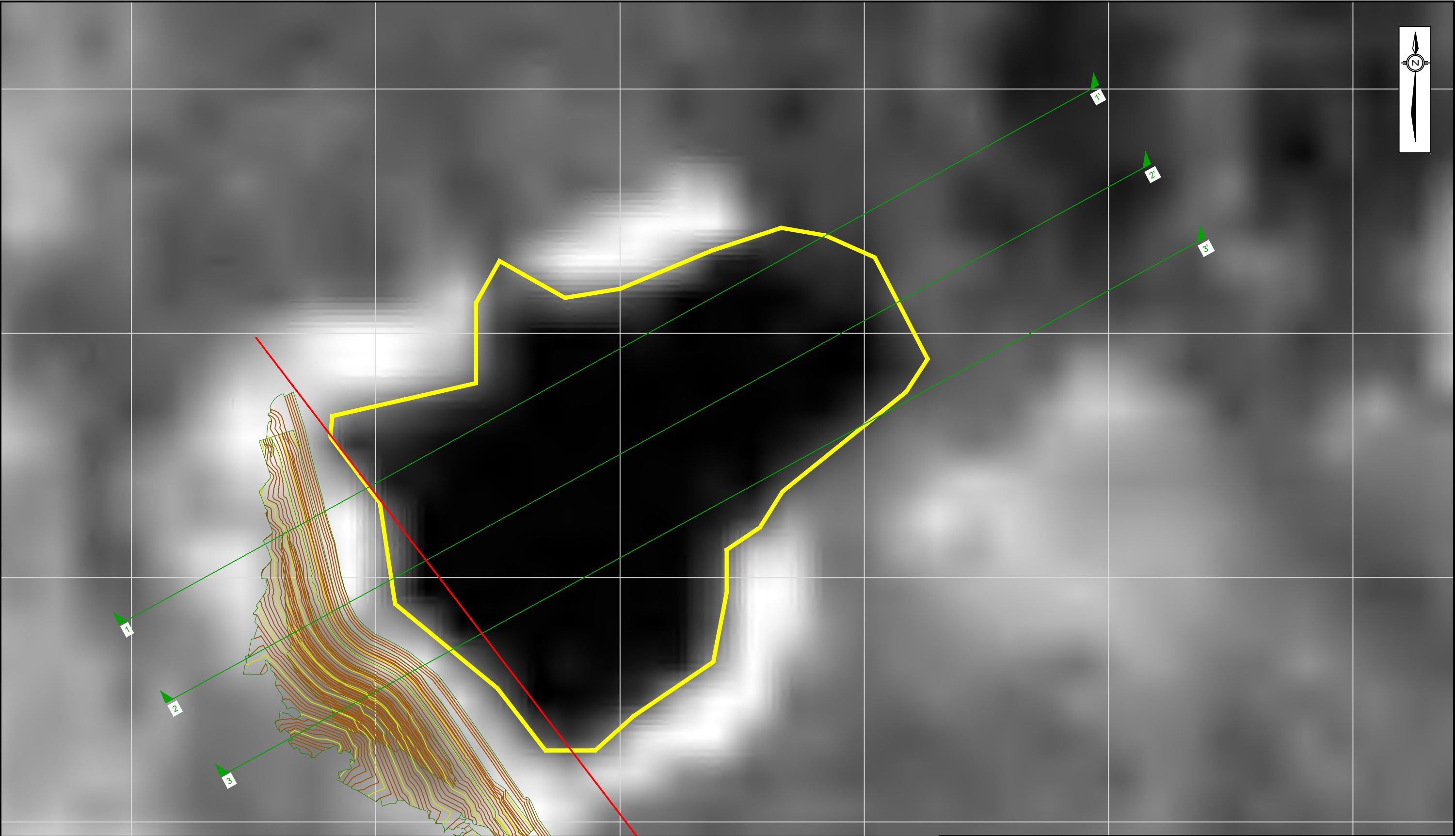
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 17, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-28	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

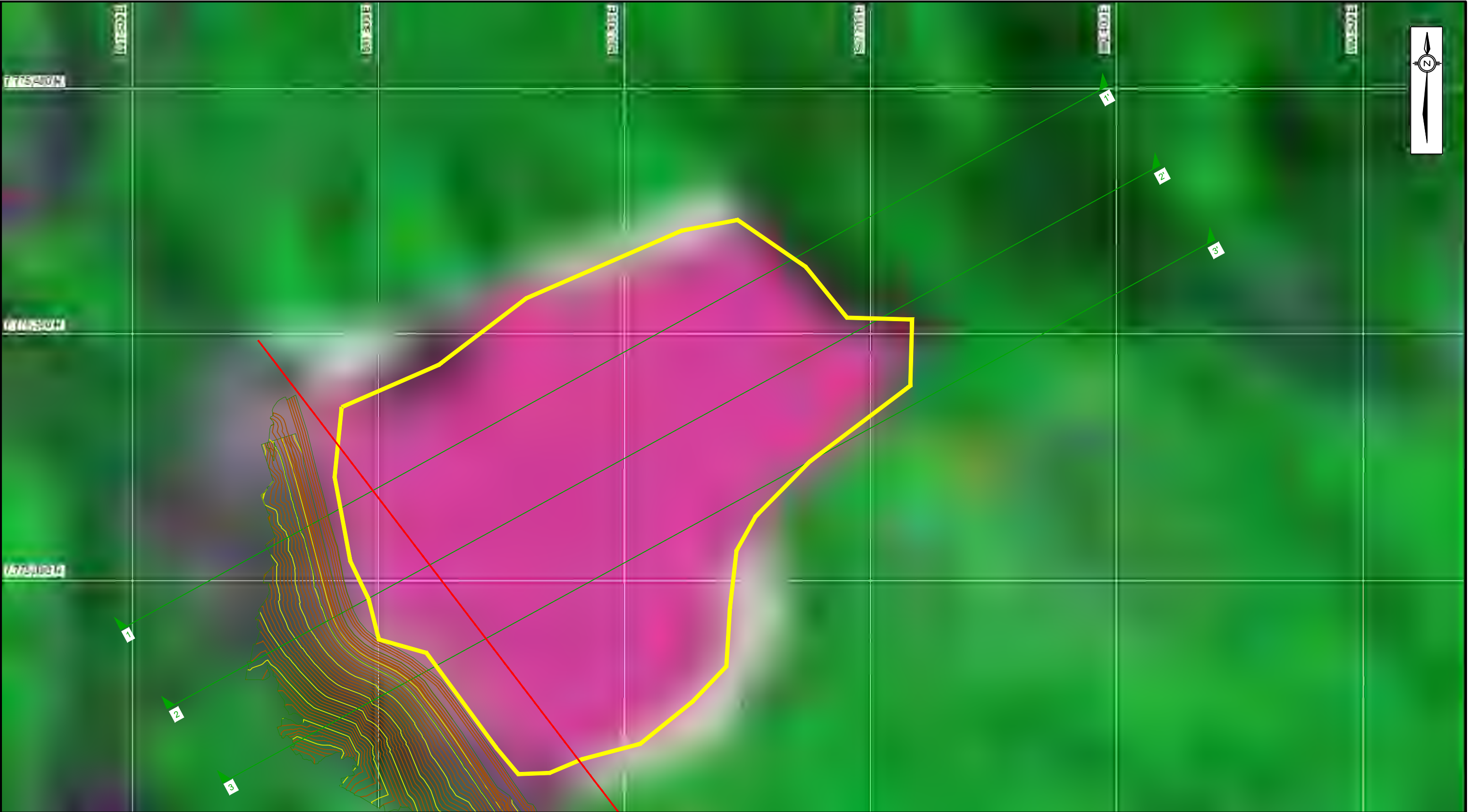
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES AUGUST 2, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-29	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- SINCE WATER ABSORBS NEAR-INFRARED LIGHT, WATER OR DAMP AREAS WILL LOOK RED IN A RED-NIR-GREEN IMAGE
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

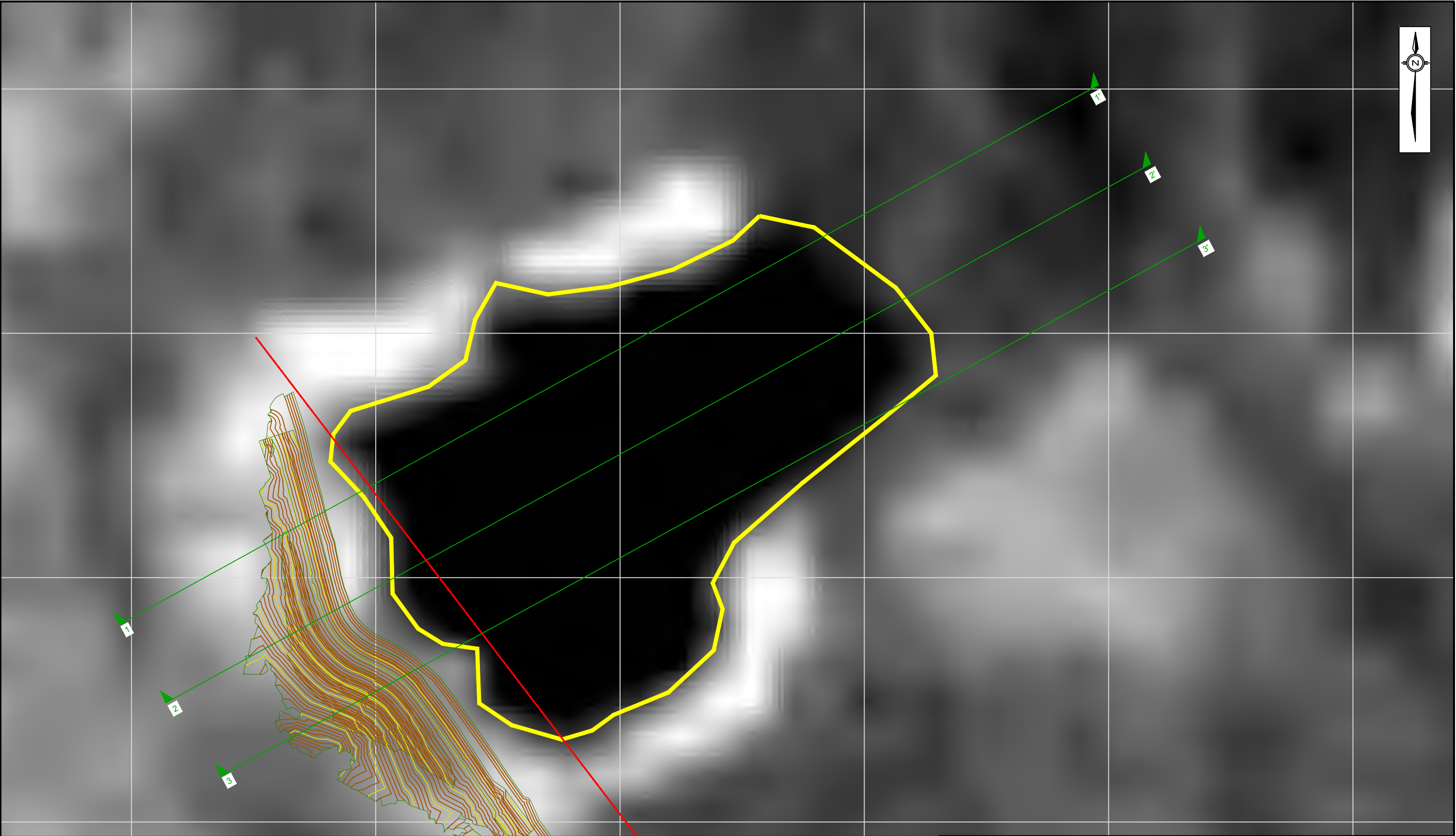
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES 1987 RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-30



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

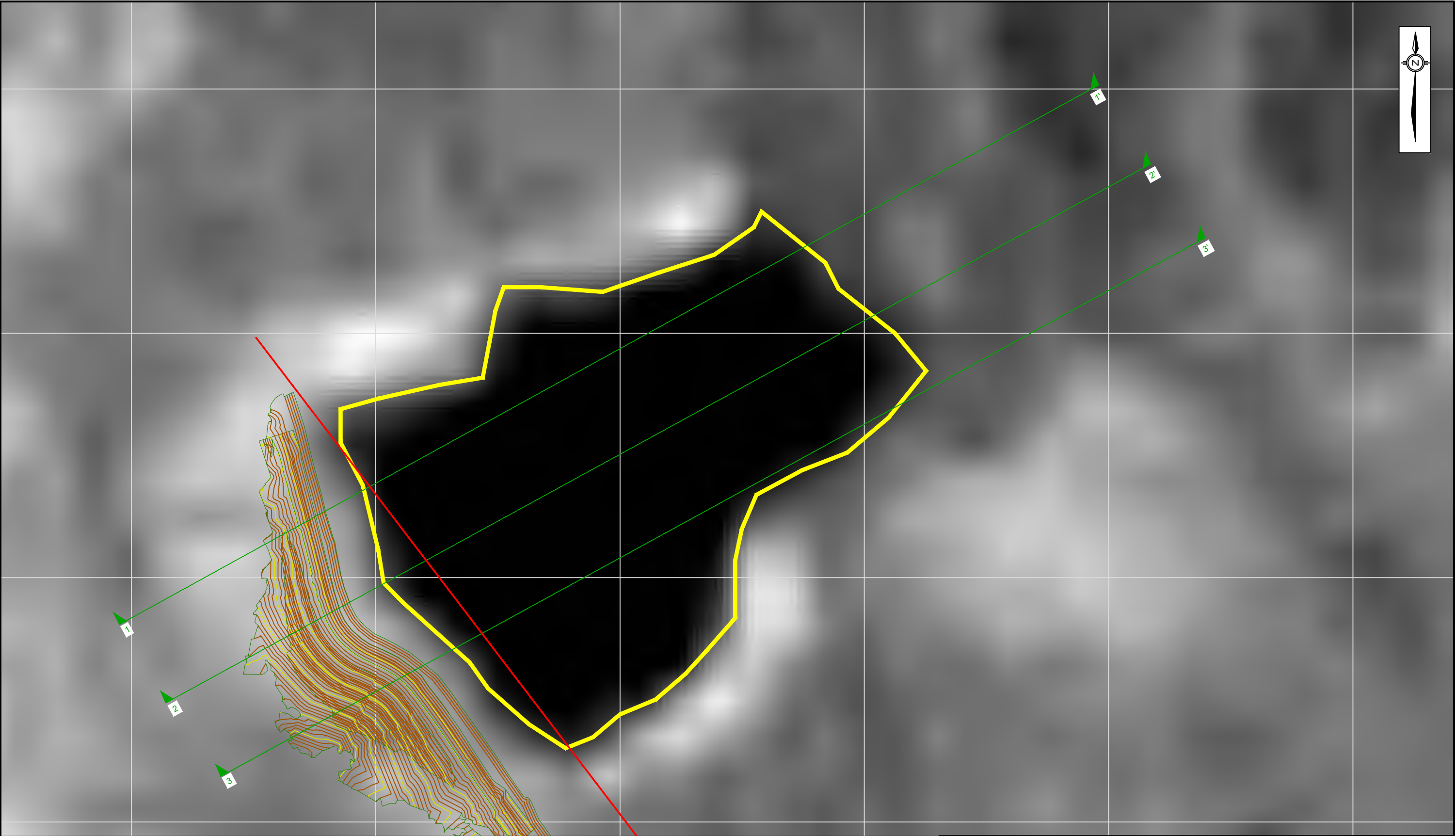
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES SEPTEMBER 3, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-31	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

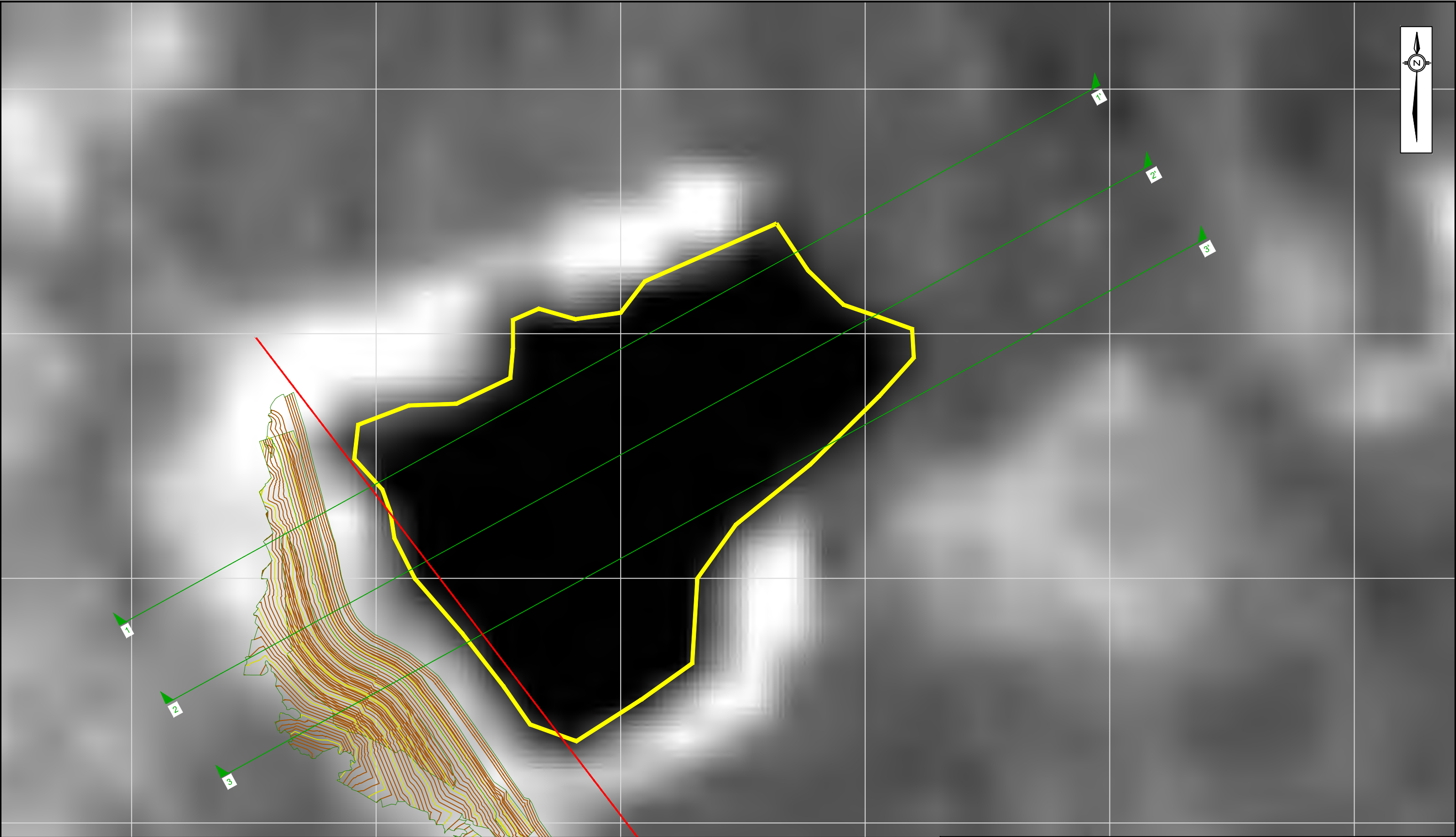
PROJECT

REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE

**SATELLITE IMAGES
SEPTEMBER 19, 1987 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I- 32
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

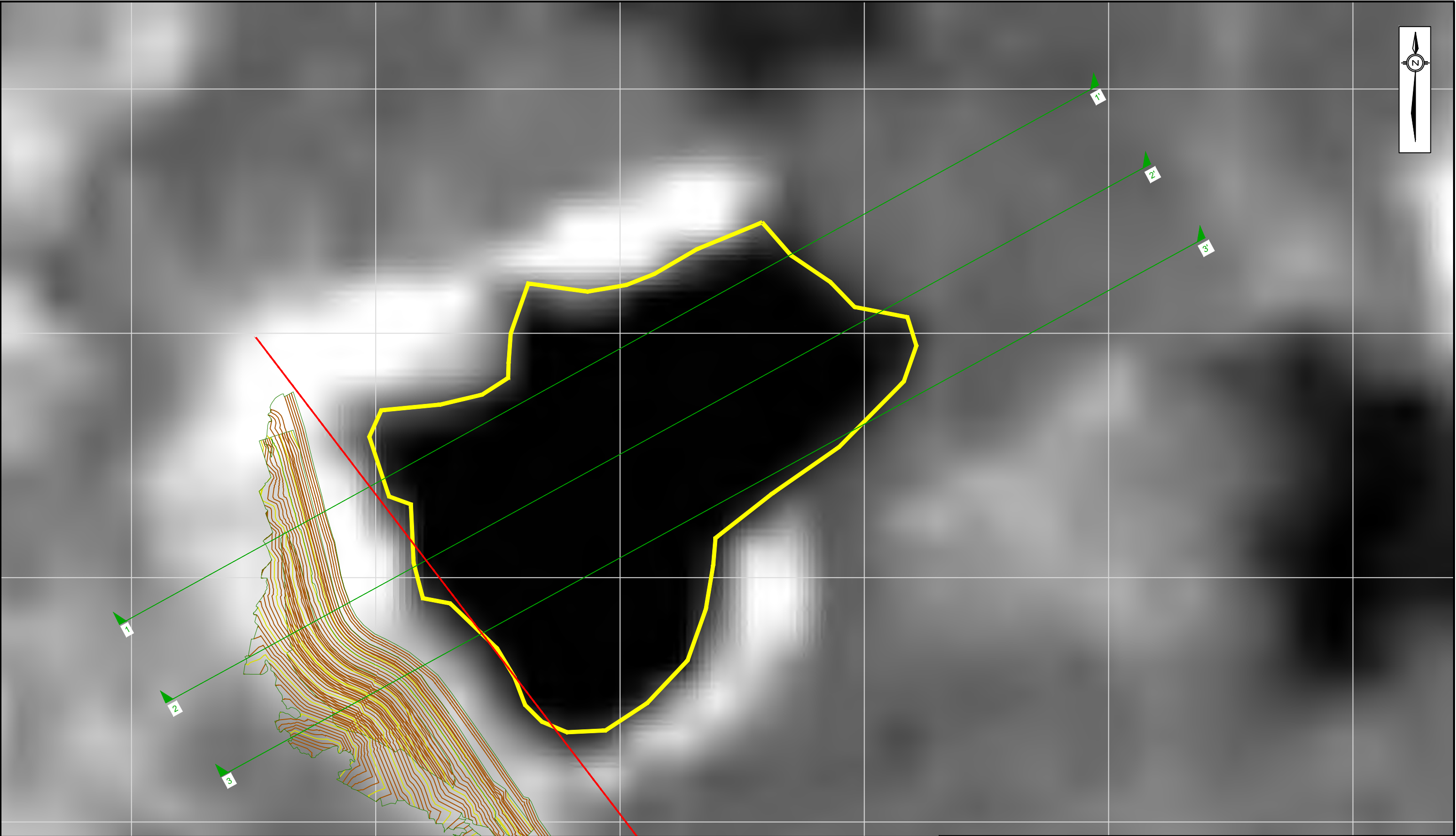
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES OCTOBER 5, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-33	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

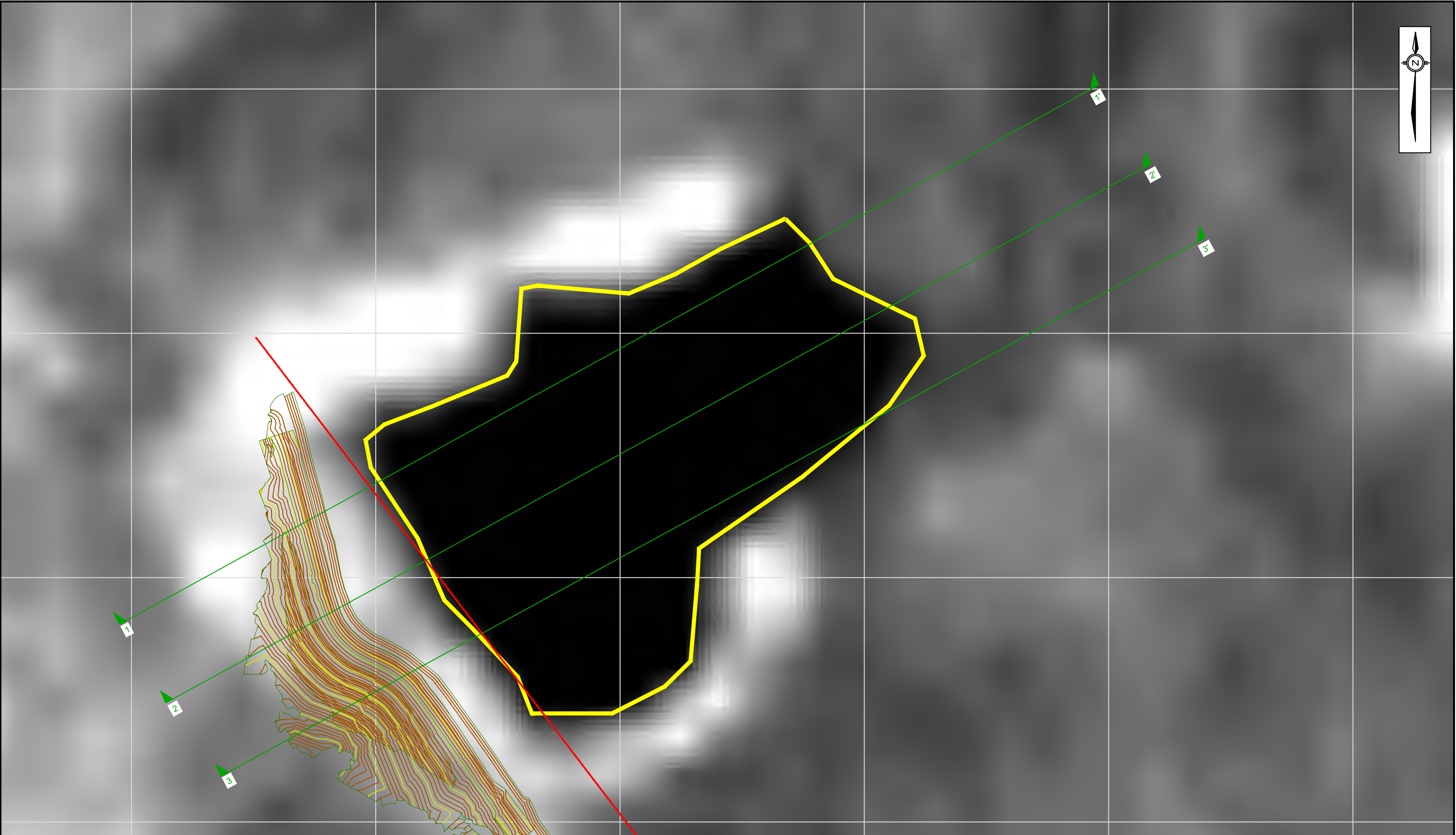
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES NOVEMBER 22, 1987 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-34	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

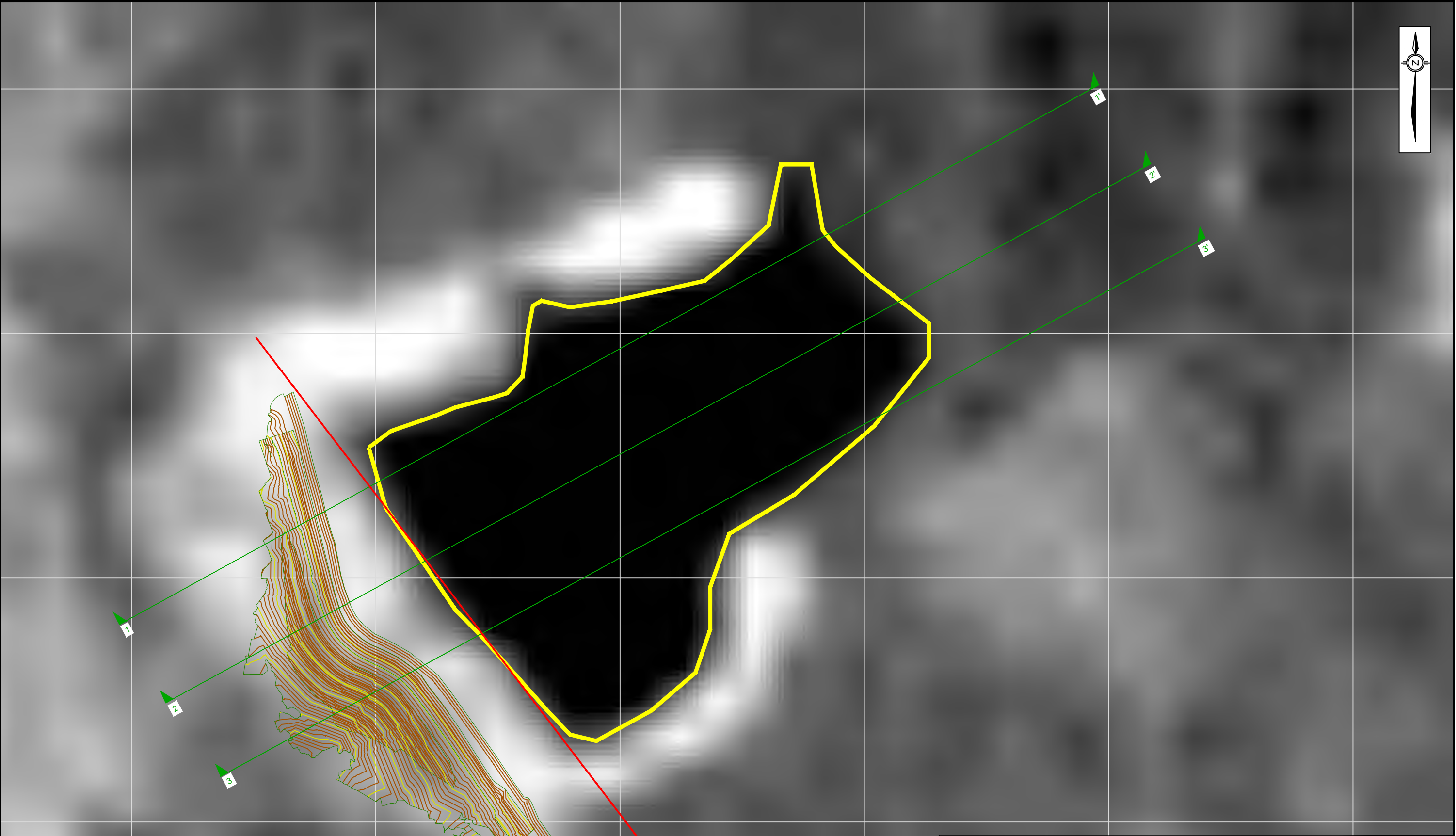
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JANUARY 25, 1988 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-35	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

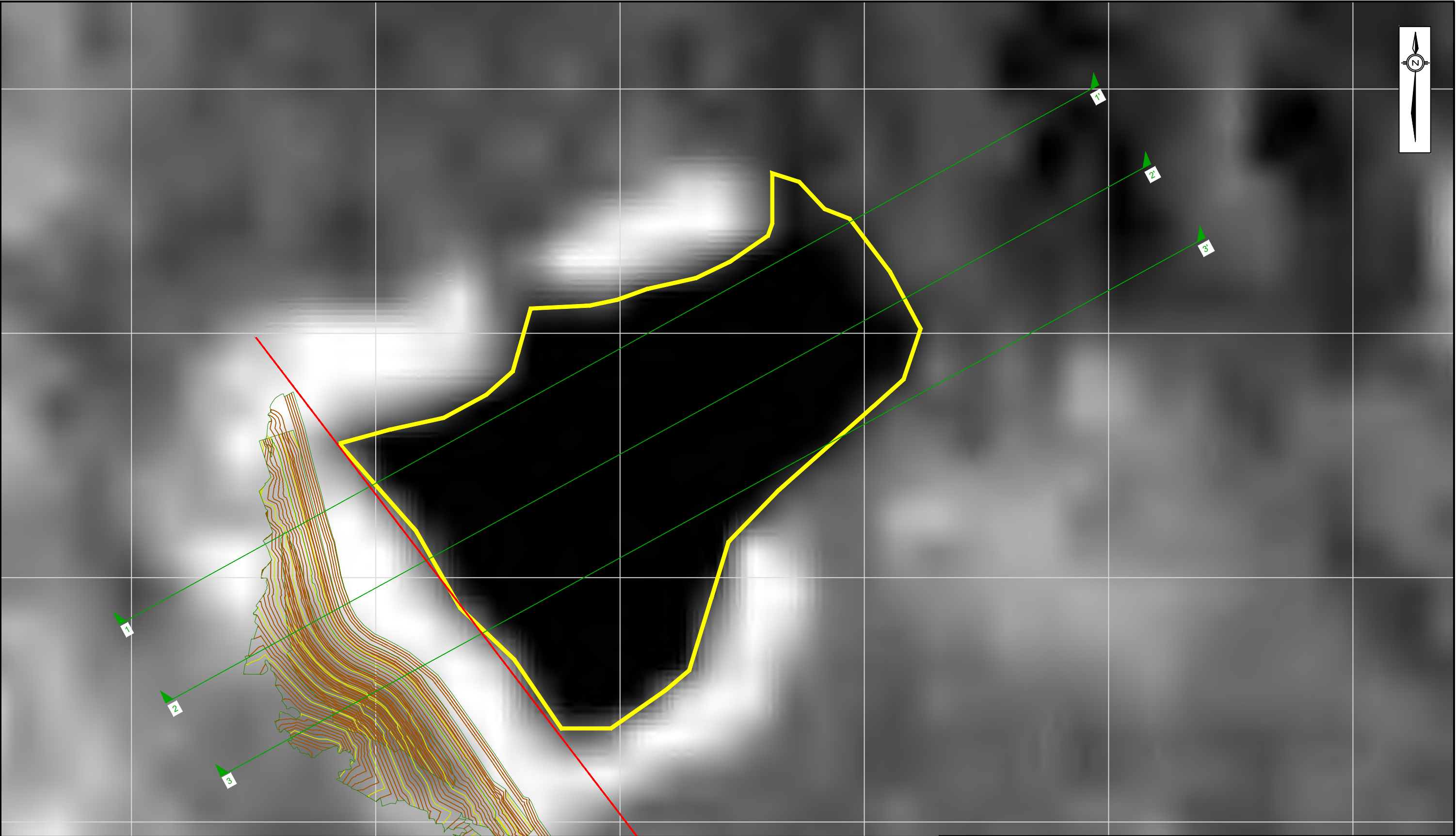
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
MARCH 29, 1988 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-36
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

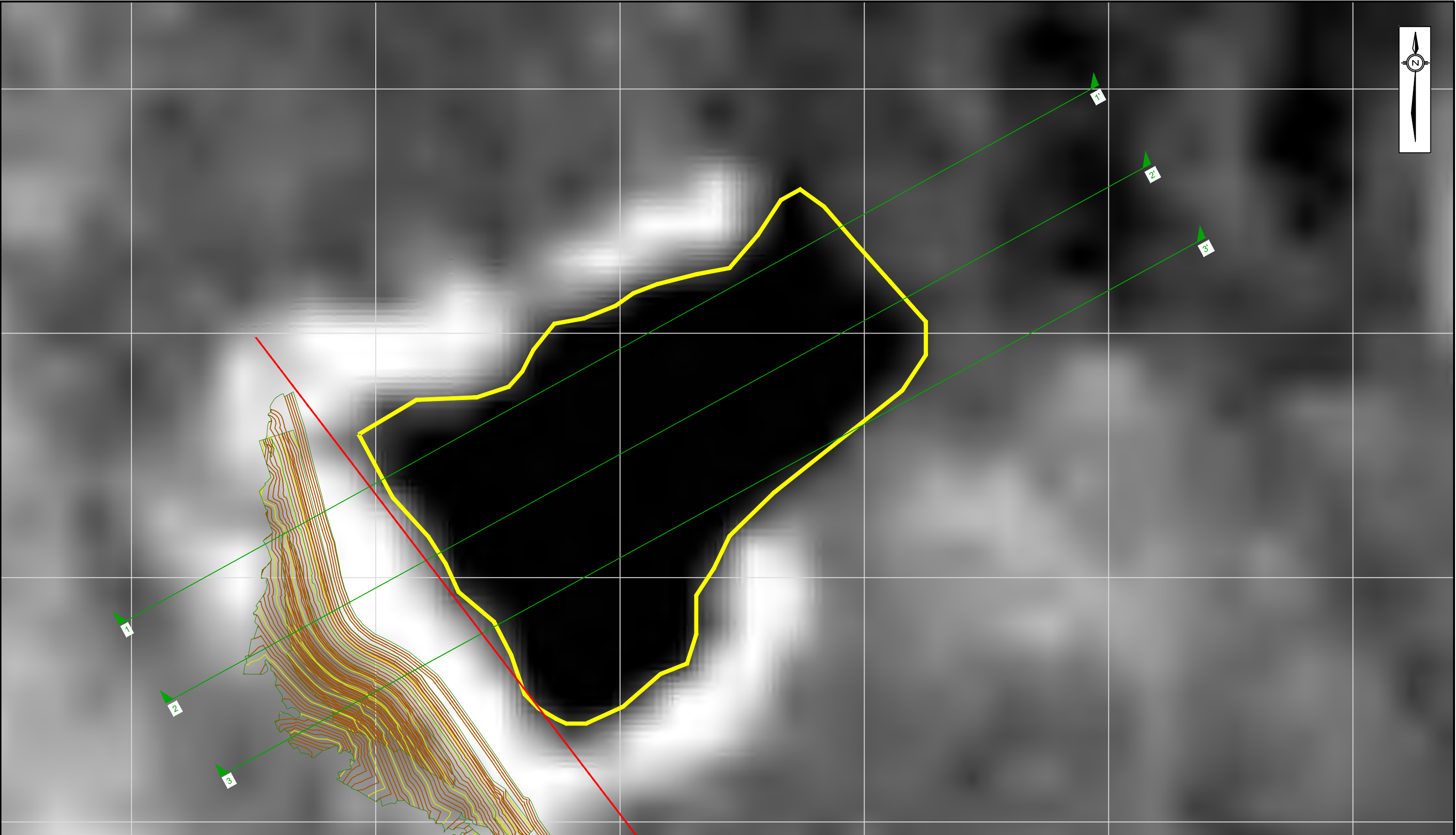
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES APRIL 30, 1988 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-37	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

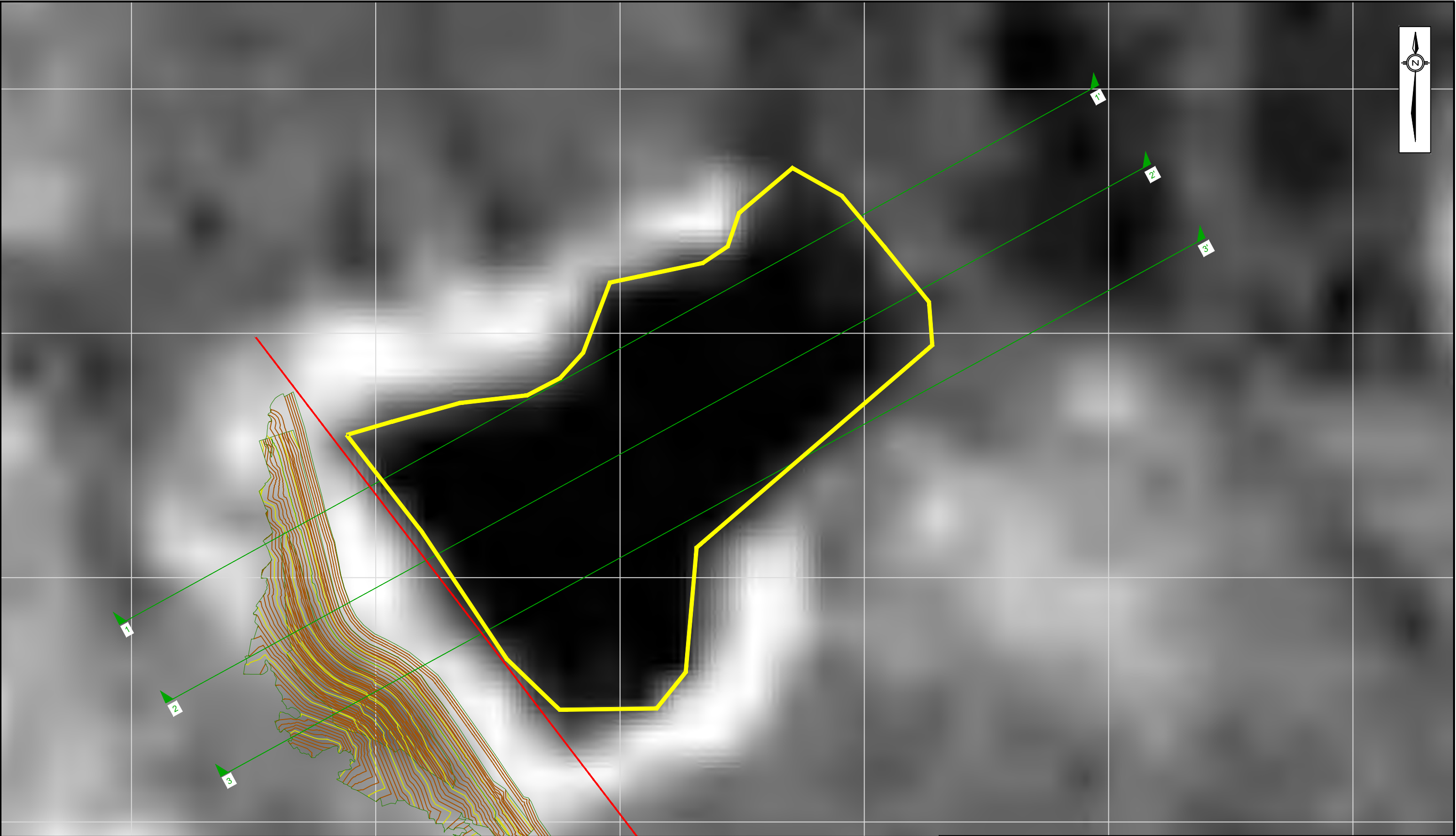
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES MAY 16, 1988 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-38



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

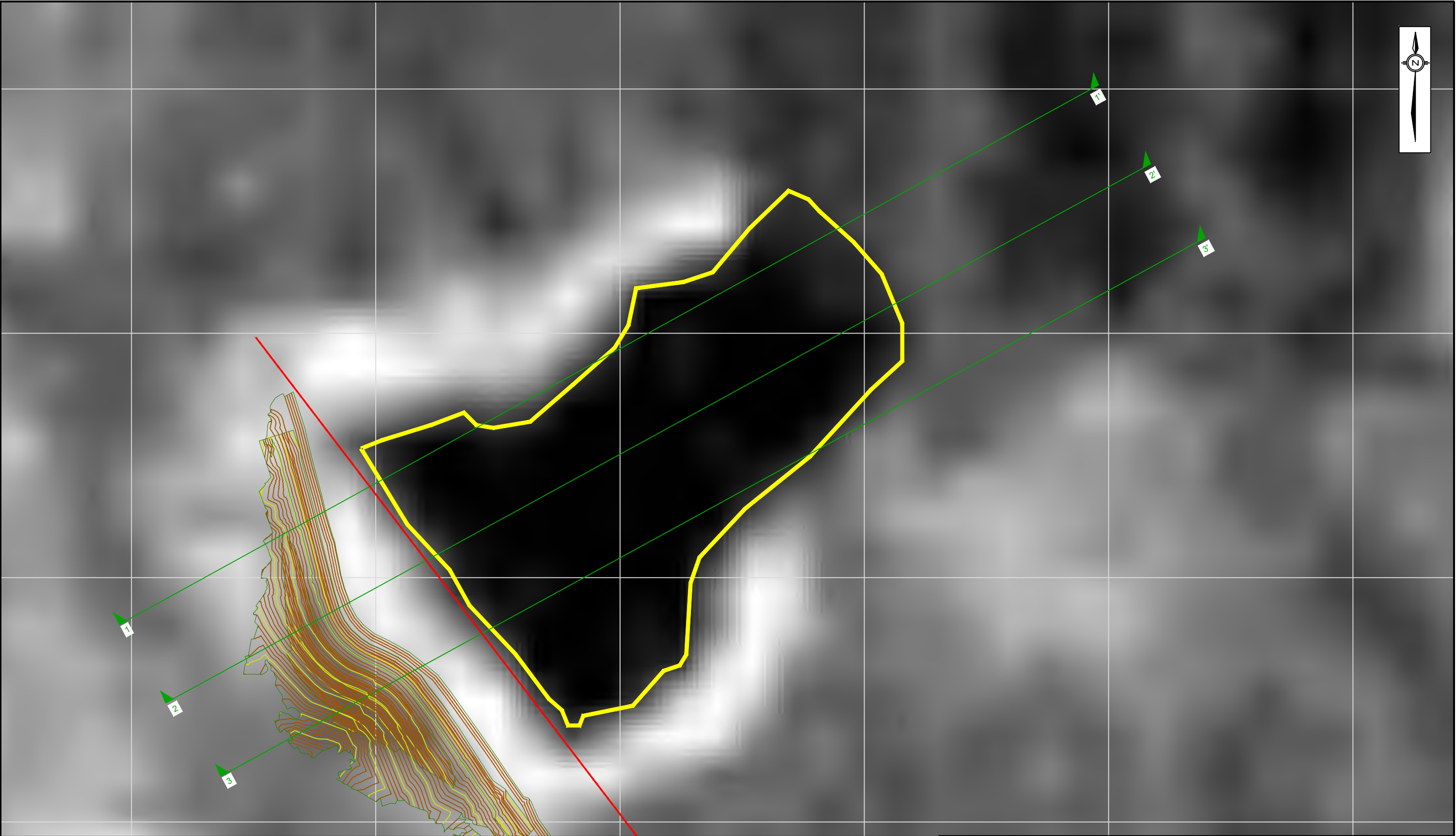
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
	TITLE
	SATELLITE IMAGES JUNE 17, 1988 (S) RAISE #5 DAM CREST EL. 889 m
SCALE 1:3,000	PROJECT No. A03355A02
	FIG. No. FIGURE I-39



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

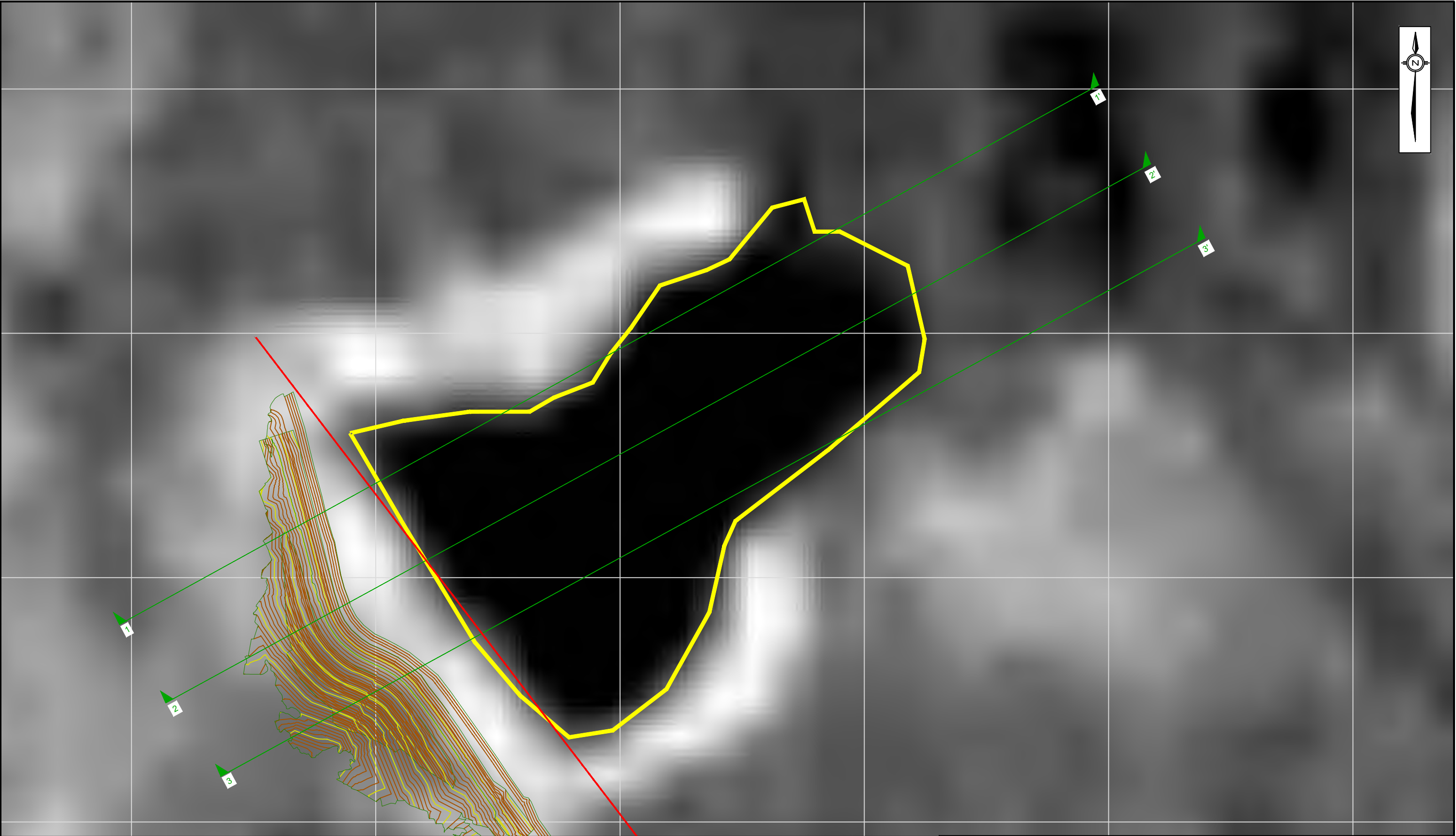
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 19, 1988 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-40	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

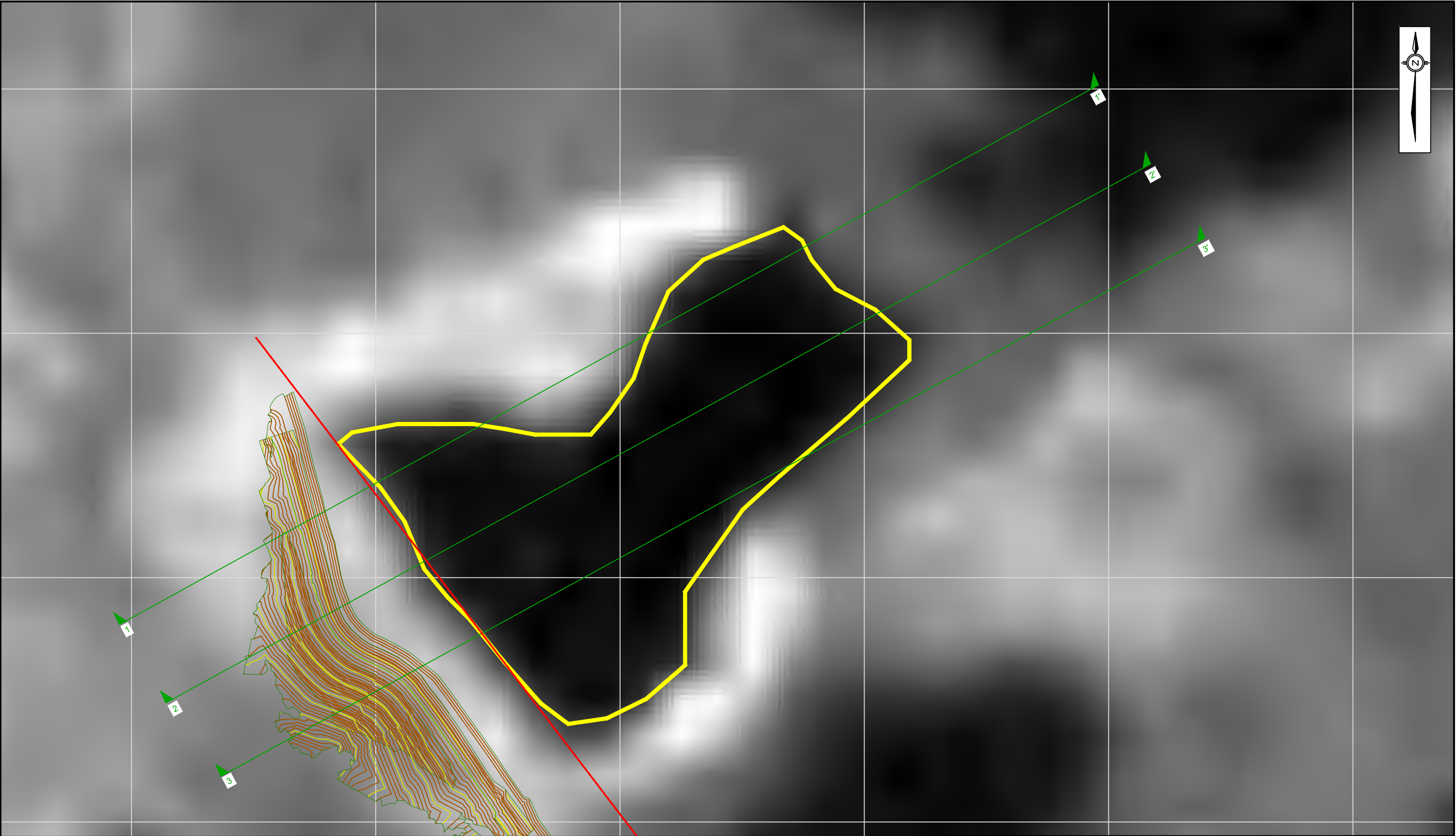
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES AUGUST 4, 1988 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-41



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

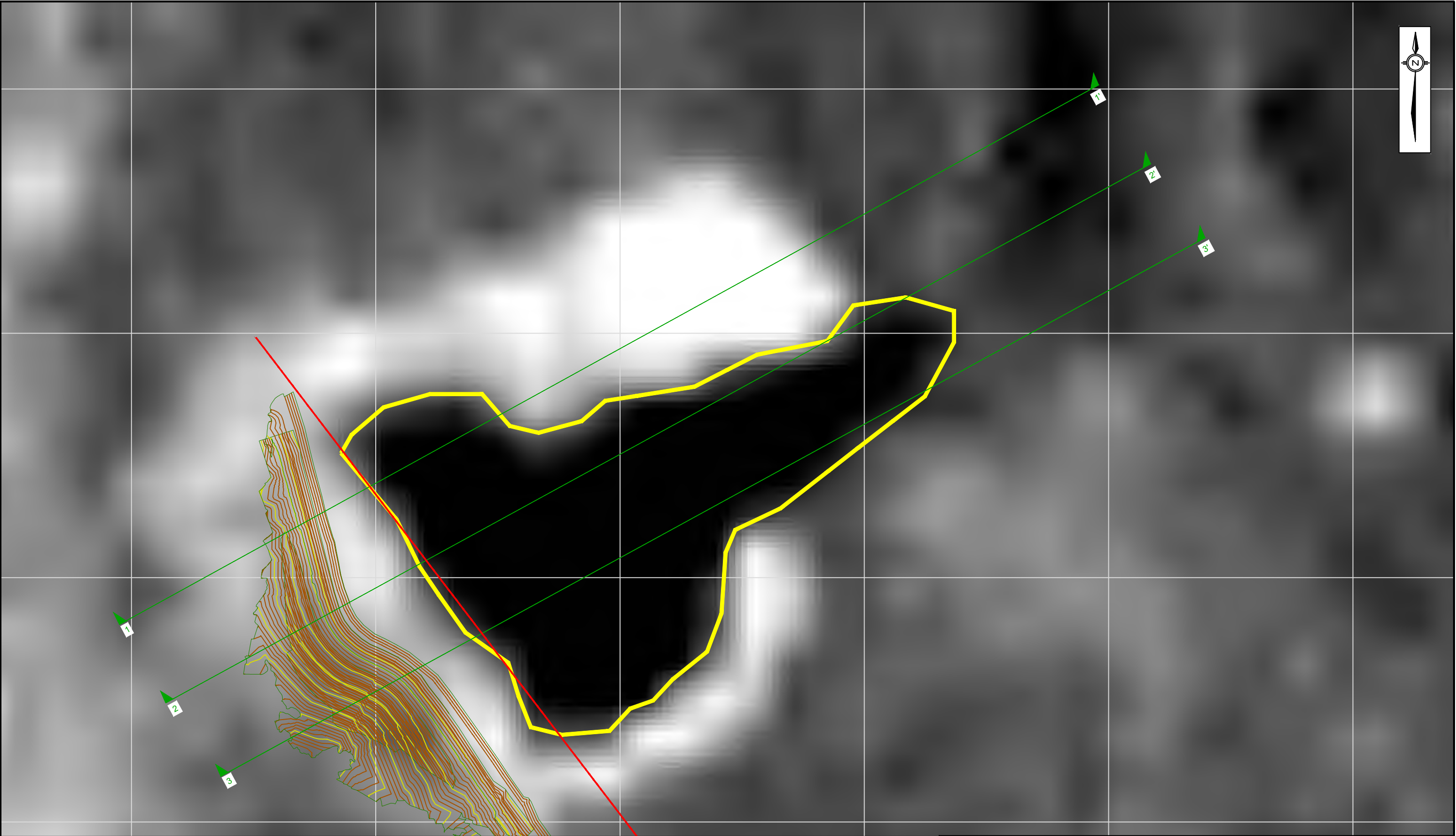
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
SEPTEMBER 21, 1988 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-42
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

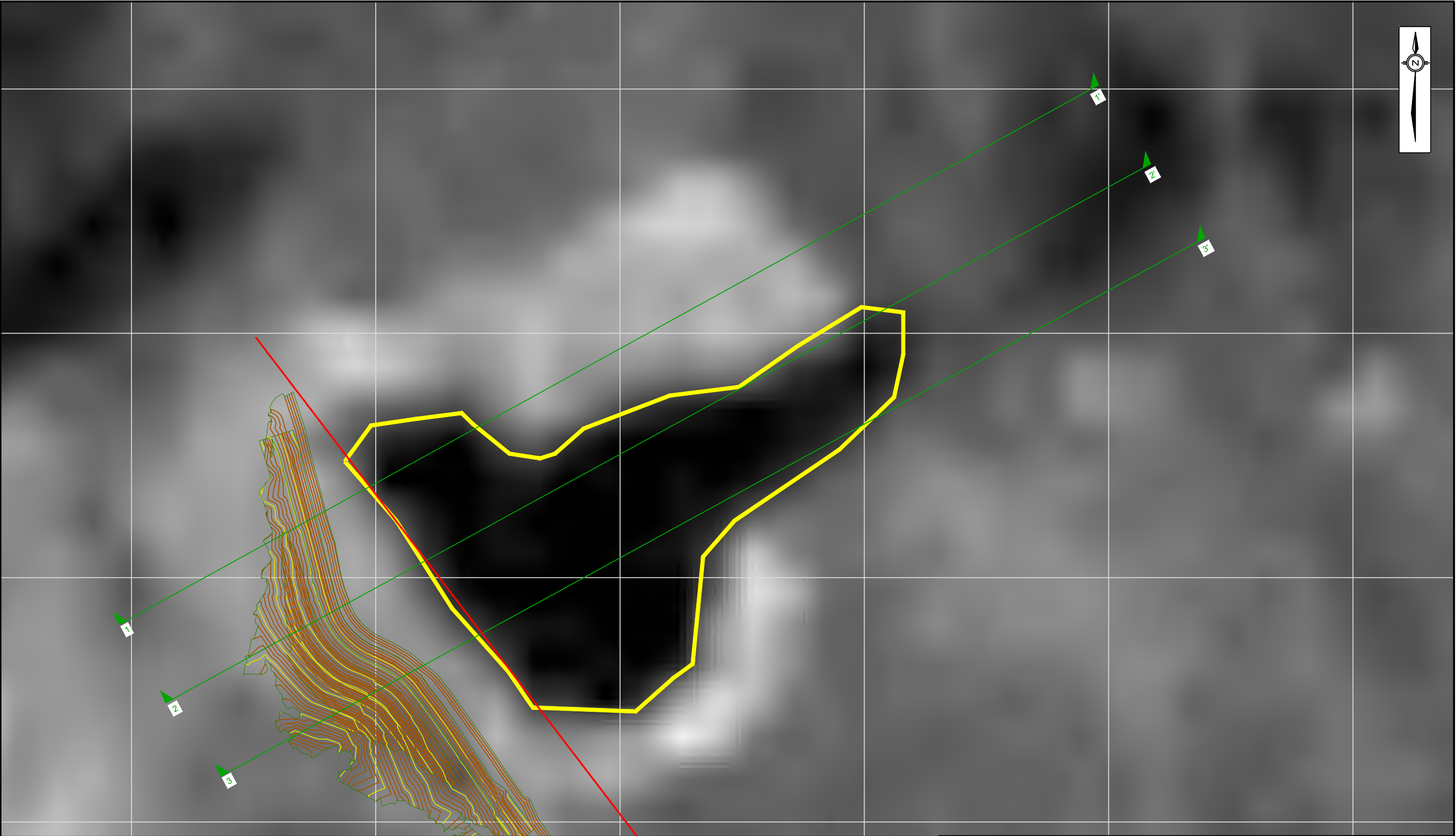
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
APRIL 1, 1989 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-43
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

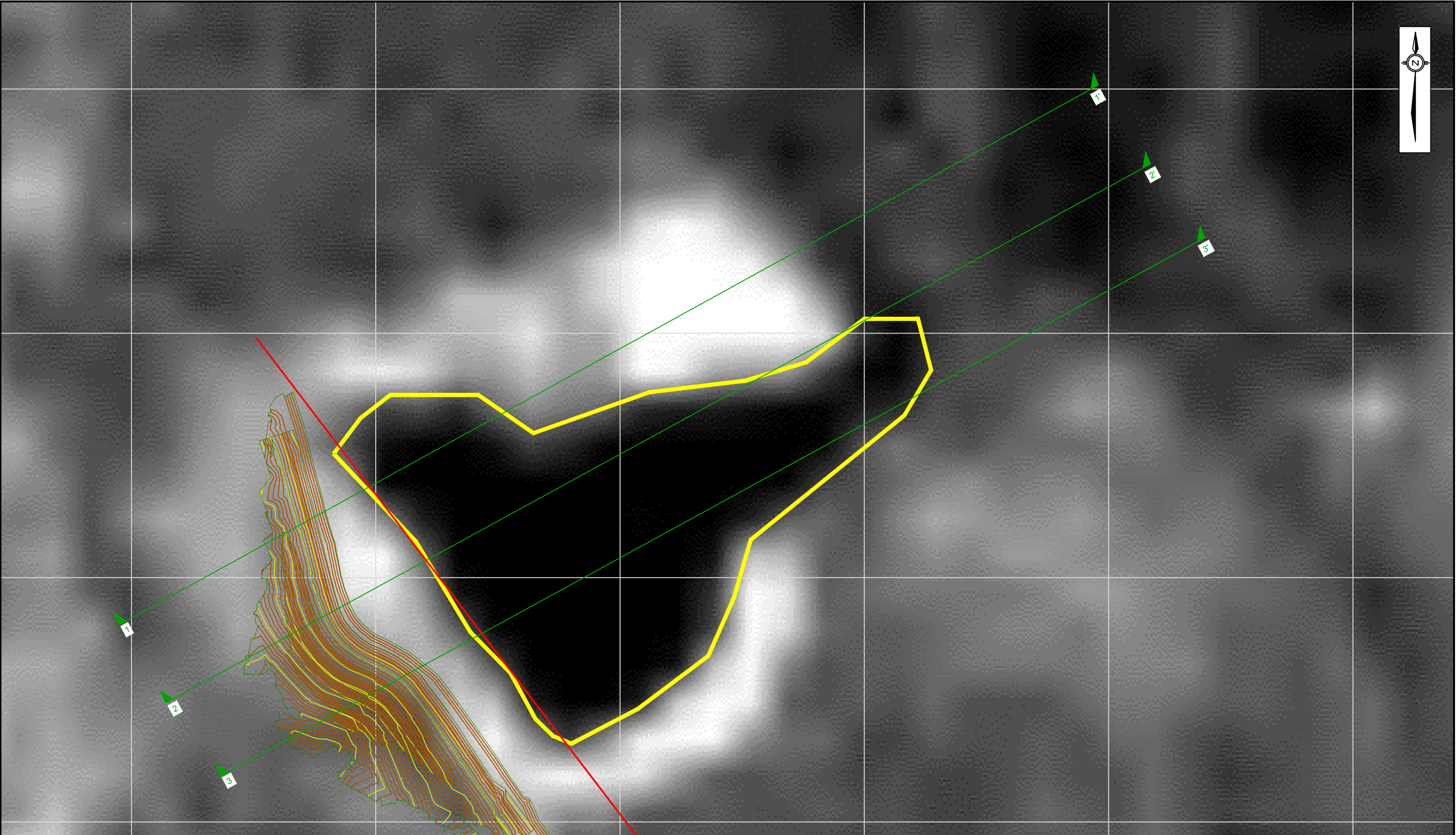
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT		PROJECT
		REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
		TITLE
		SATELLITE IMAGES APRIL 17, 1989 (S) RAISE #5 DAM CREST EL. 889 m
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-44



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

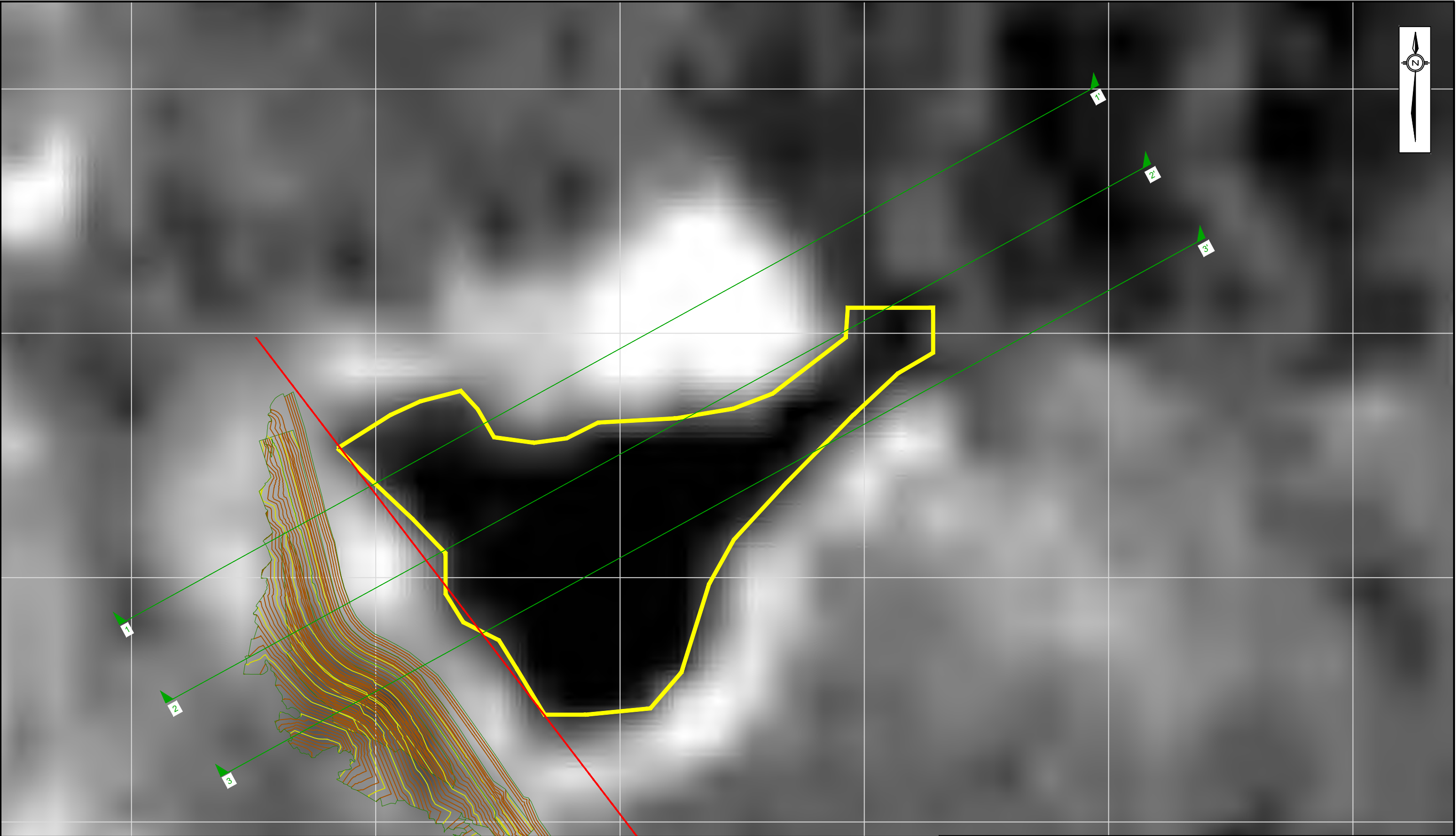
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES MAY 19, 1989 (S) RAISE #5 DAM CREST EL. 889 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-45	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

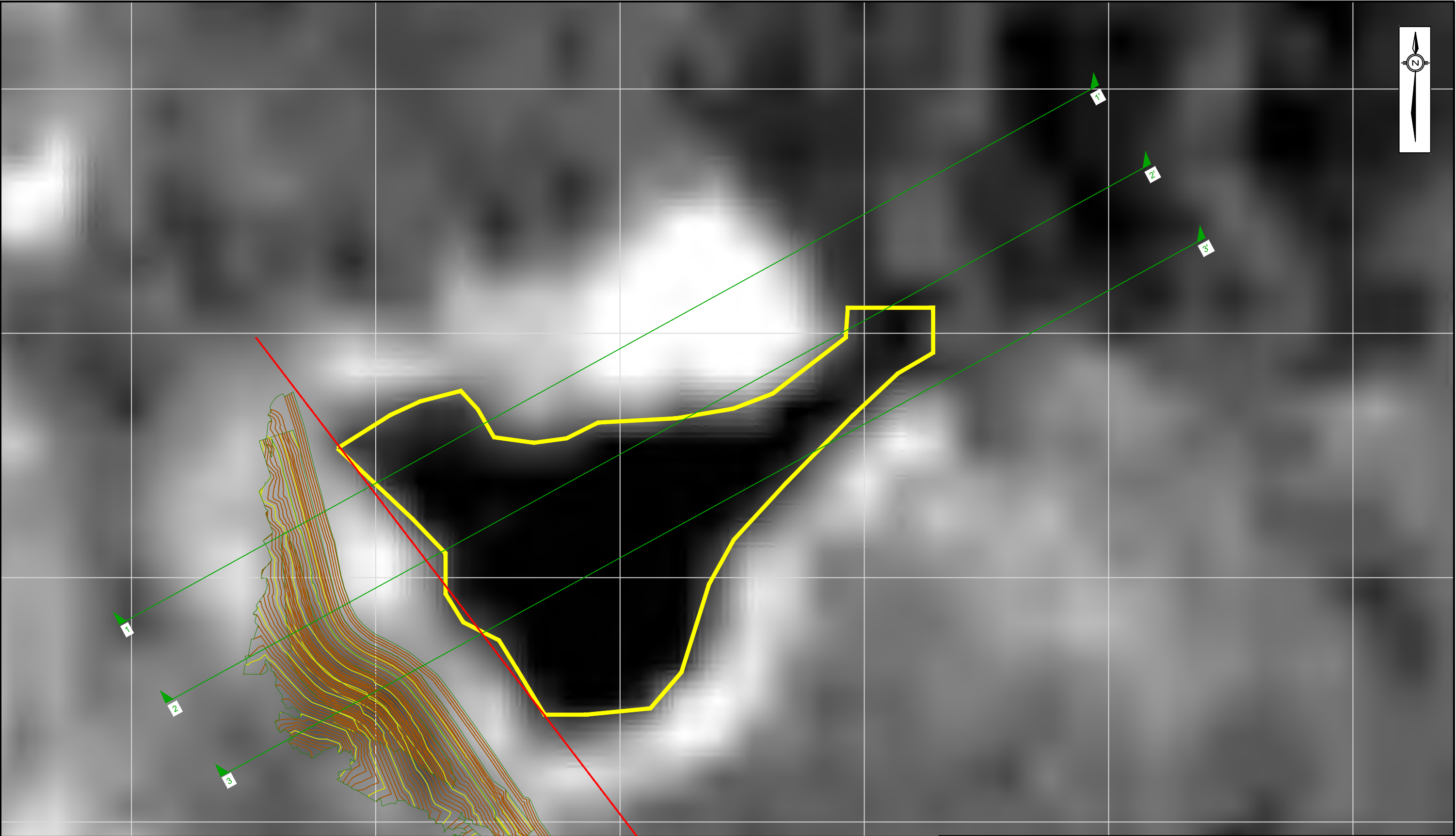
PROJECT

REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE

**SATELLITE IMAGES
JUNE 4, 1989 (S)
RAISE #5
DAN CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-46
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

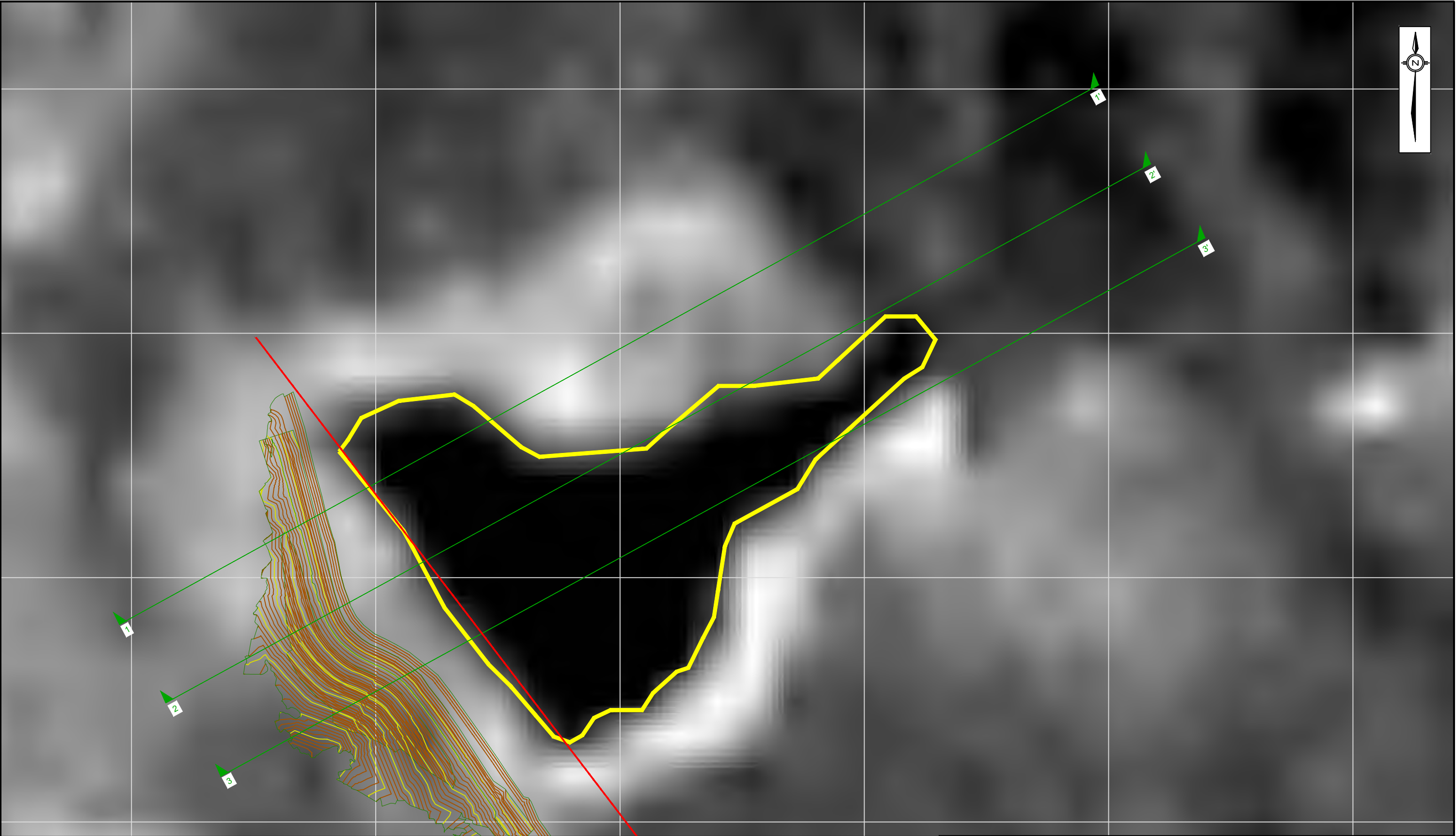
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES JUNE 20, 1989 (S) RAISE #5 DAN CREST EL. 889 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-47



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

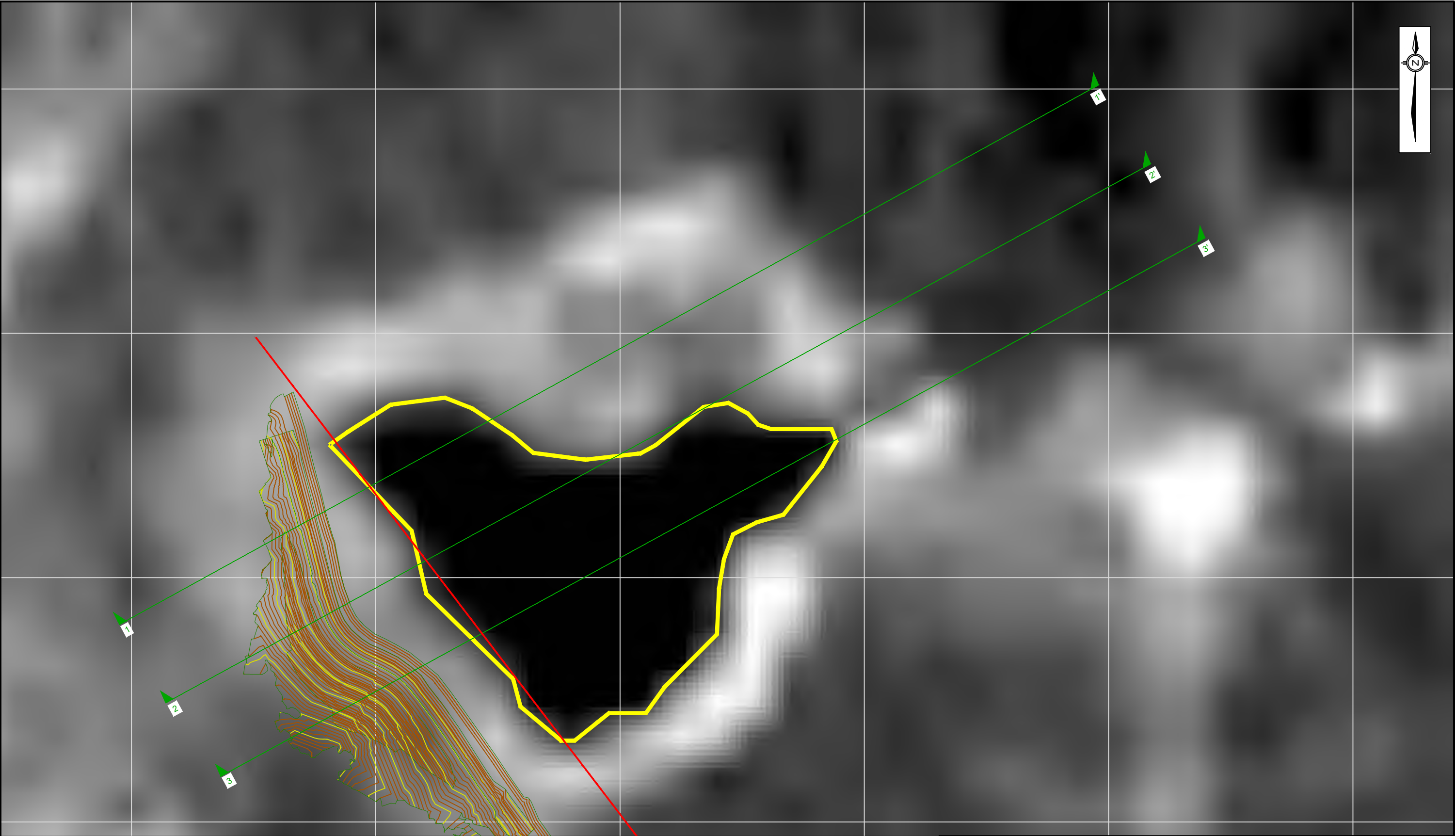
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
AUGUST 23, 1989 (S)
RAISE #5
DAM CRET EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-48
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

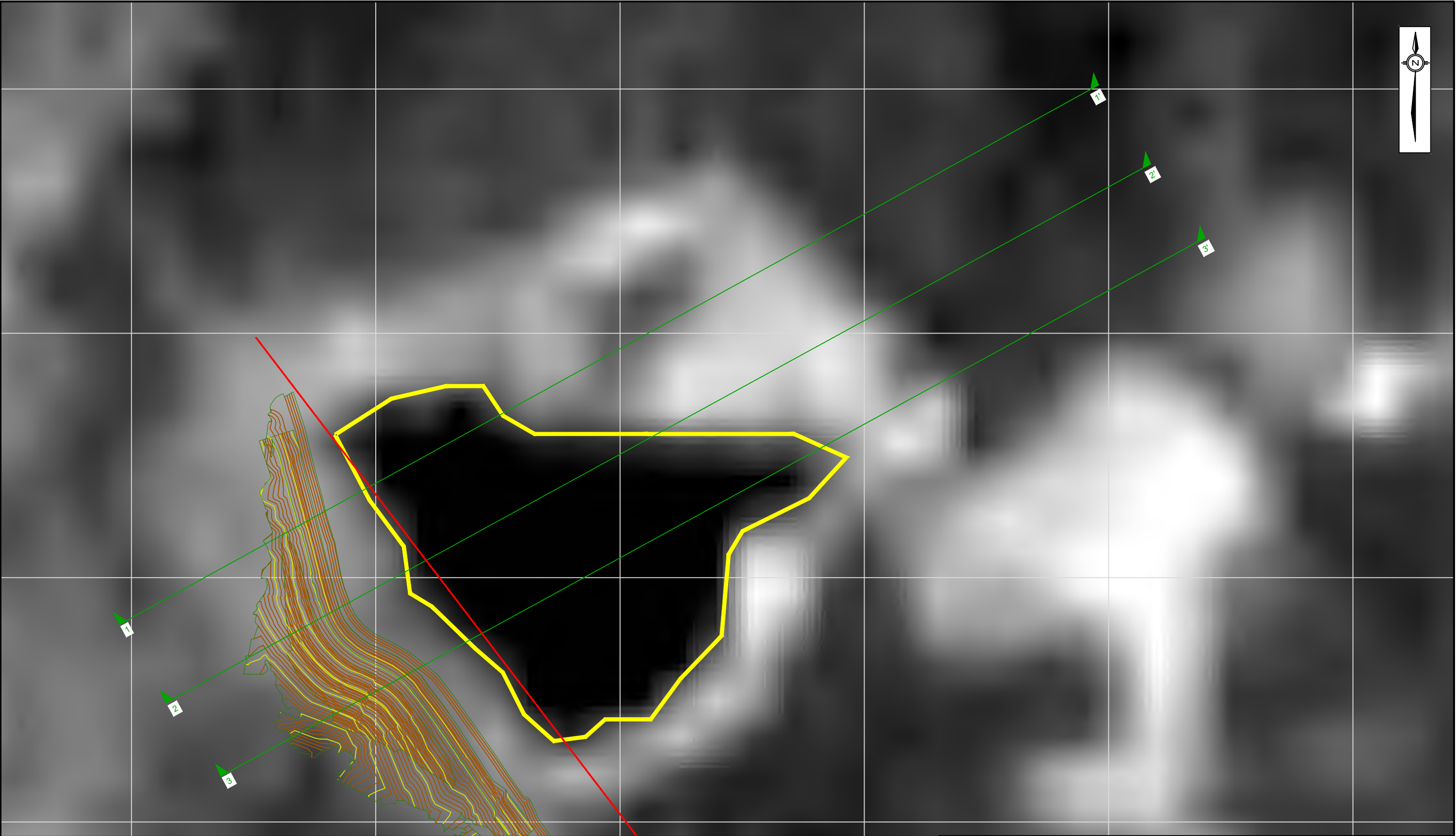
DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT		
TITLE SATELLITE IMAGES SEPTEMBER 24, 1989 (S) RAISE #5 DAM CREST EL. 889 m		
SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-49



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 5)	DAM RAISE OUTLINE

1:3,000 30 60

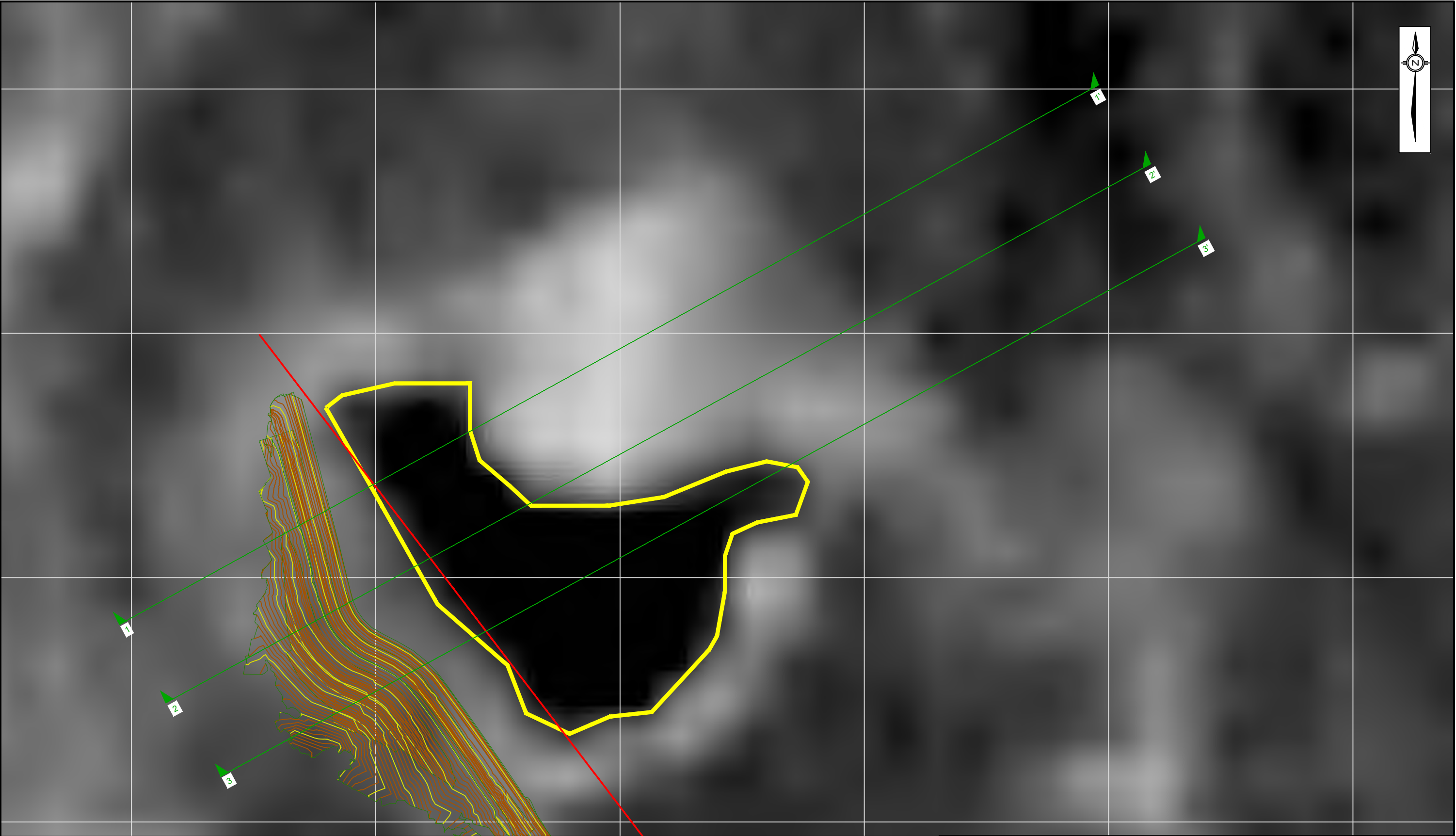
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
OCTOBER 26, 1989 (S)
RAISE #5
DAM CREST EL. 889 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-50
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

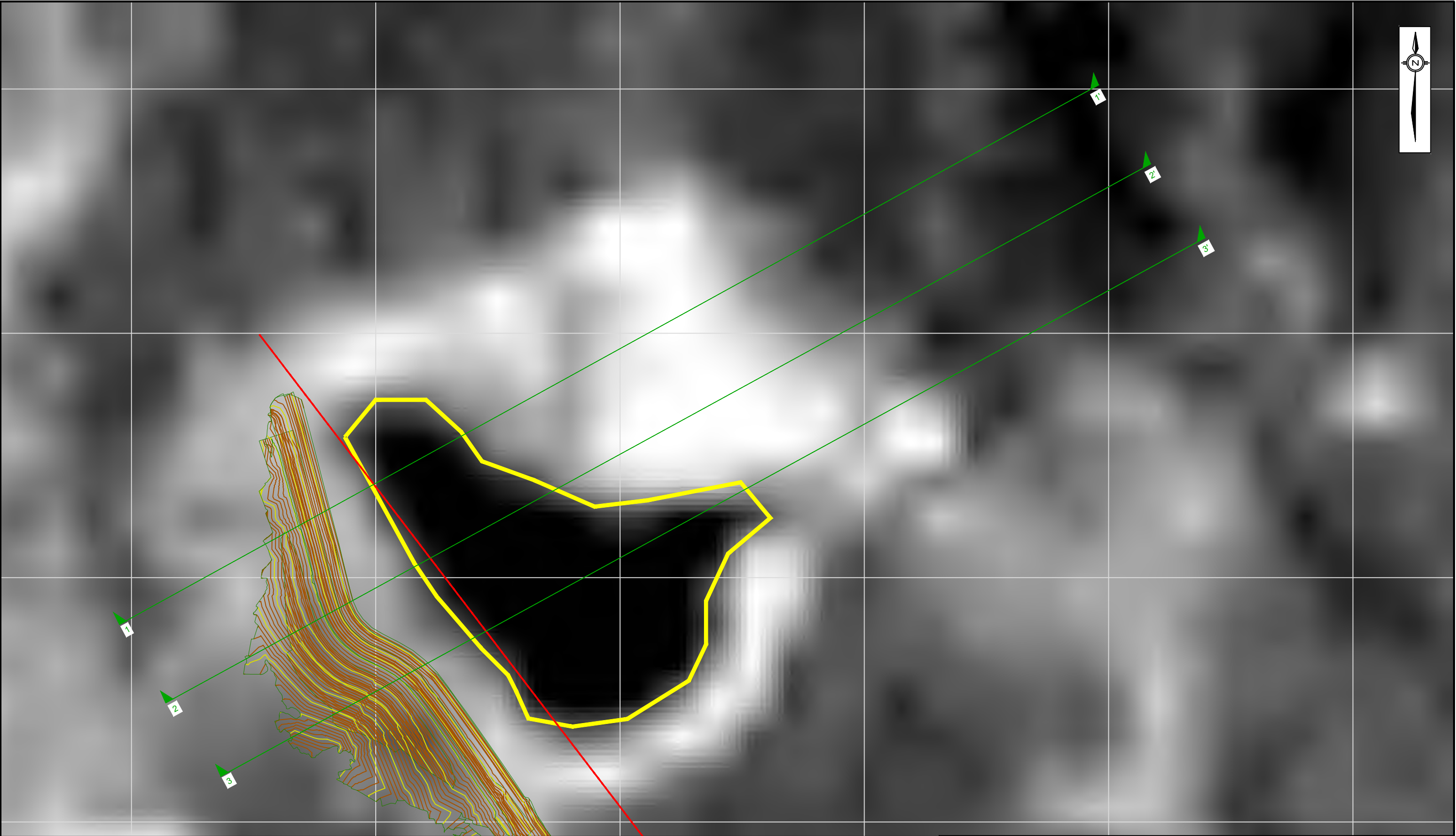
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 6)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES MARCH 3, 1990 (S) RAISE #6 DAM CREST EL. 891.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-51	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

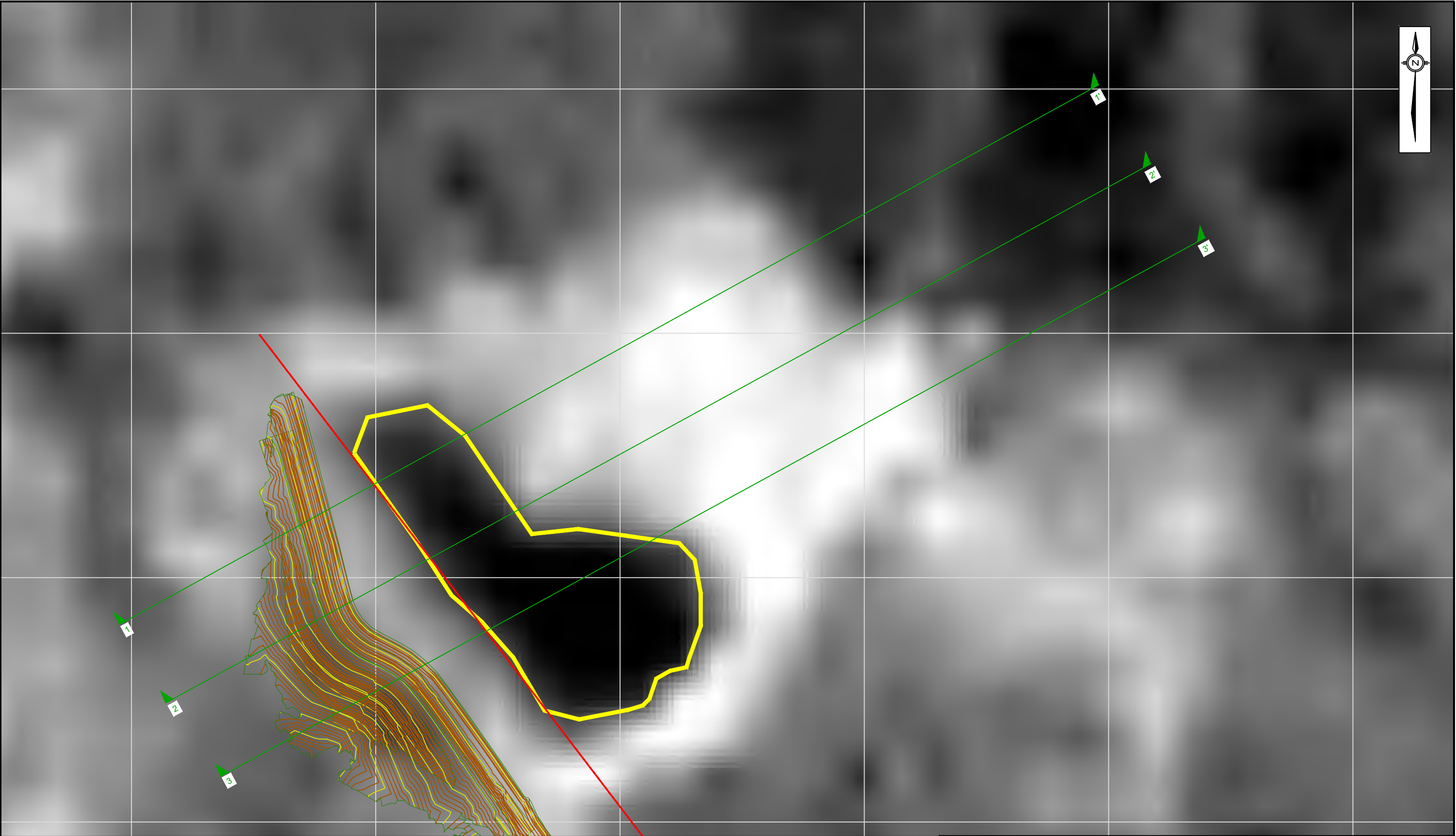
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 6)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES APRIL 4, 1990 (S) RAISE #6 DAM CREST EL. 891.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-52	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

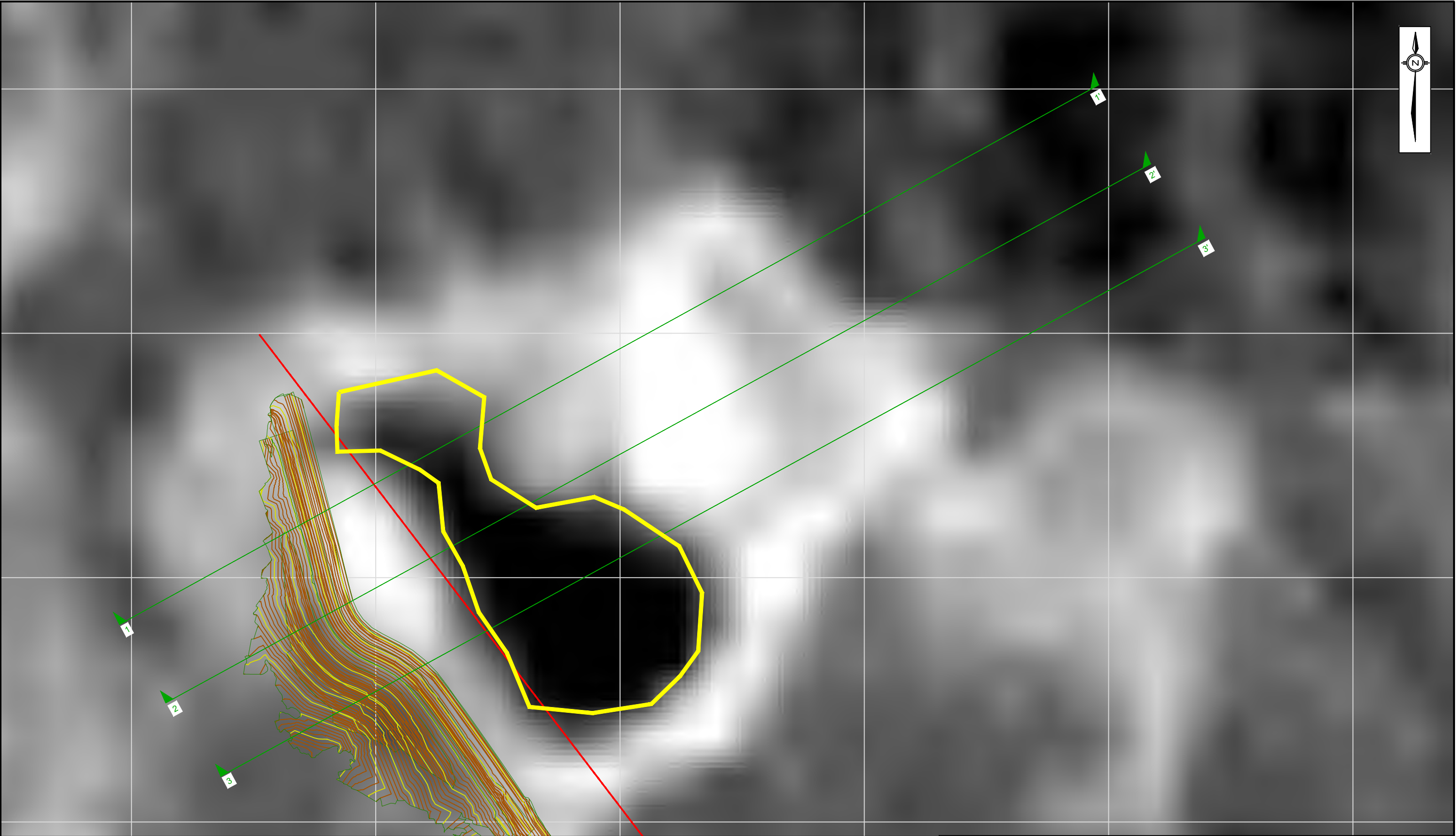
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 6)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 9, 1990 (S) RAISE #6 DAM CREST EL. 891.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-53	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

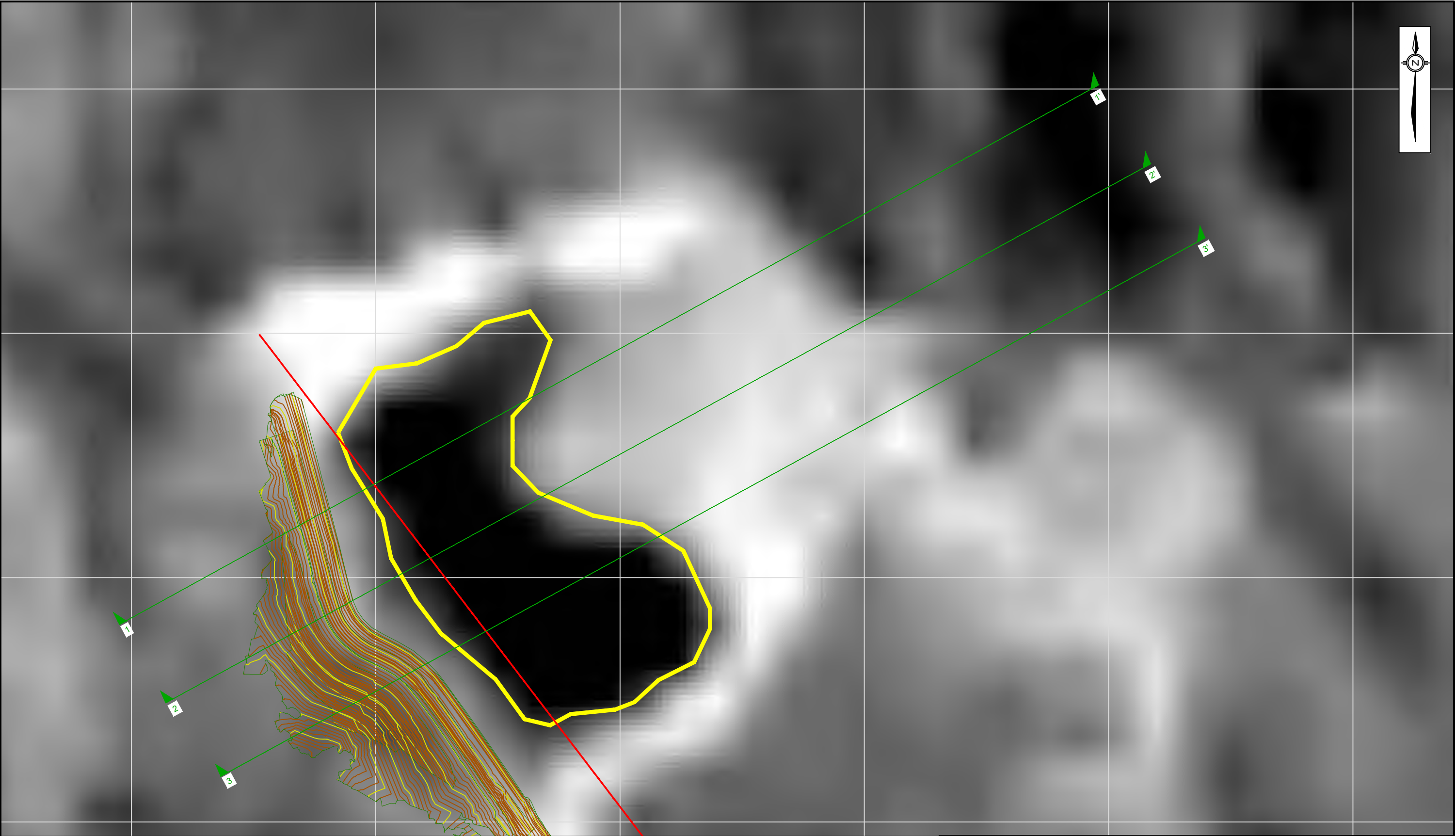
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 6)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 25, 1990 (S) RAISE #6 DAM CREST EL. 891.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-54	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

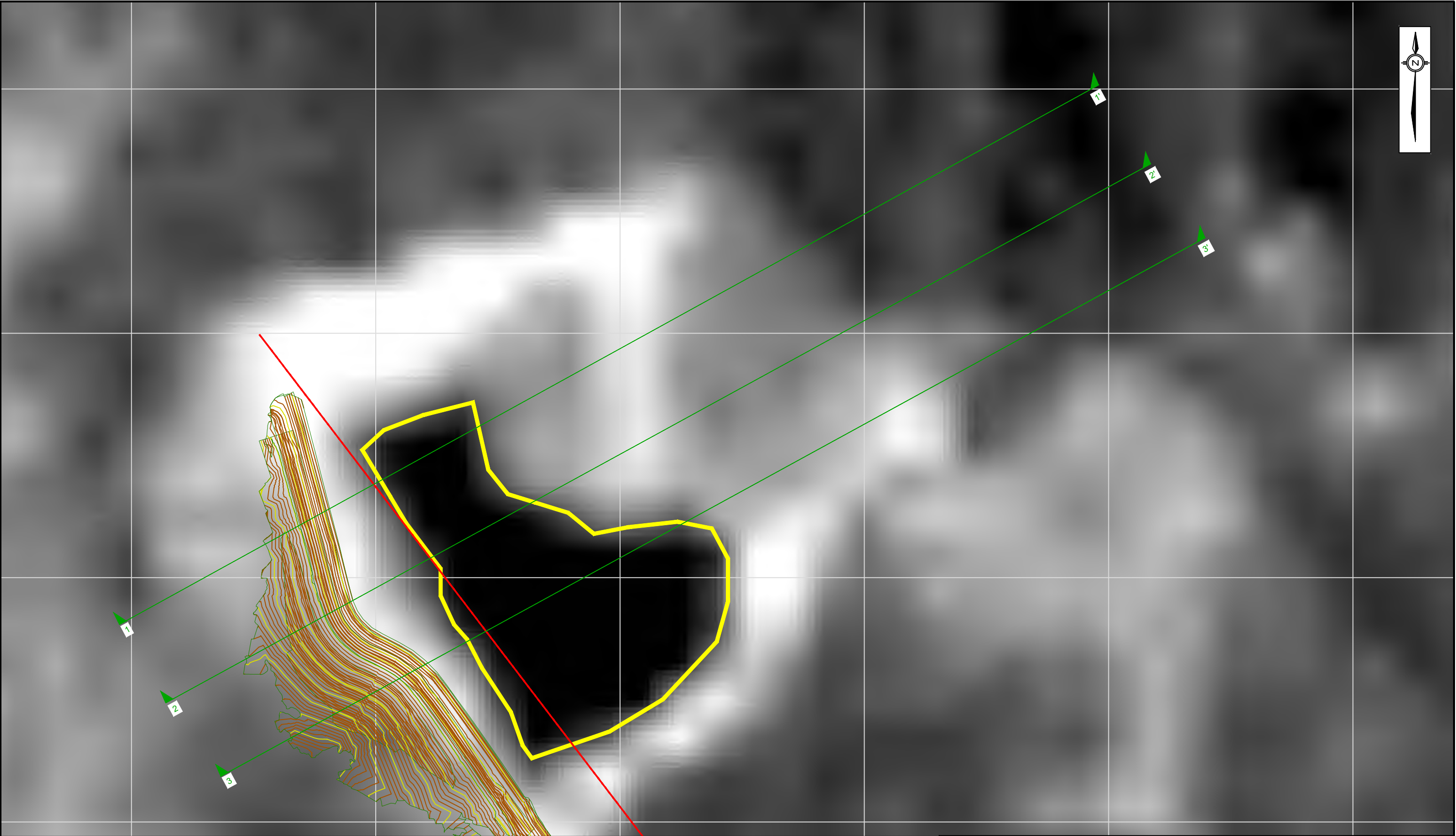
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 6)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
	TITLE
	SATELLITE IMAGES AUGUST 26, 1990 (S) RAISE #6 DAM CREST EL. 891.5 m
SCALE	PROJECT No.
1:3,000	A03355A02
	FIG. No.
	FIGURE I-55



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 6)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

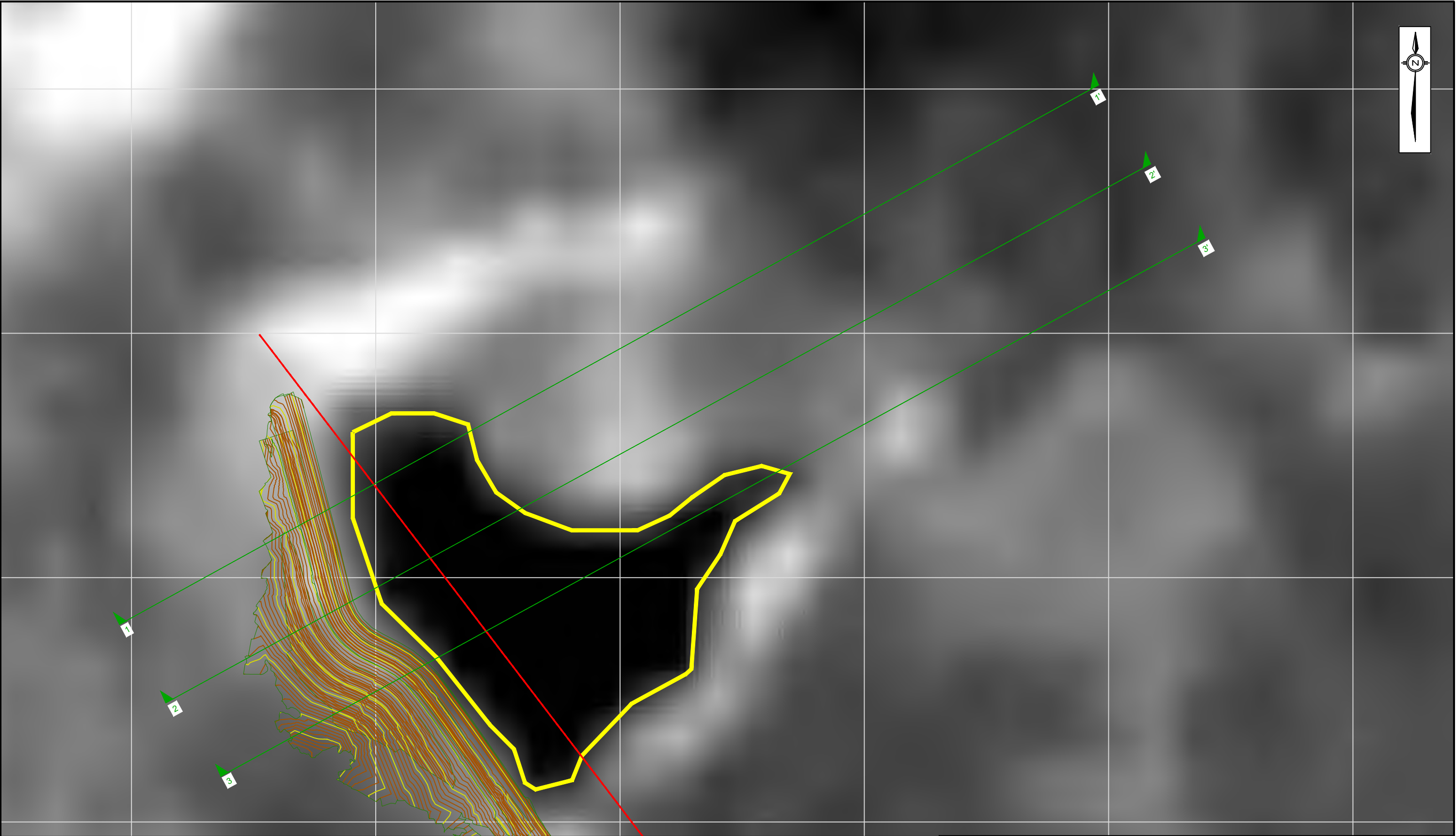
CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE

**SATELLITE IMAGES
SEPTEMBER 11, 1990 (S)
RAISE #6
DAM CREST EL. 891.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-56
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

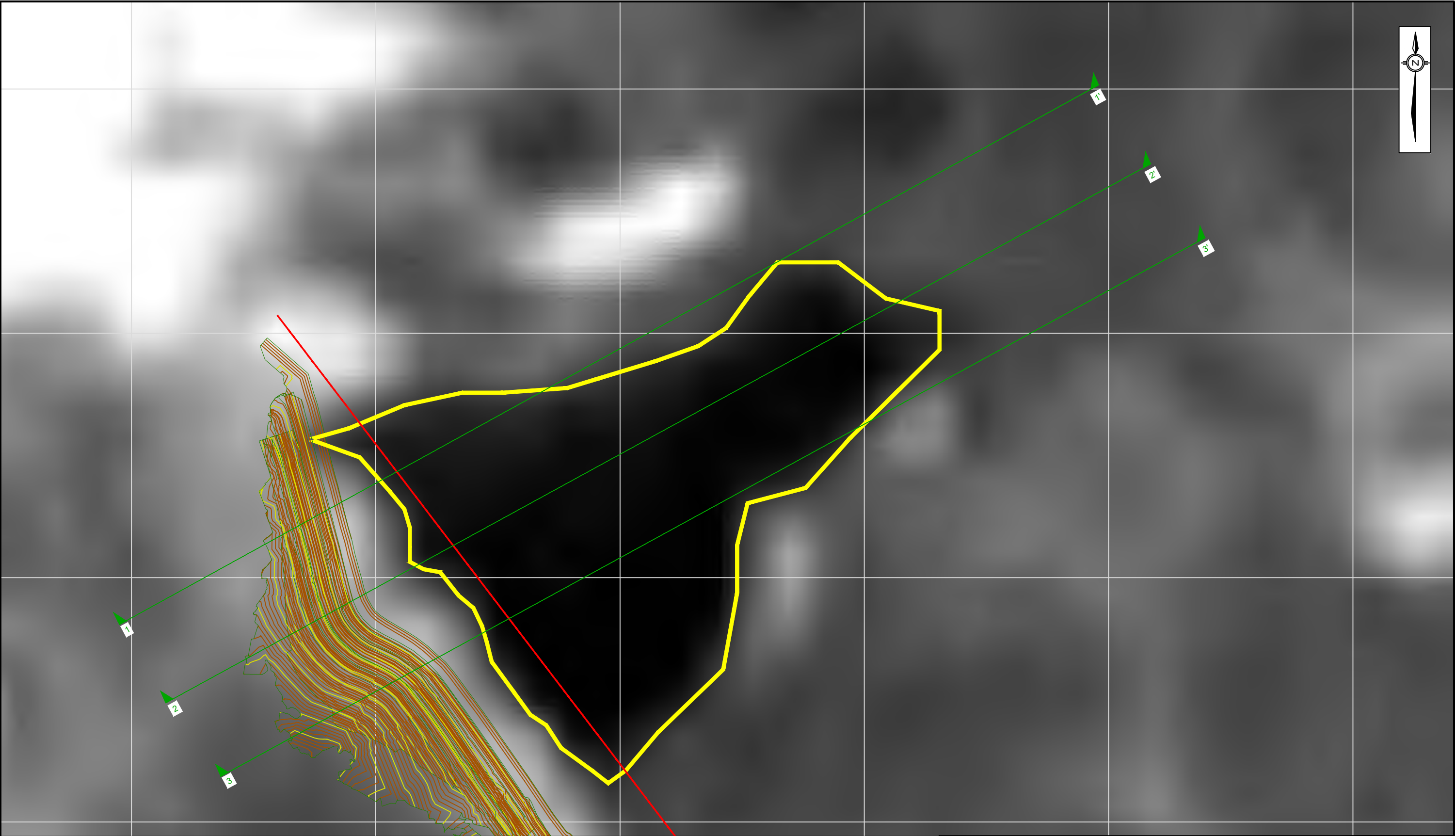
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 6)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES SEPTEMBER 27, 1990 (S) RAISE #6 DAM CREST EL. 891.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-57	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

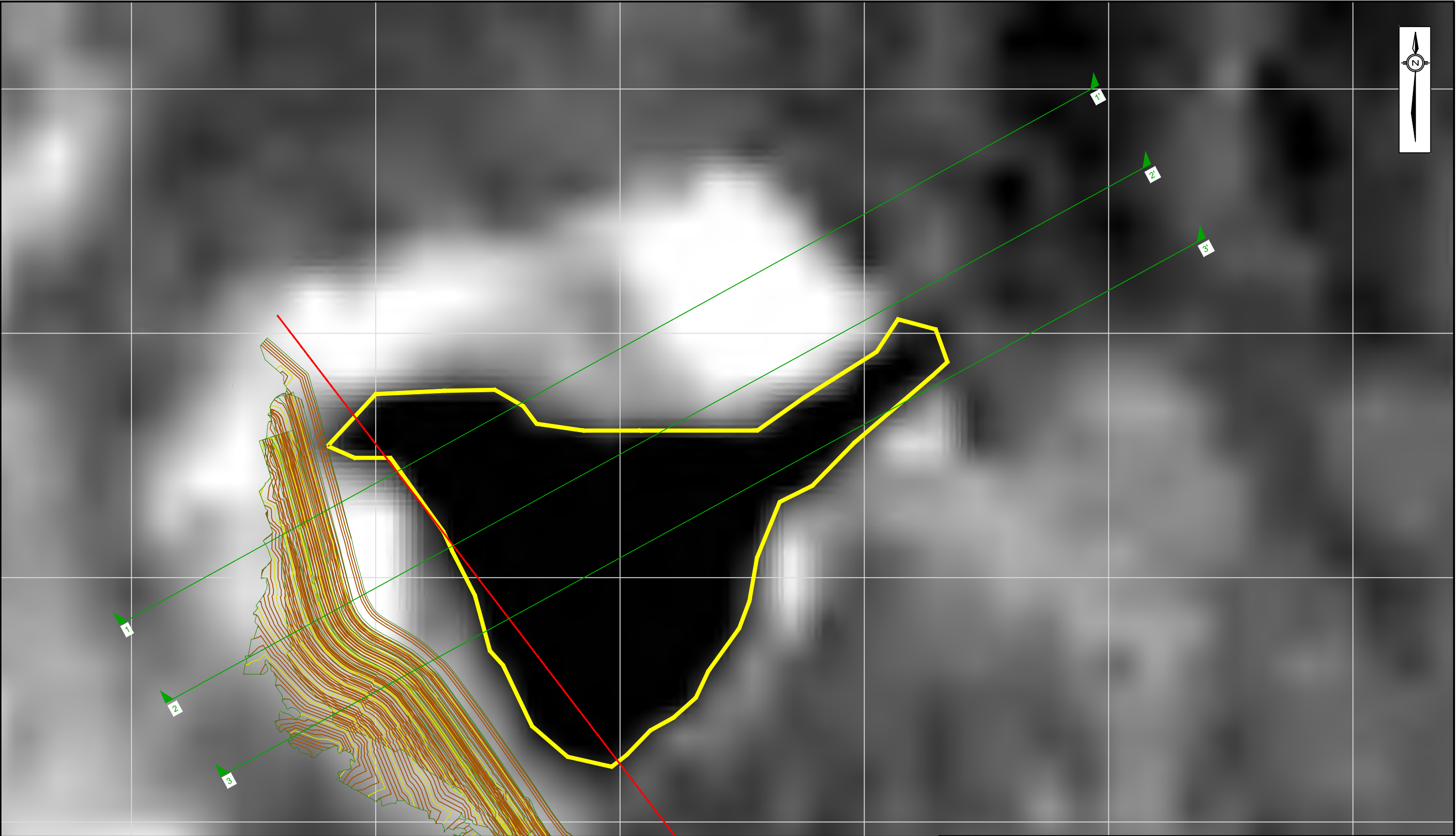
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 7)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JANUARY 1, 1991 (S) RAISE #7 DAM CREST EL. 895 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-58	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

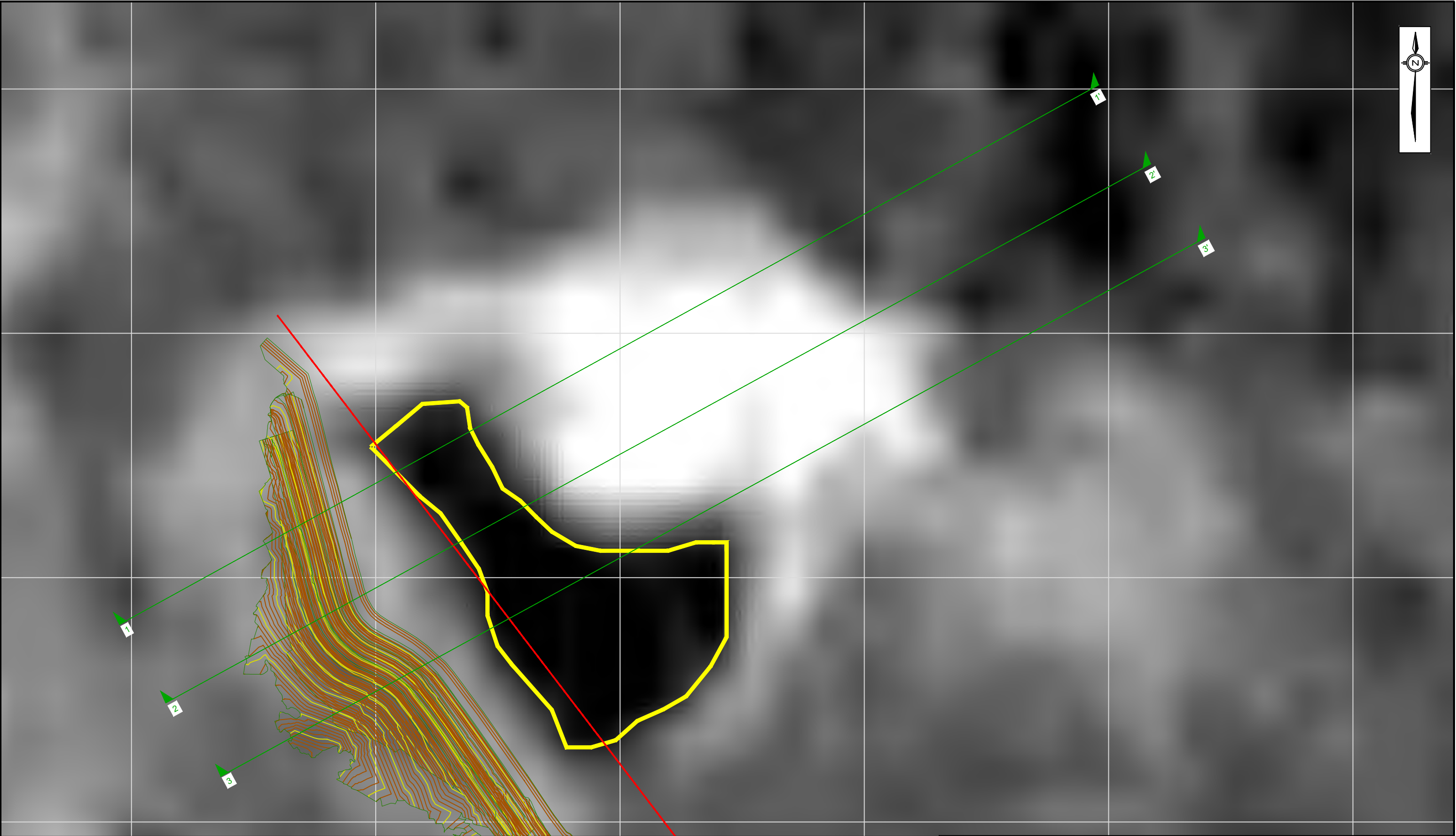
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 7)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES APRIL 7, 1991 (S) RAISE #7 DAM CREST EL. 895 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-59	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

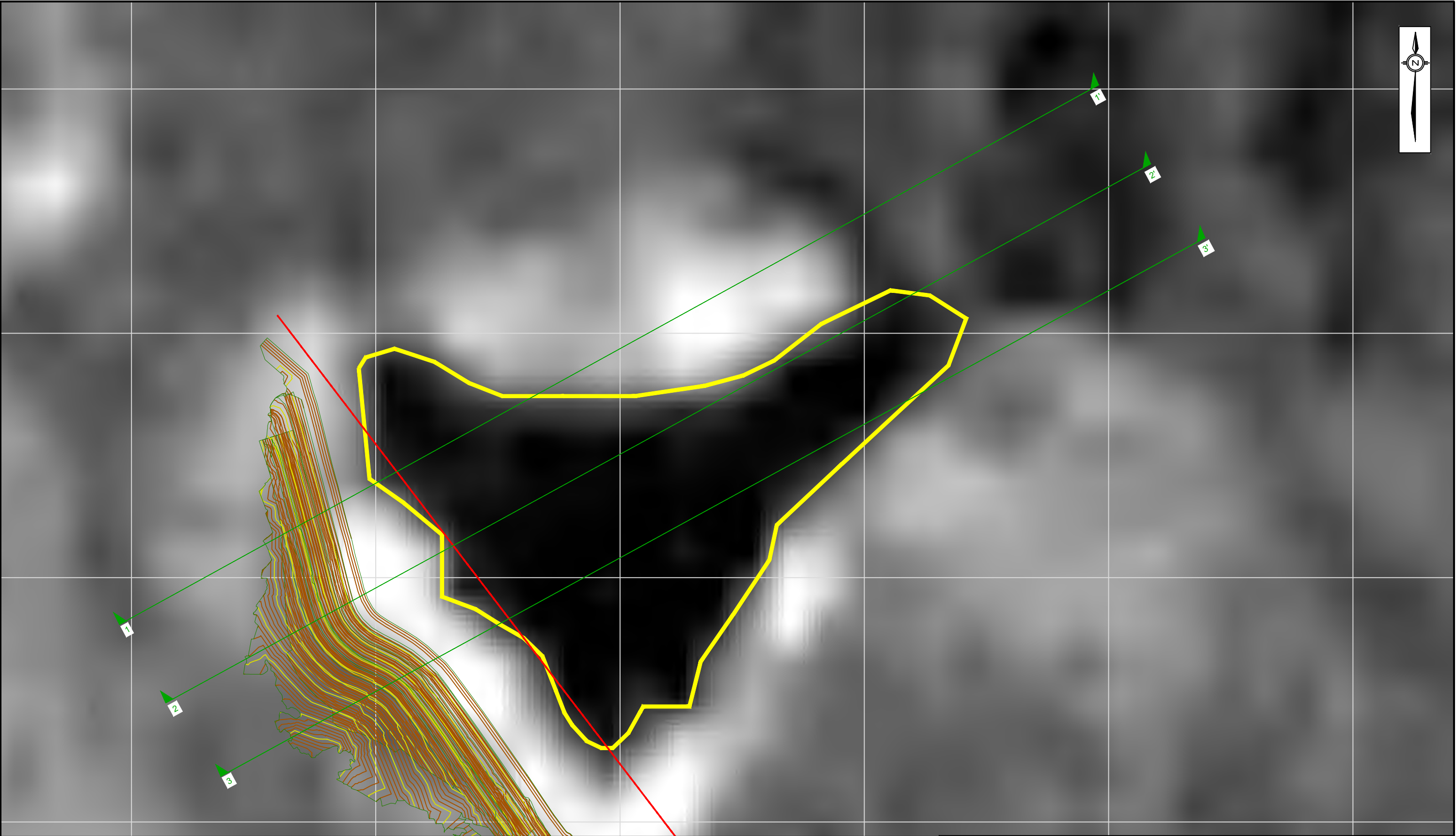
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 7)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES JULY 12, 1991 (S) RAISE #7 DAM CREST EL. 895 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-60



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

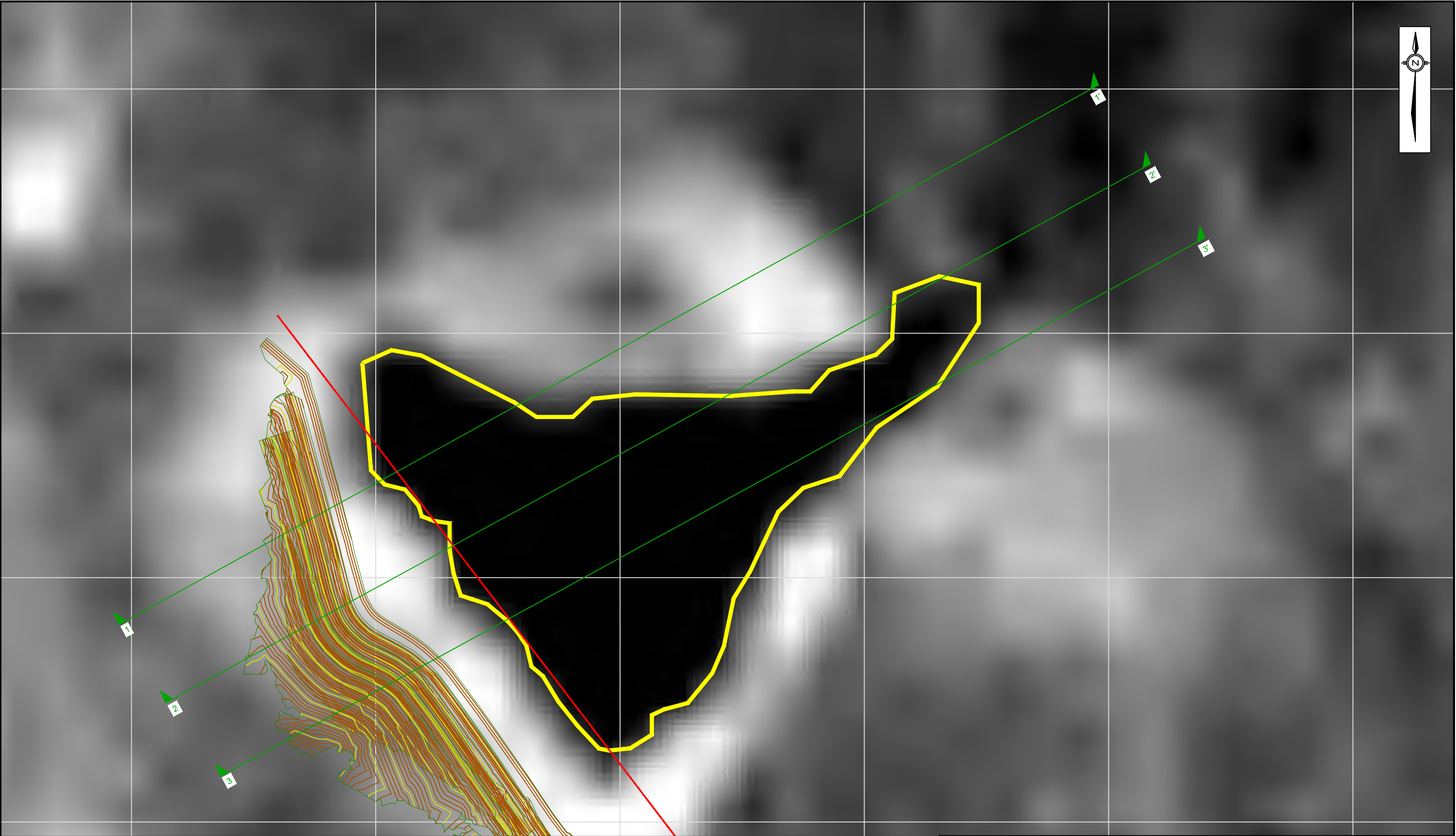
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 7)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 30, 1992 (S) RAISE #7 DAM CREST EL. 895 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-61	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

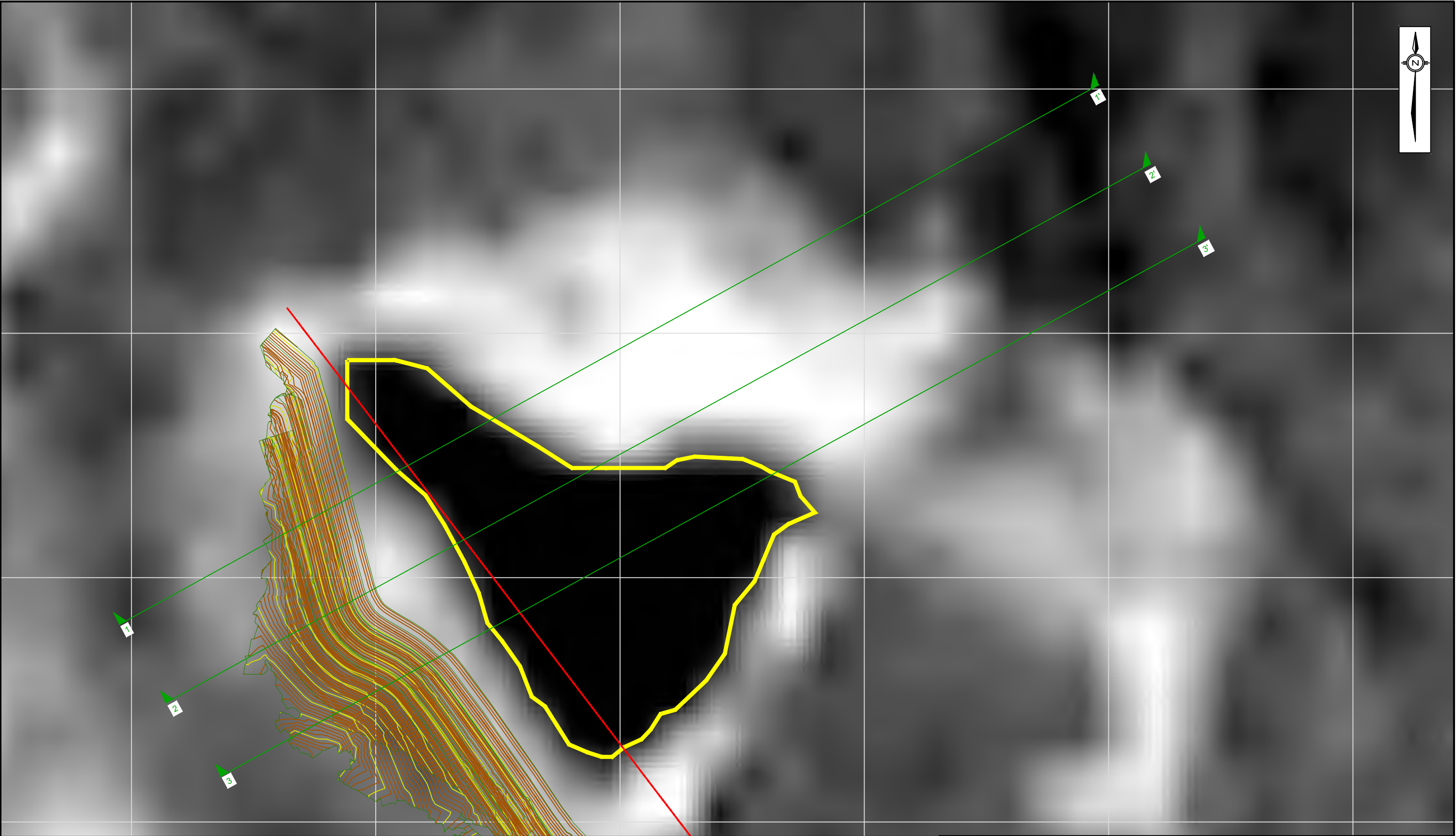
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 7)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES AUGUST 31, 1992 (S) RAISE #7 DAM CREST EL. 895 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-62	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

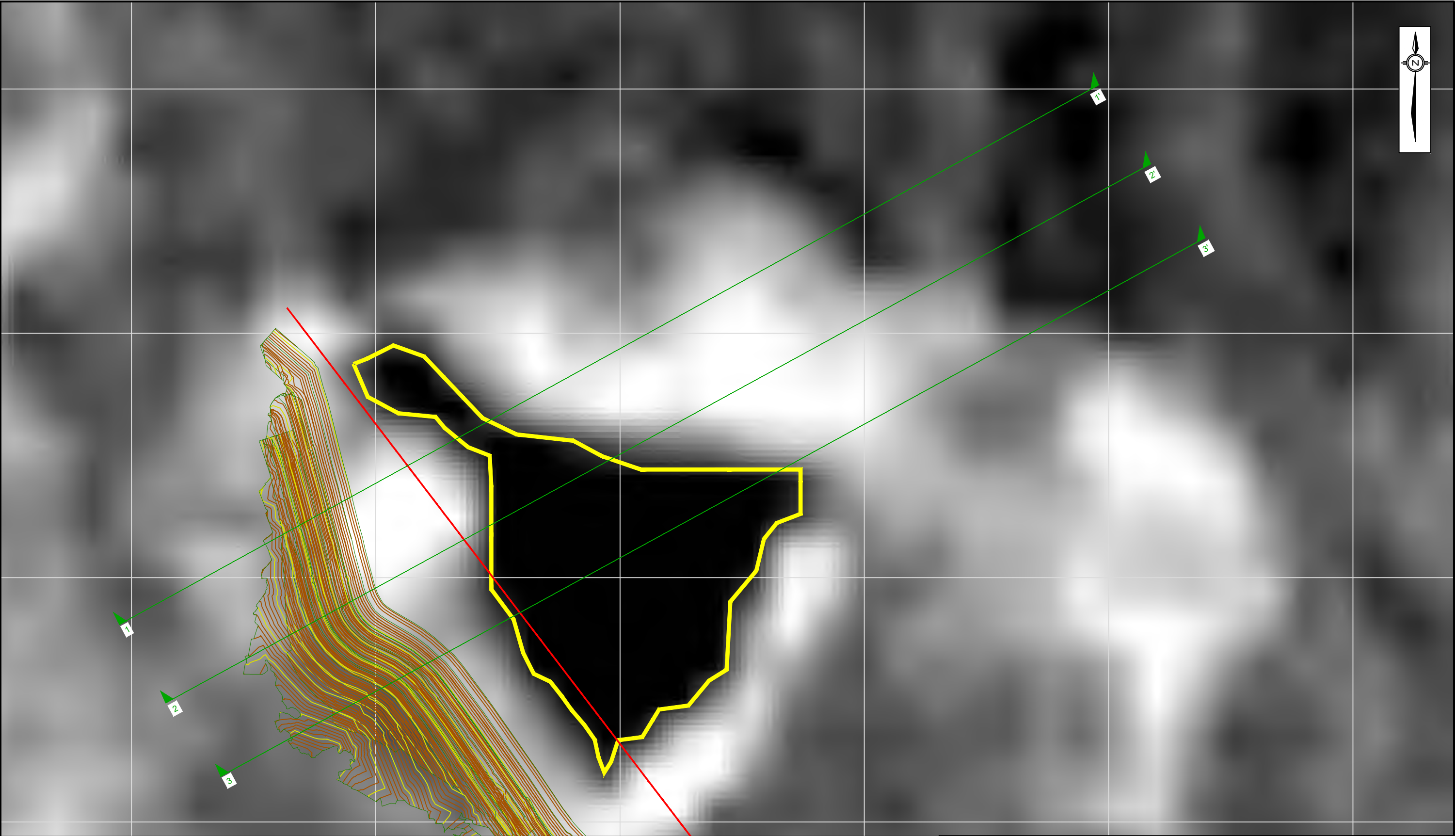
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES MARCH 27, 1993 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-63	



NOTES:

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.

2. ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.

3. ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.

4. SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

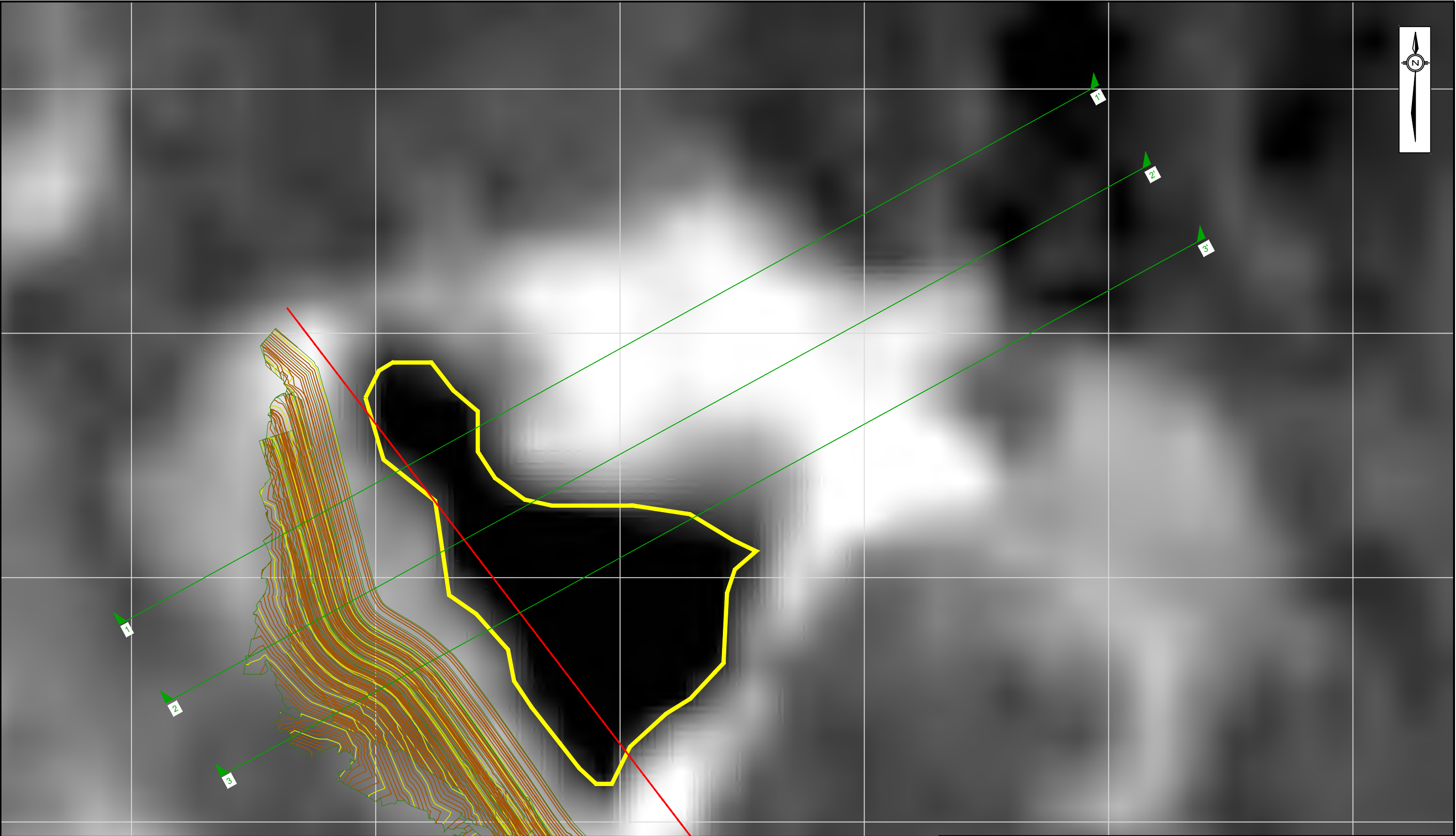
LEGEND:

— DESIGN SECTIONS	— 1 m CONTOURS
— POND OUTLINE	— 5 m CONTOURS
— MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	— DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE SATELLITE IMAGES APRIL 28, 1993 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-64	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

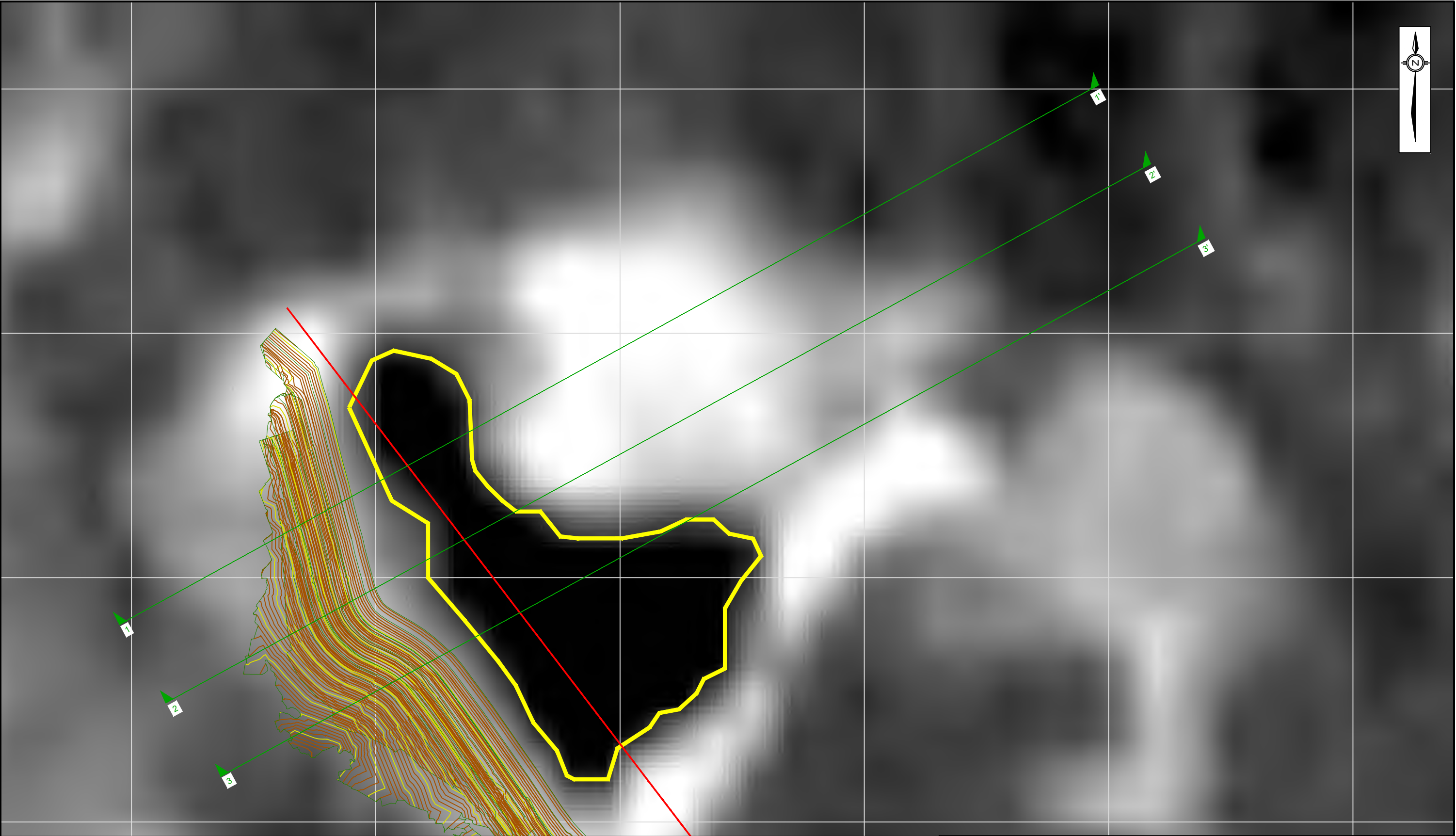
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES AUGUST 18, 1993 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-65	



NOTES:

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.

2. ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.

3. ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.

4. SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

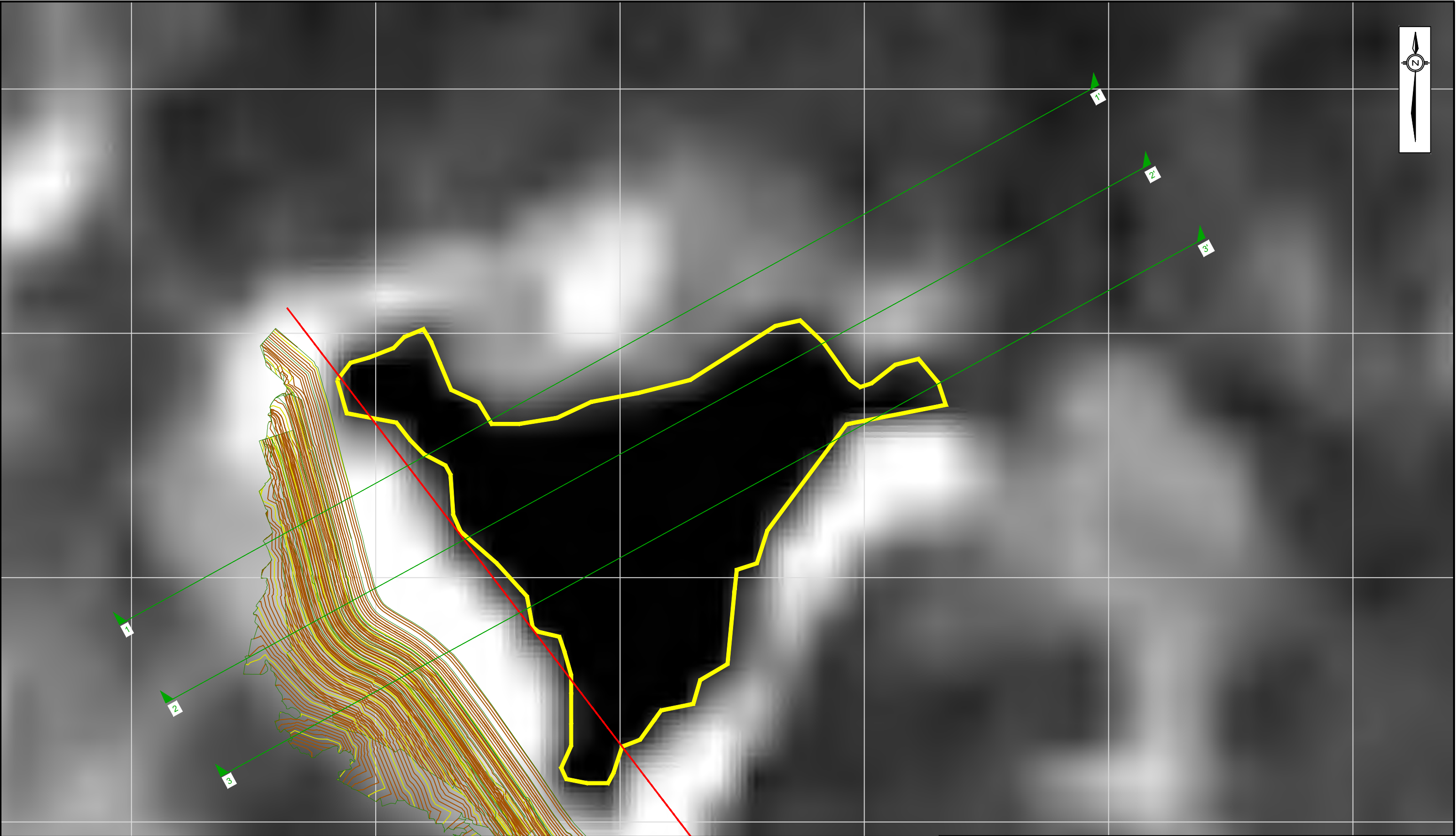
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES SEPTEMBER 19, 1993 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-66	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

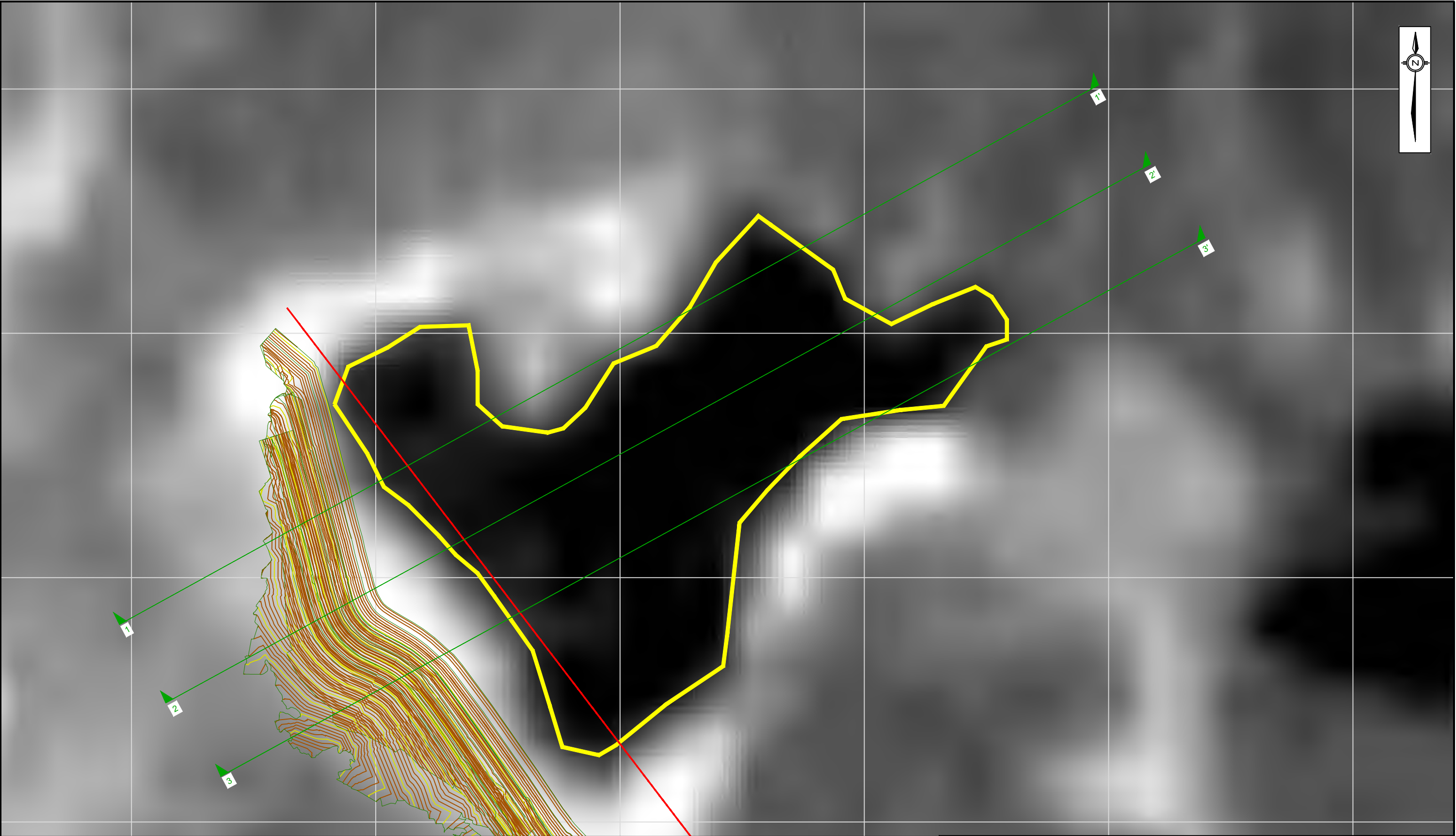
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES NOVEMBER 6, 1993 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-67	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

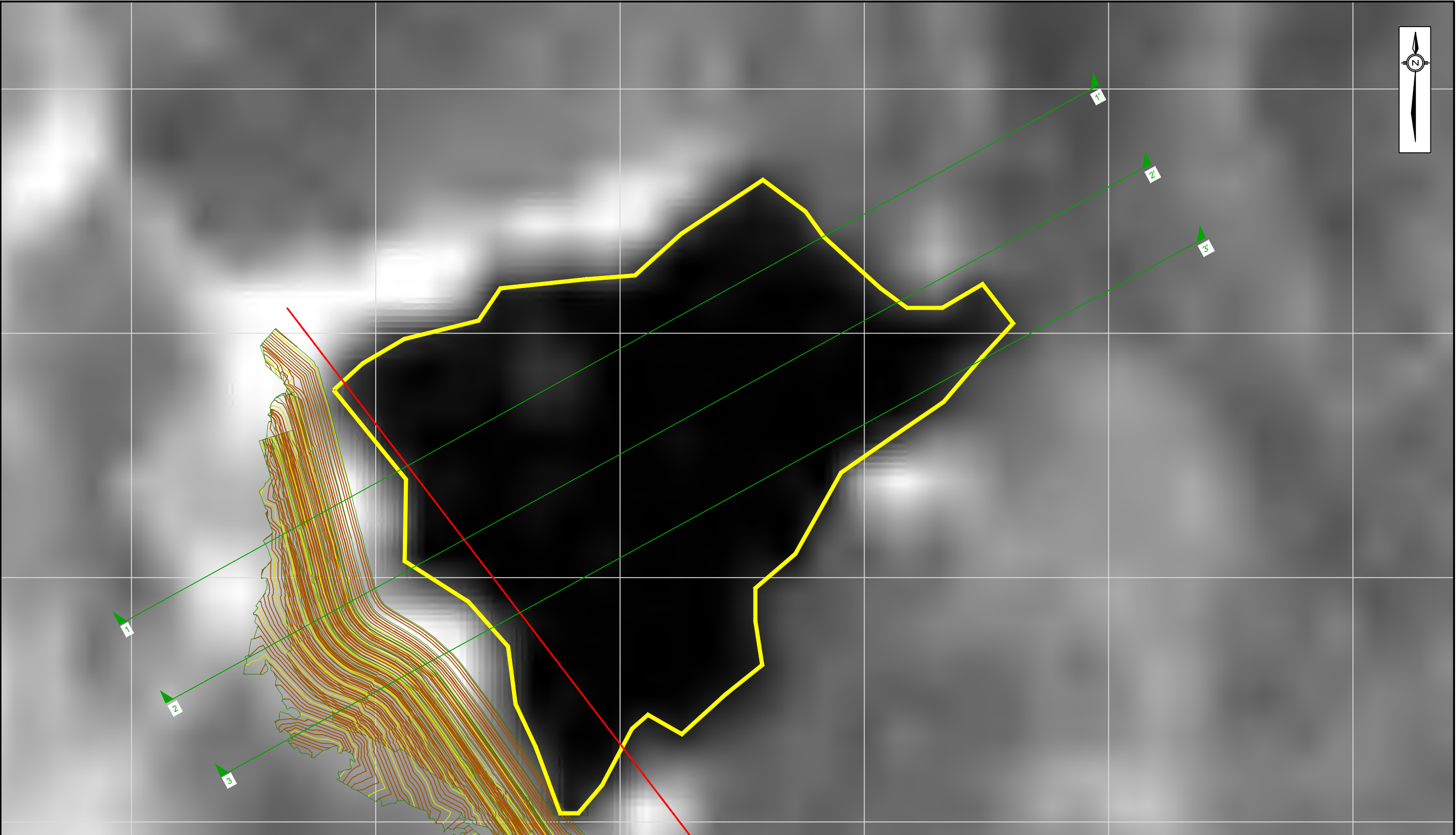
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES DECEMBER 8, 1993 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-68	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

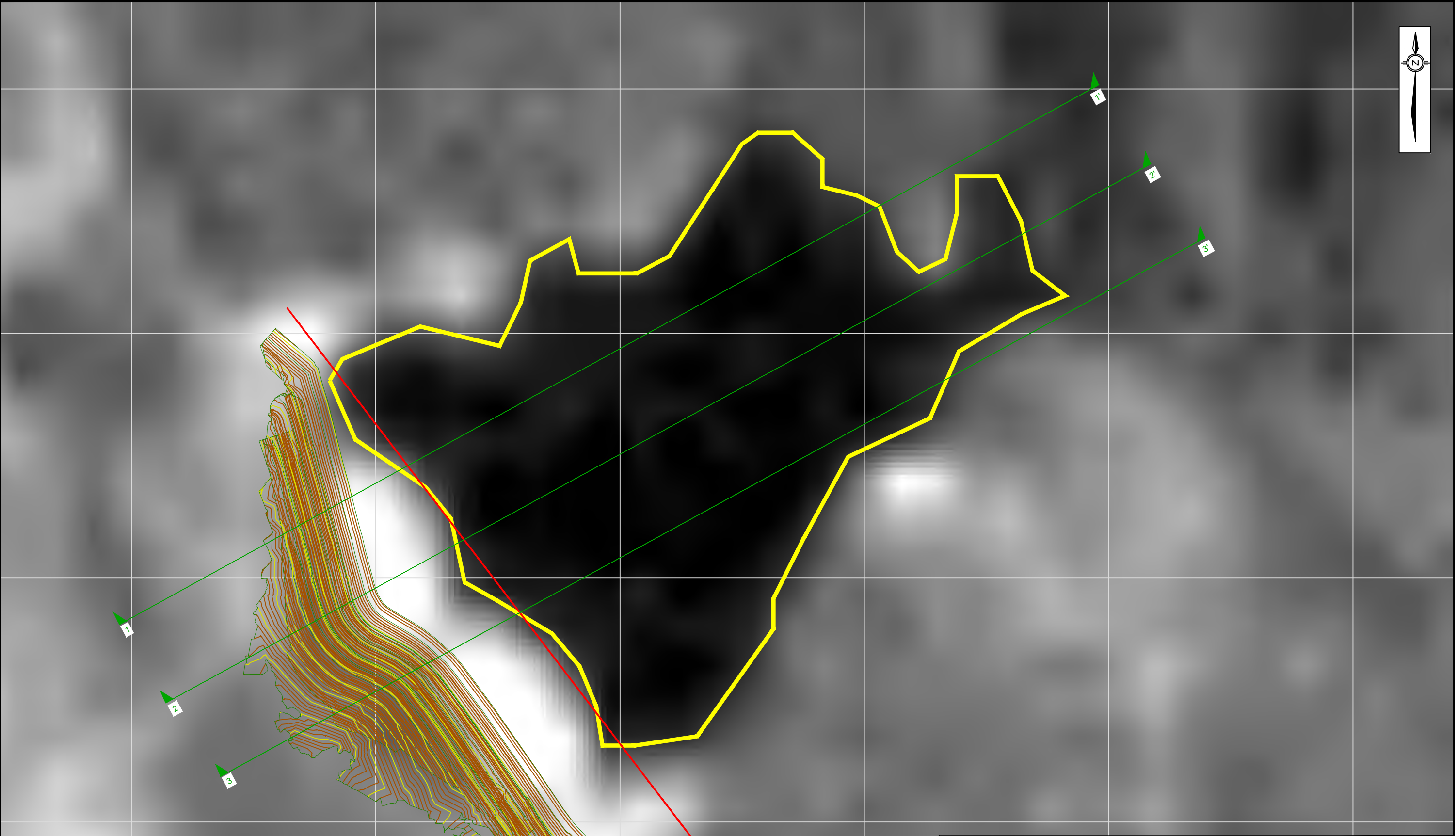
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES FEBRUARY 10, 1994 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-69	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

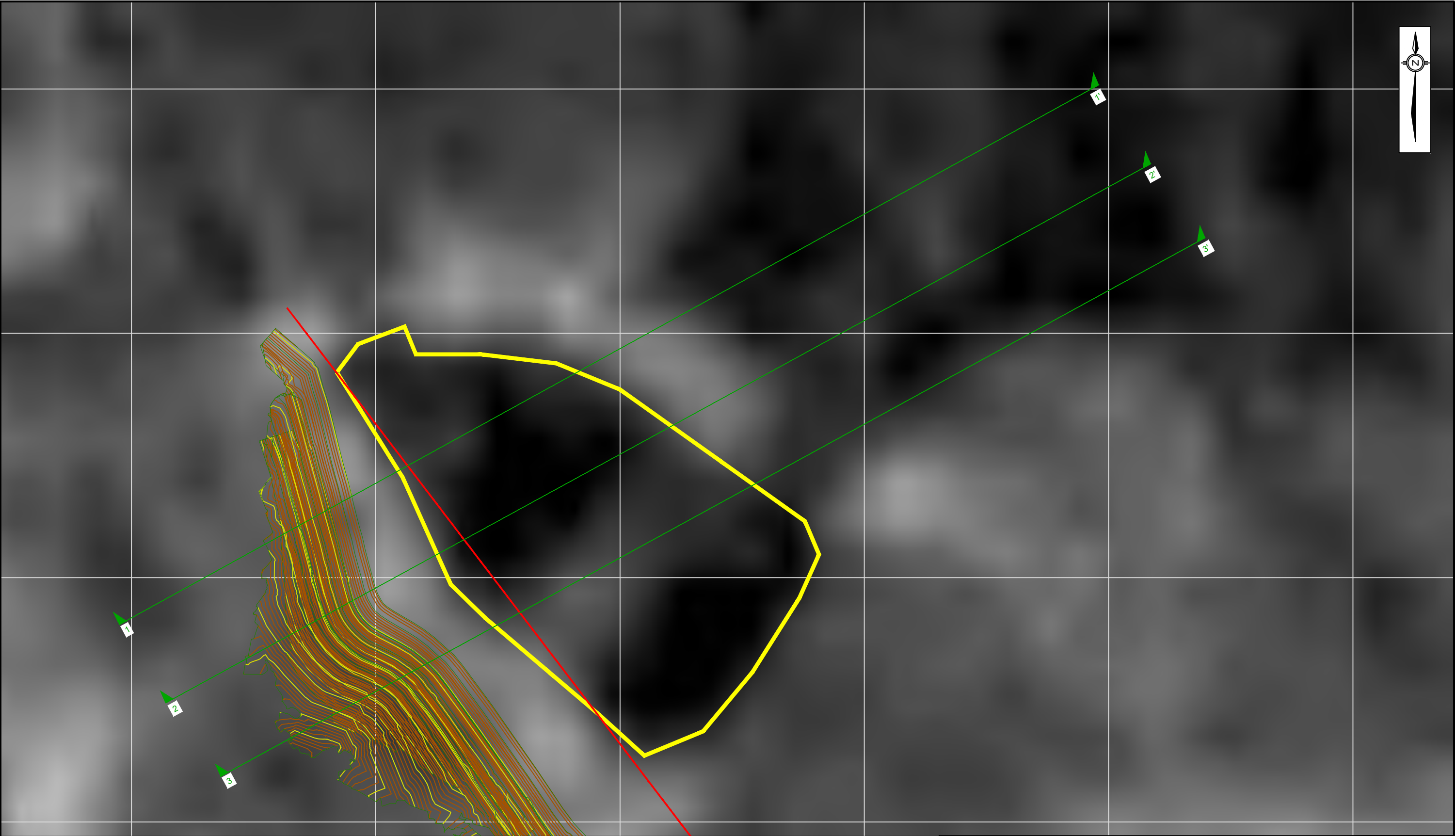
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
MAY 1, 1994 (S)
RAISE #8
DAM CREST EL. 899 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-70
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

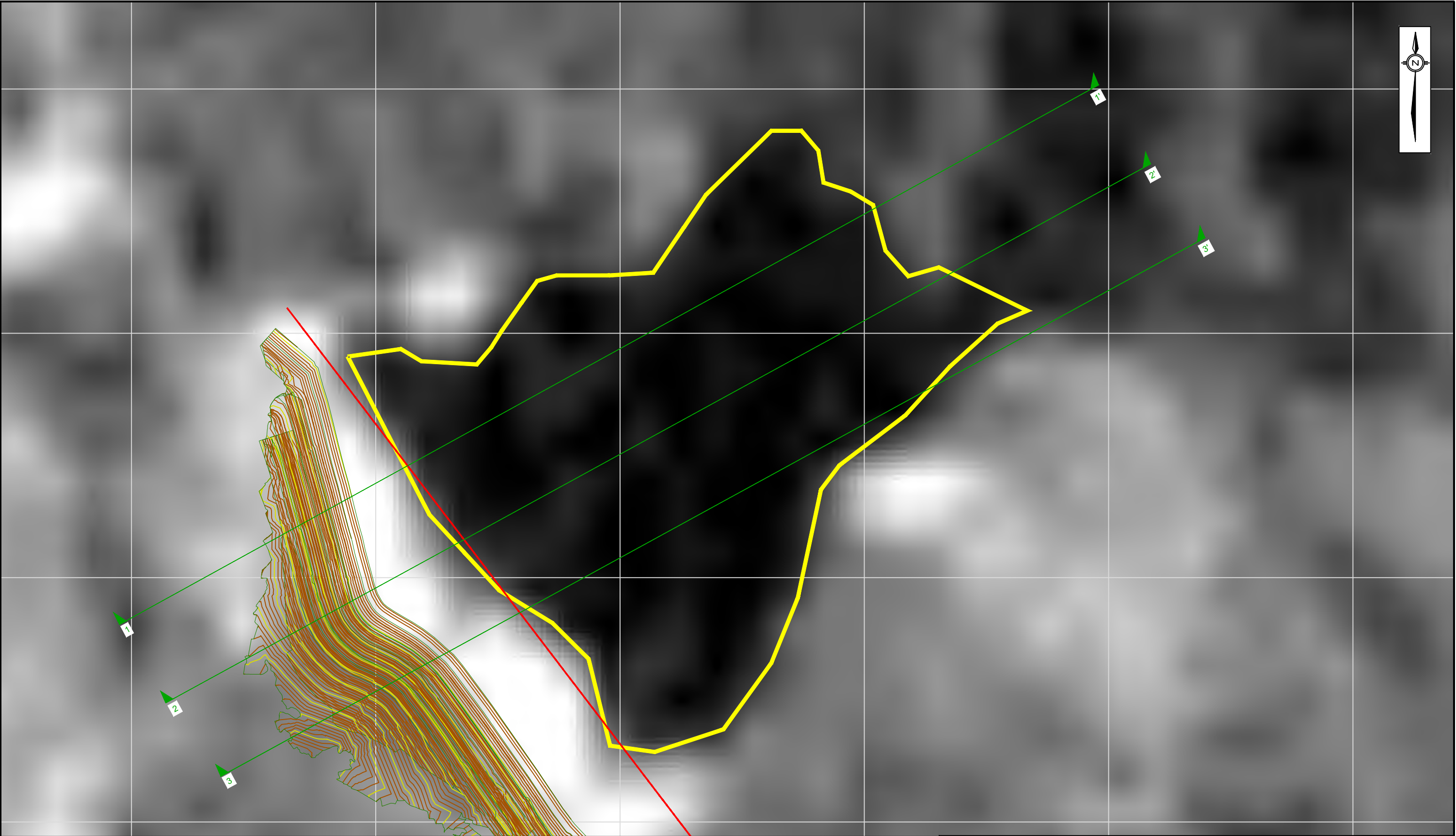
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JUNE 2, 1994 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-71	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

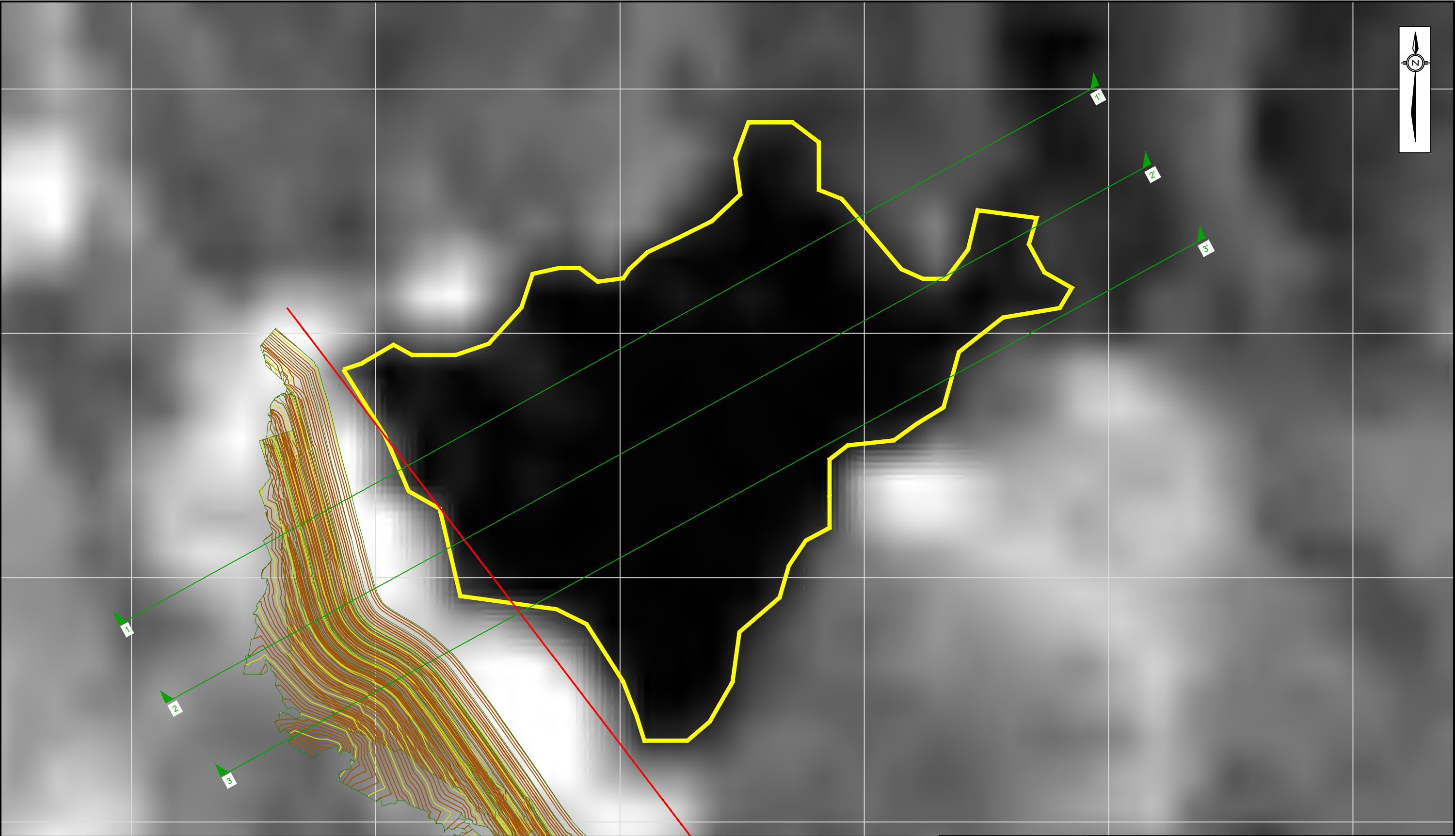
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT
	TITLE
	SATELLITE IMAGES JUNE 18, 1994 (S) RAISE #8 DAM CREST EL. 899 m
SCALE 1:3,000	PROJECT No. A03355A02
	FIG. No. FIGURE I-72



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

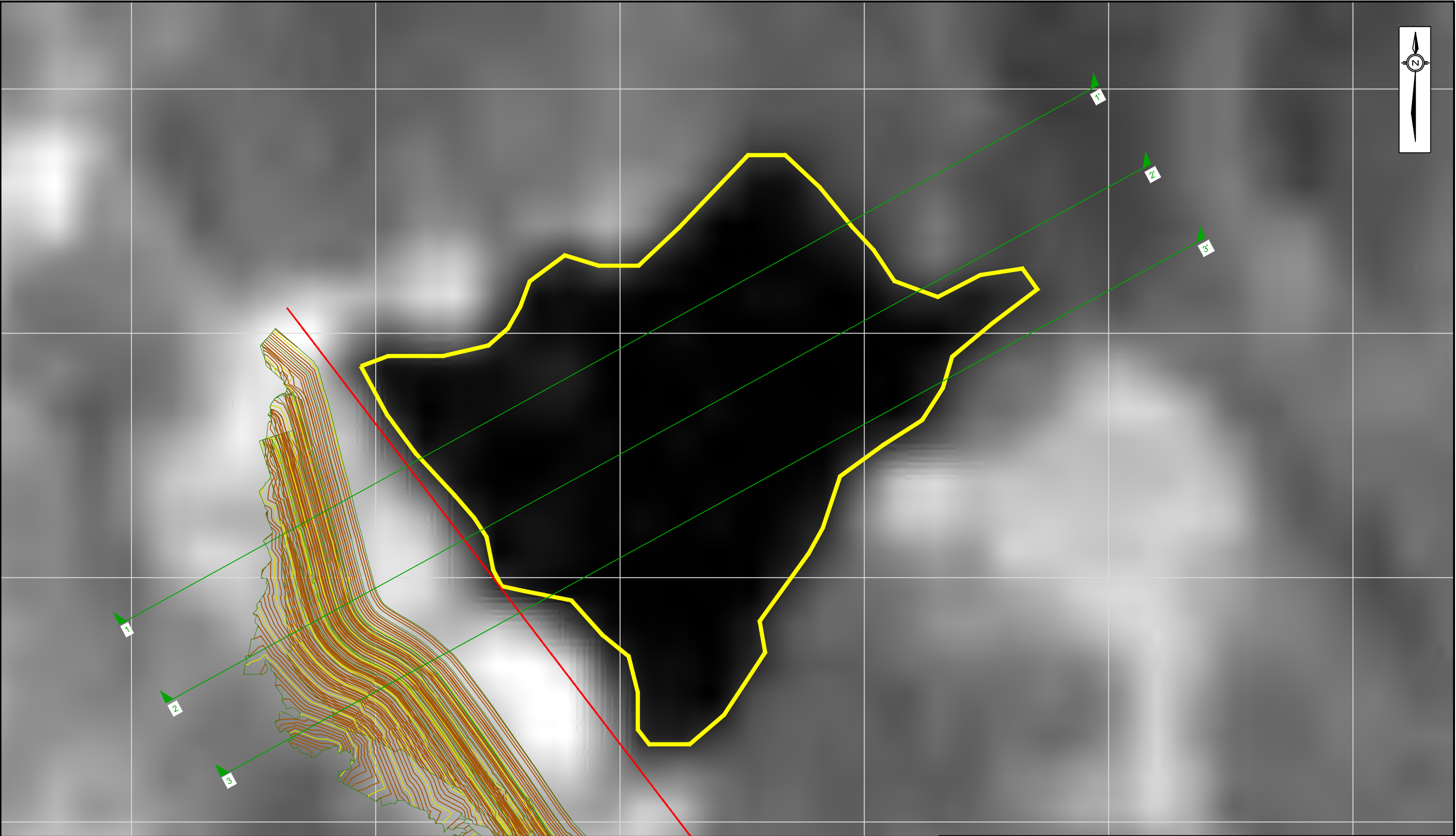
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES AUGUST 5, 1994 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-73	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

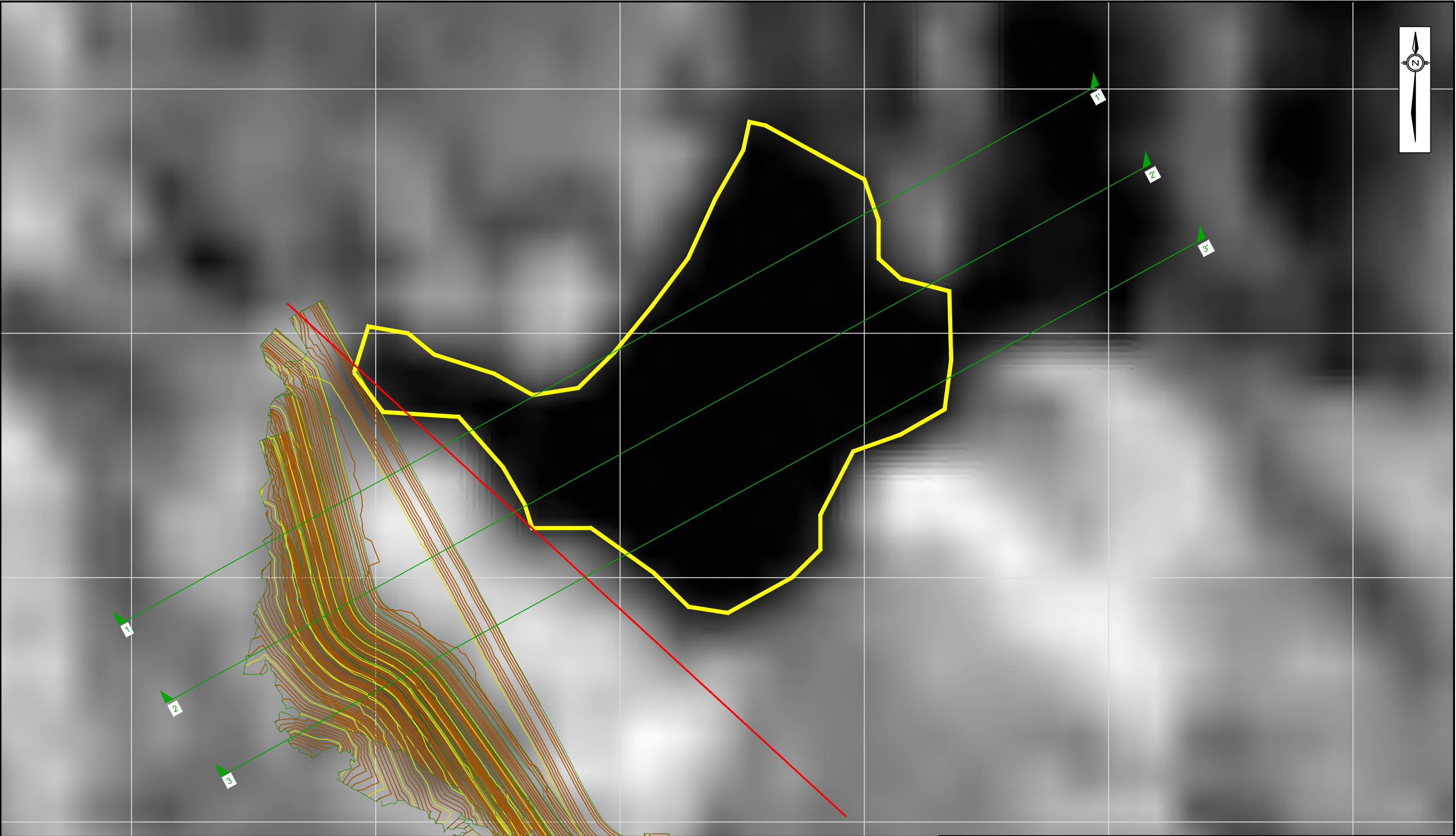
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 8)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES SEPTEMBER 22, 1994 (S) RAISE #8 DAM CREST EL. 899 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-74	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

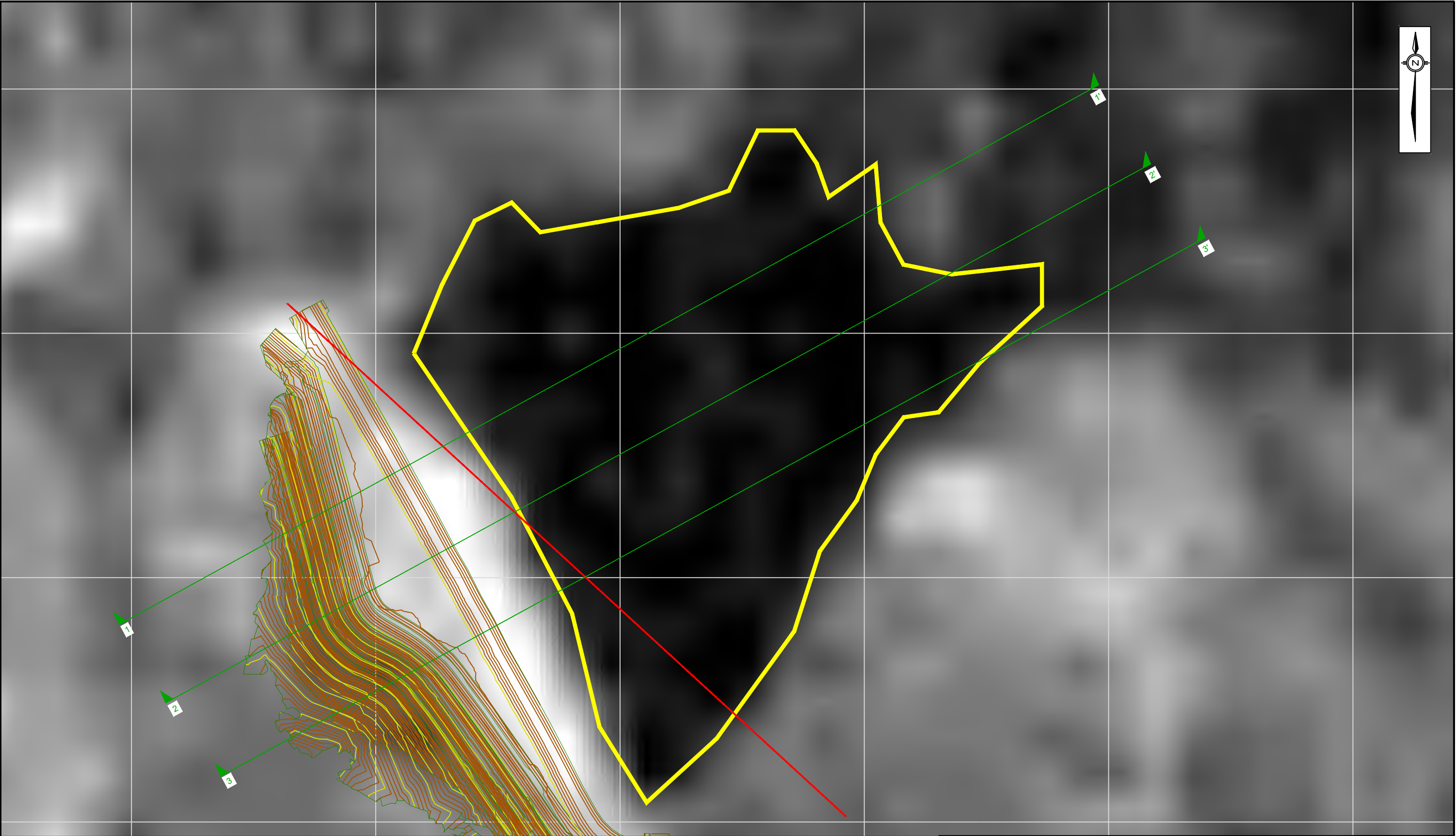
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 9)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	PROJECT	
	REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
	TITLE	
	SATELLITE IMAGES JULY 7, 1995 (S) RAISE #9 DAM CREST EL. 905 m	
SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-75



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

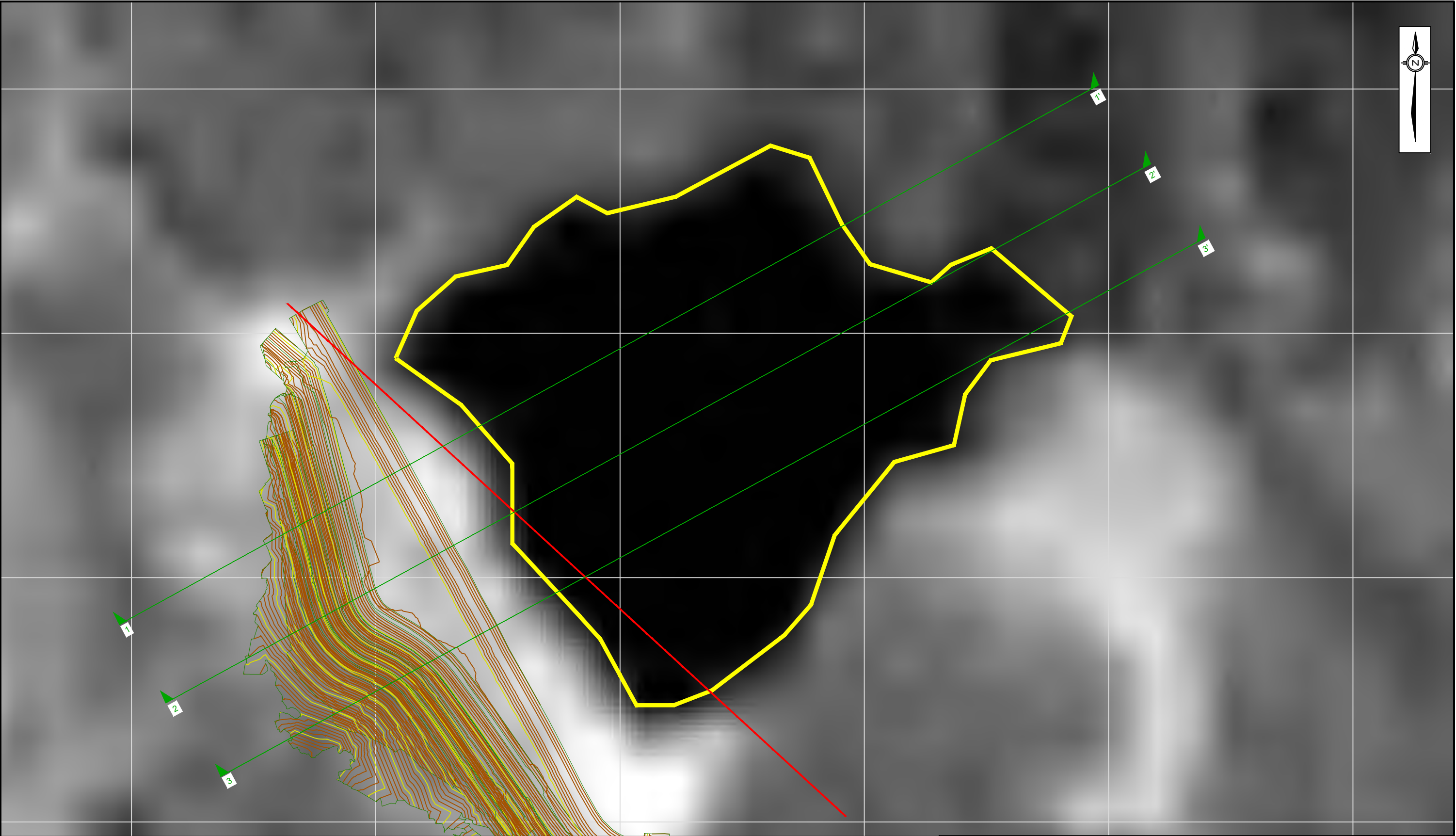
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 9)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JUNE 7, 1996 (S) RAISE #9 DAM CREST EL. 905 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-76	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

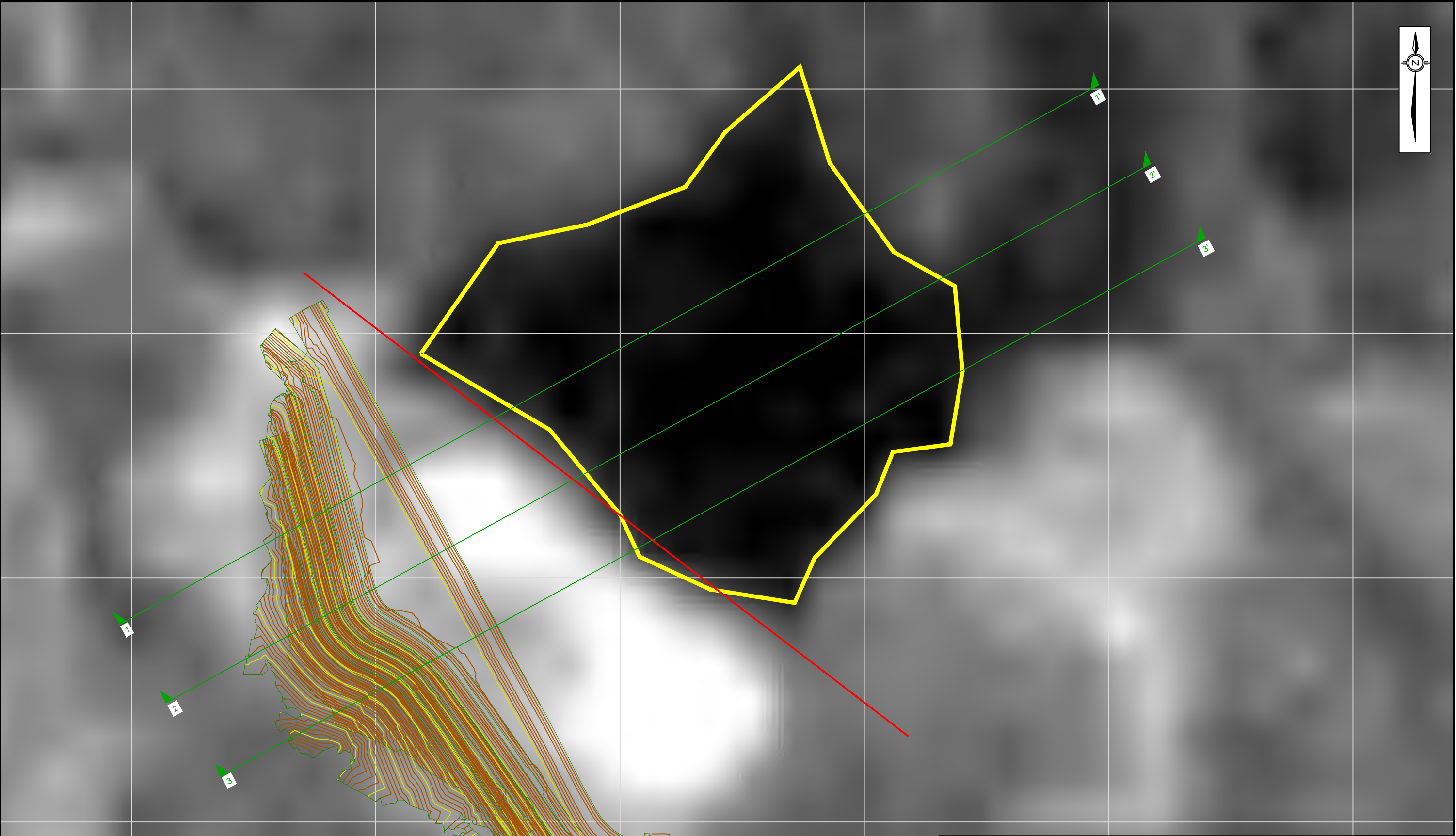
DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 9)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT		
TITLE SATELLITE IMAGES AUGUST 26, 1996 (S) RAISE #9 DAM CREST EL. 905 m		
SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-77



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 9)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 28, 1997 (S) RAISE #9 DAM CREST EL. 905 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-78	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 9)	DAM RAISE OUTLINE

1:3,000

0 30 60

BASED ON A 11"X 17" DRAWING SIZE

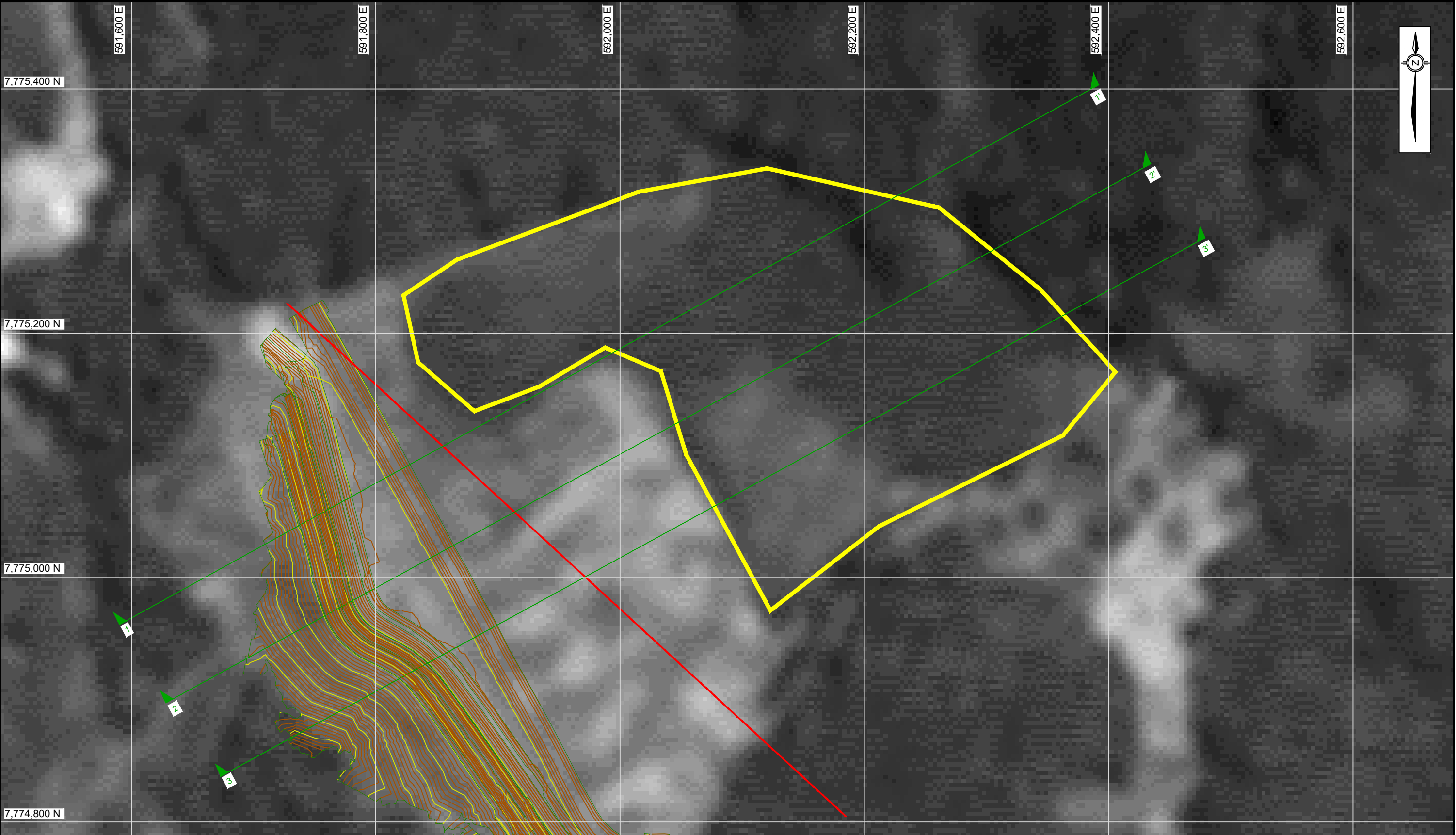
CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
FEBRUARY 1998
RAISE #9
DAM CREST EL. 905 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-79
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ROB-FIG-1



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 9)	DAM RAISE OUTLINE

1:3,000 30 60

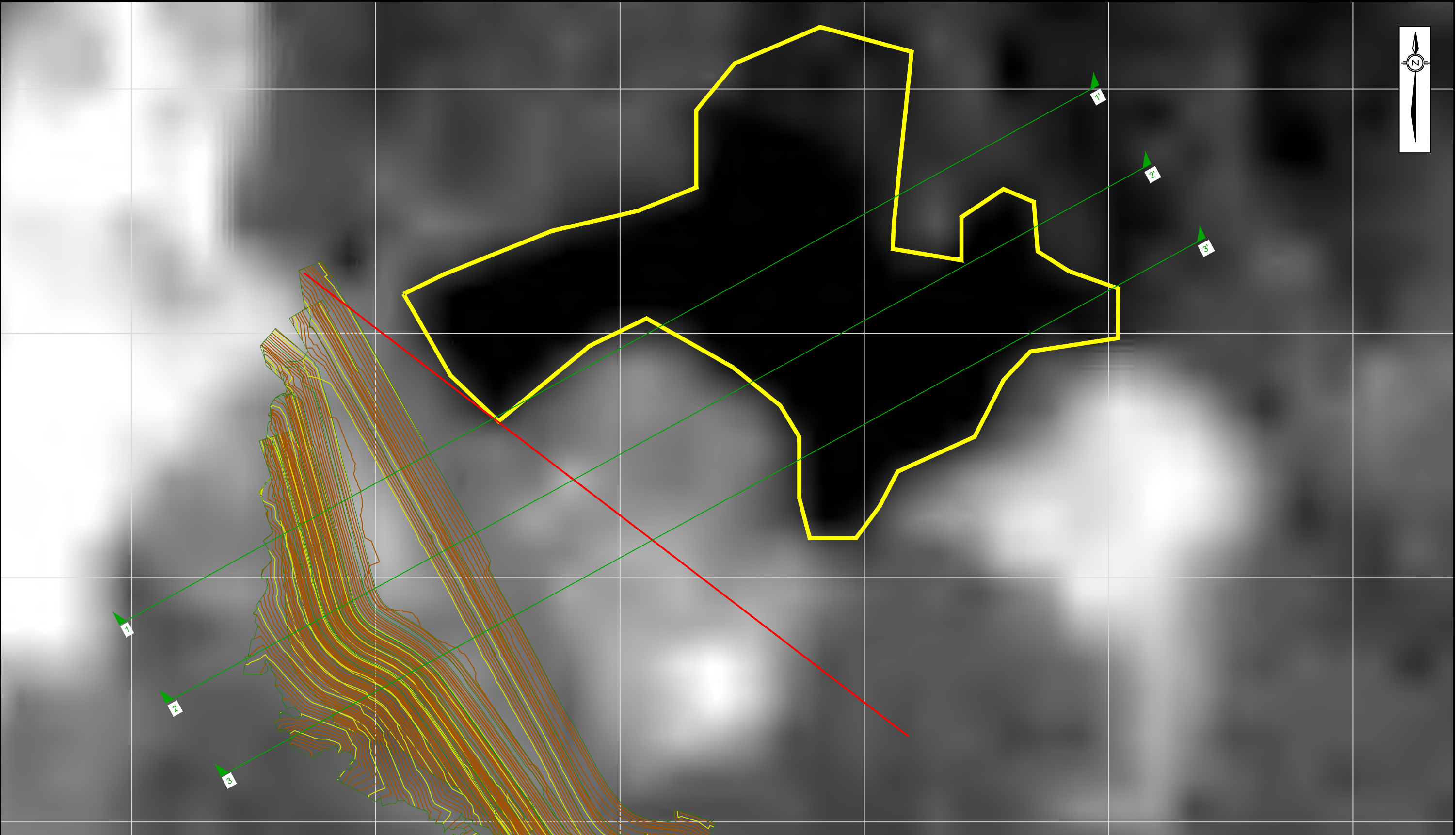
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
MARCH 1998
RAISE #9
DAM CREST EL. 905.0 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-80
------------------	--------------------------	-------------------------



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

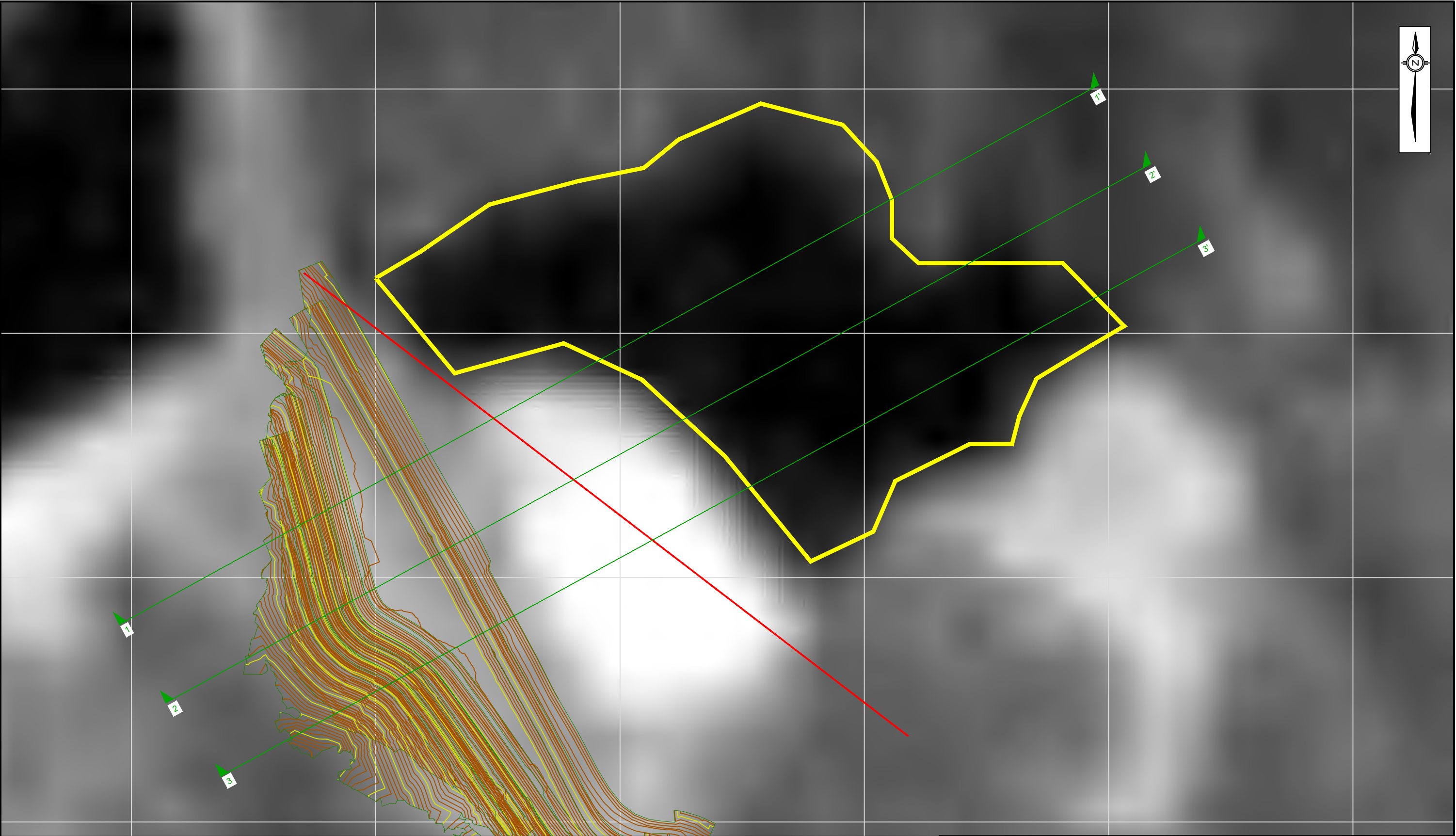
DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT		
TITLE SATELLITE IMAGES AUGUST 16, 1998 (S) RAISE #10 DAM CREST EL. 910 m		
SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-81



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

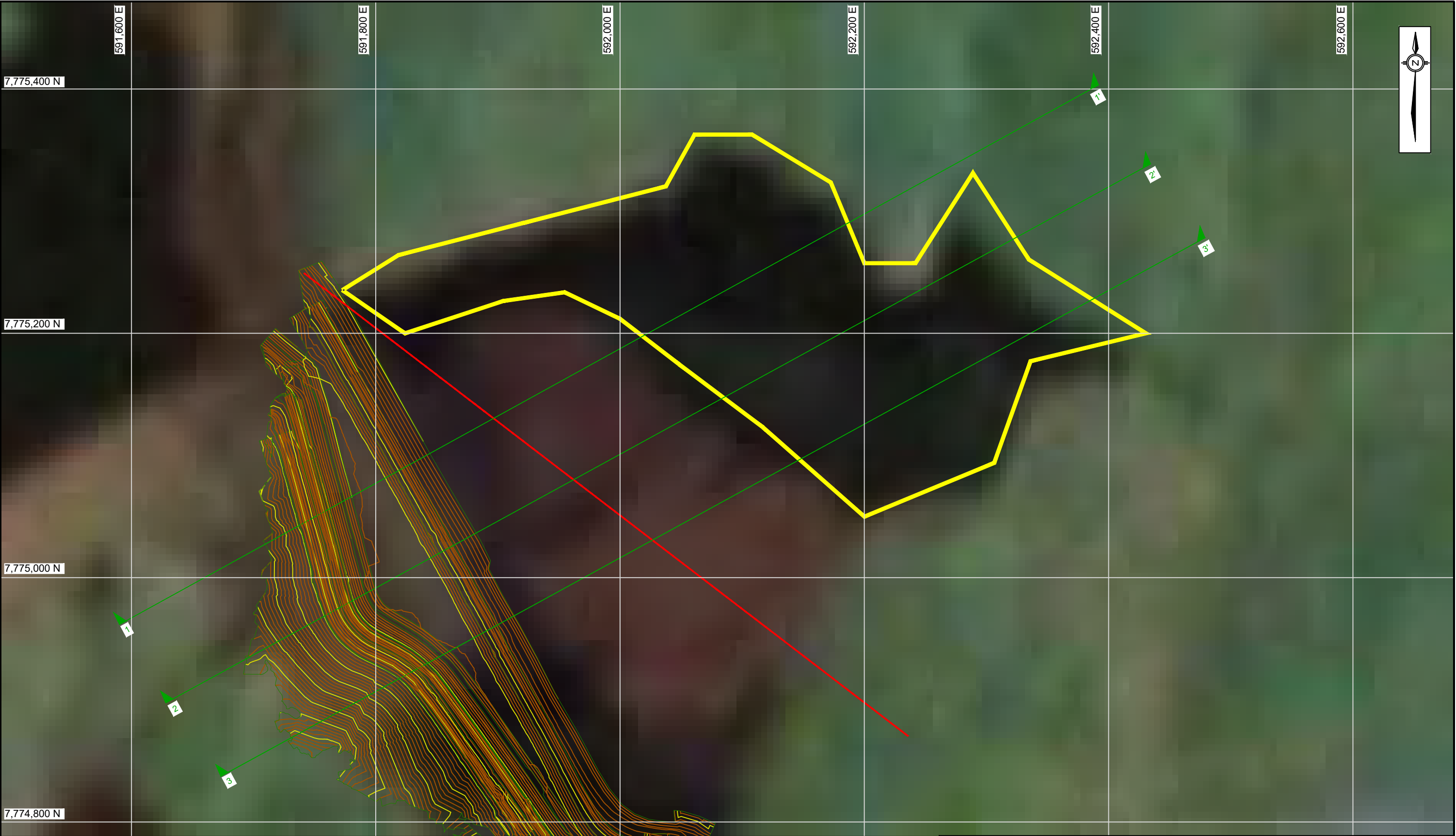
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES AUGUST 19, 1999 (S) RAISE #10 DAM CREST EL. 910 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-82	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

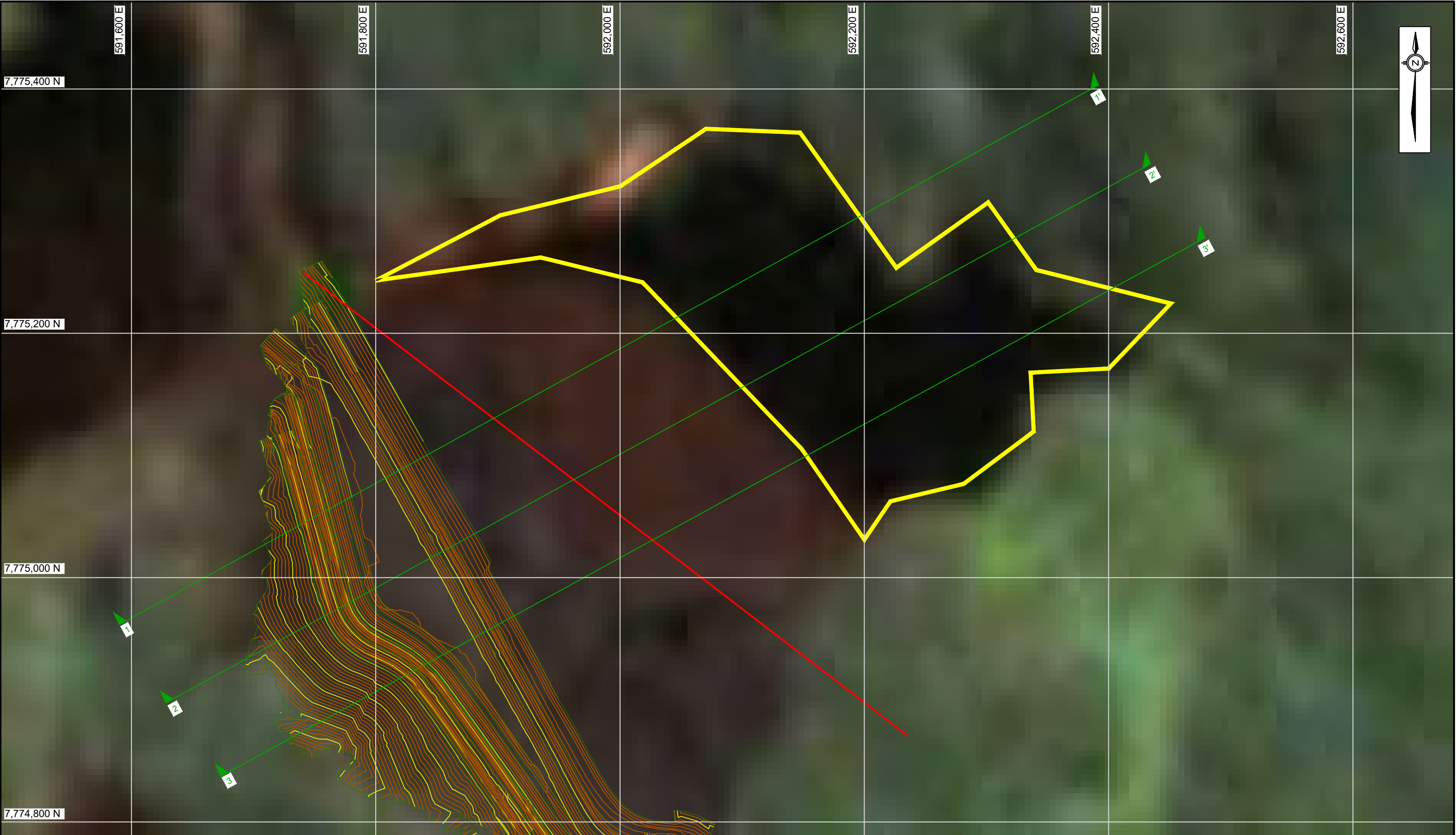
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
DECEMBER 1999
RAISE #10
DAM CREST EL. 910.0 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-83
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

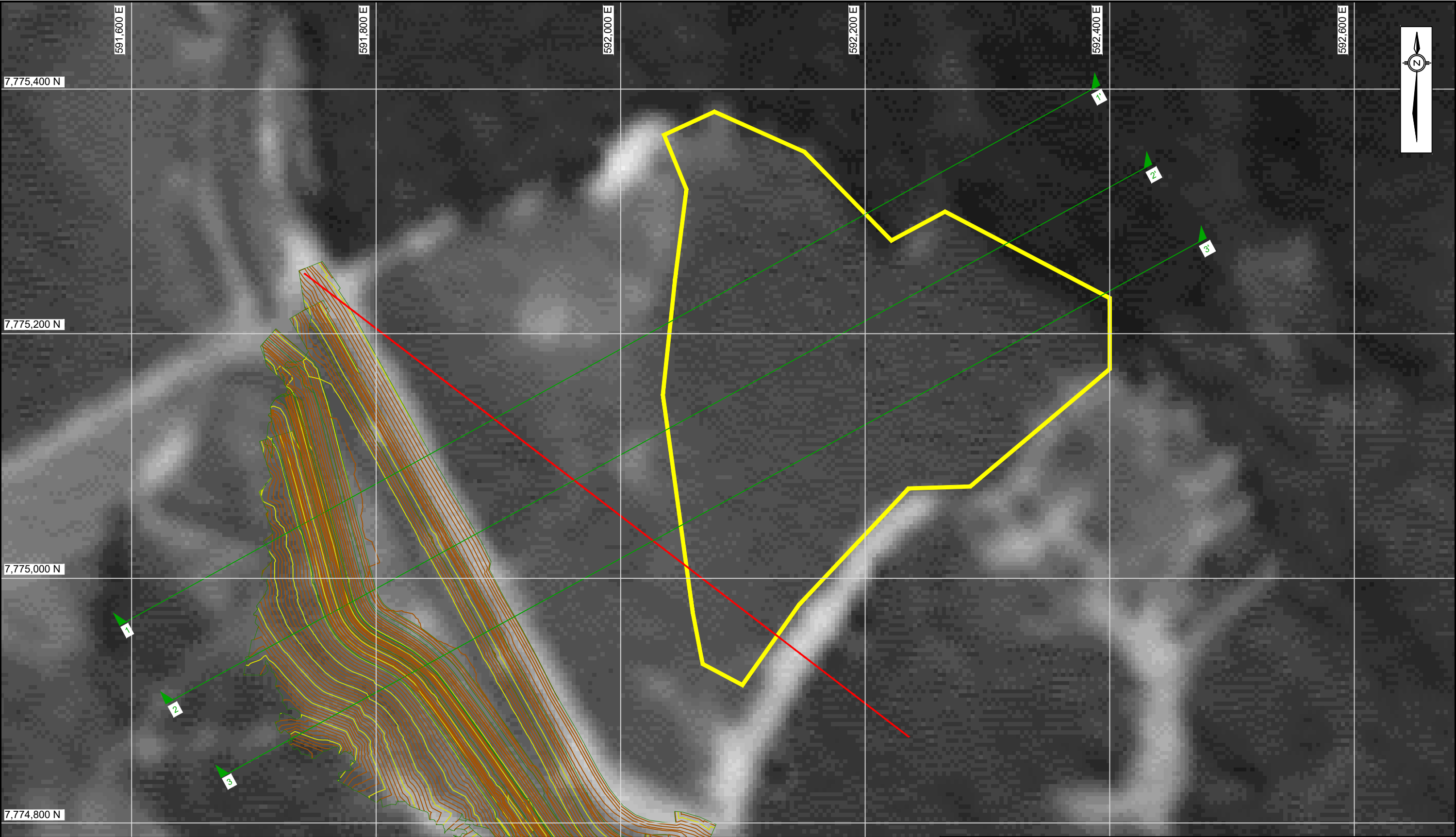
CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
APRIL 2000
RAISE #10
DAM CREST EL. 910.0 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-84
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ROB-11G8-L



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

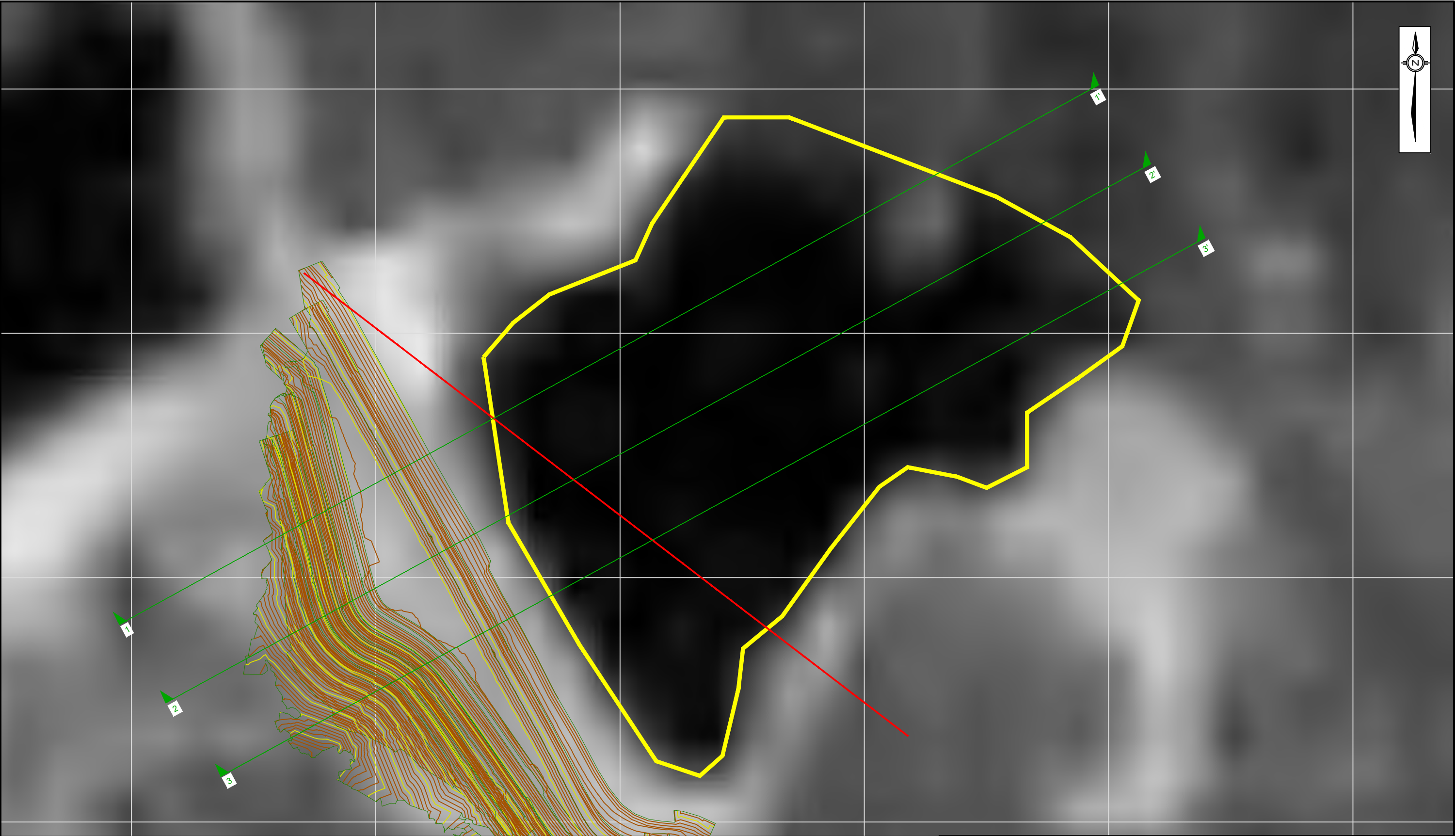
DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	

PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT		
TITLE SATELLITE IMAGES JULY 2000 RAISE #10 DAM CREST EL. 910.0 m		
SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-85



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

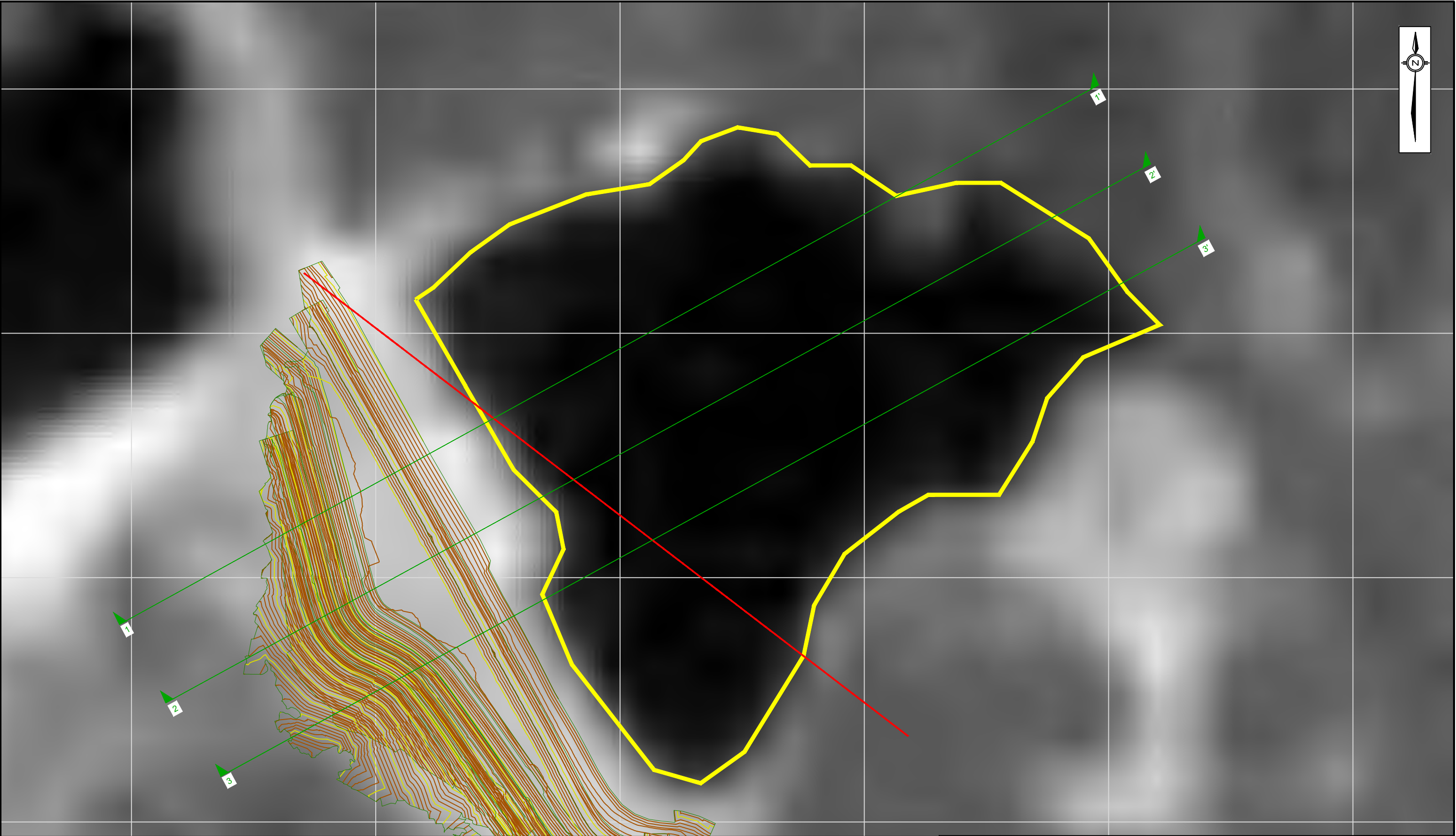
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
AUGUST 21, 2000 (S)
RAISE #10
DAM CREST EL. 910 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-86
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

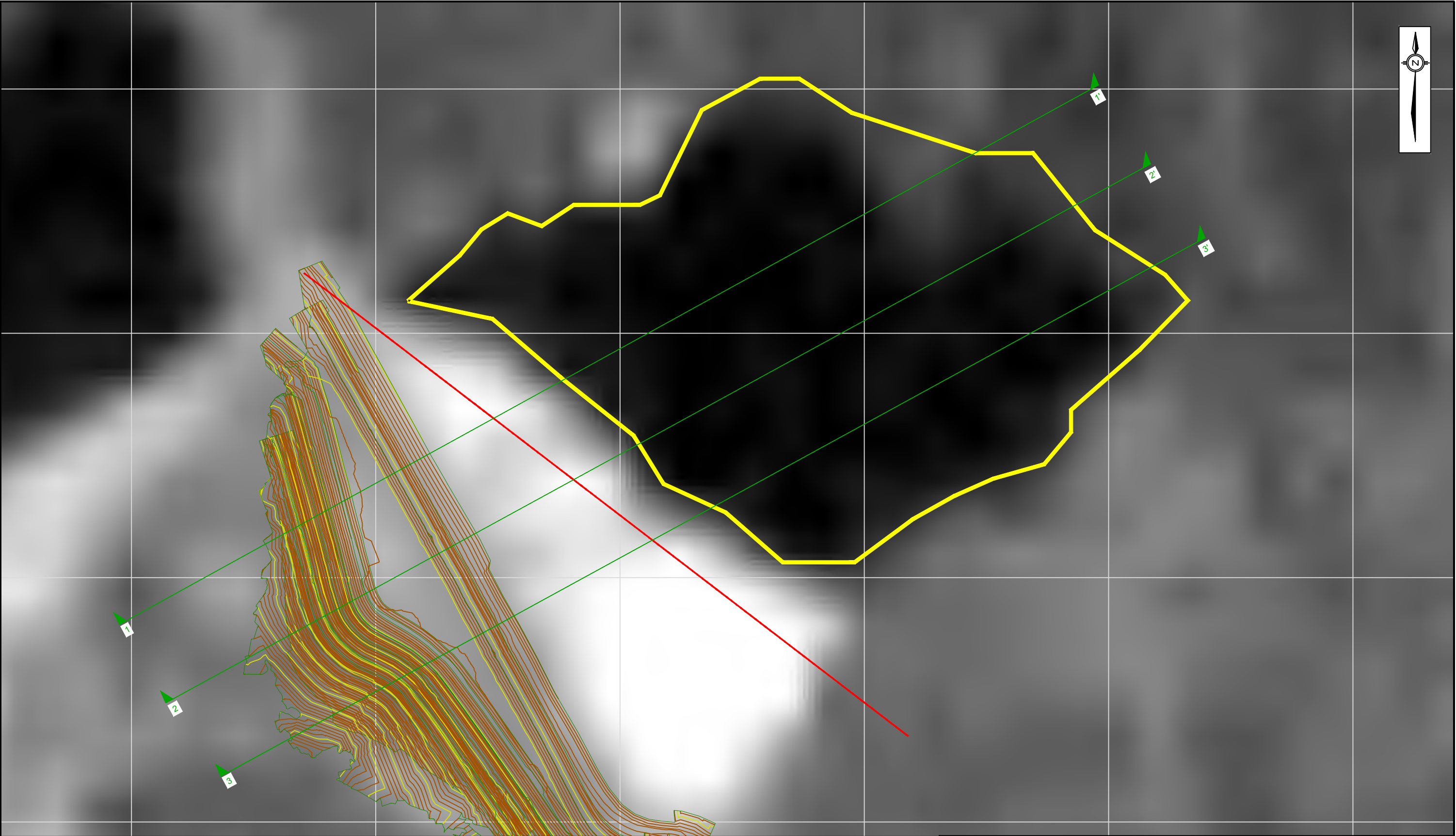
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
SEPTEMBER 22, 2000 (S)
RAISE #10
DAM CREST EL. 910 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-87
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

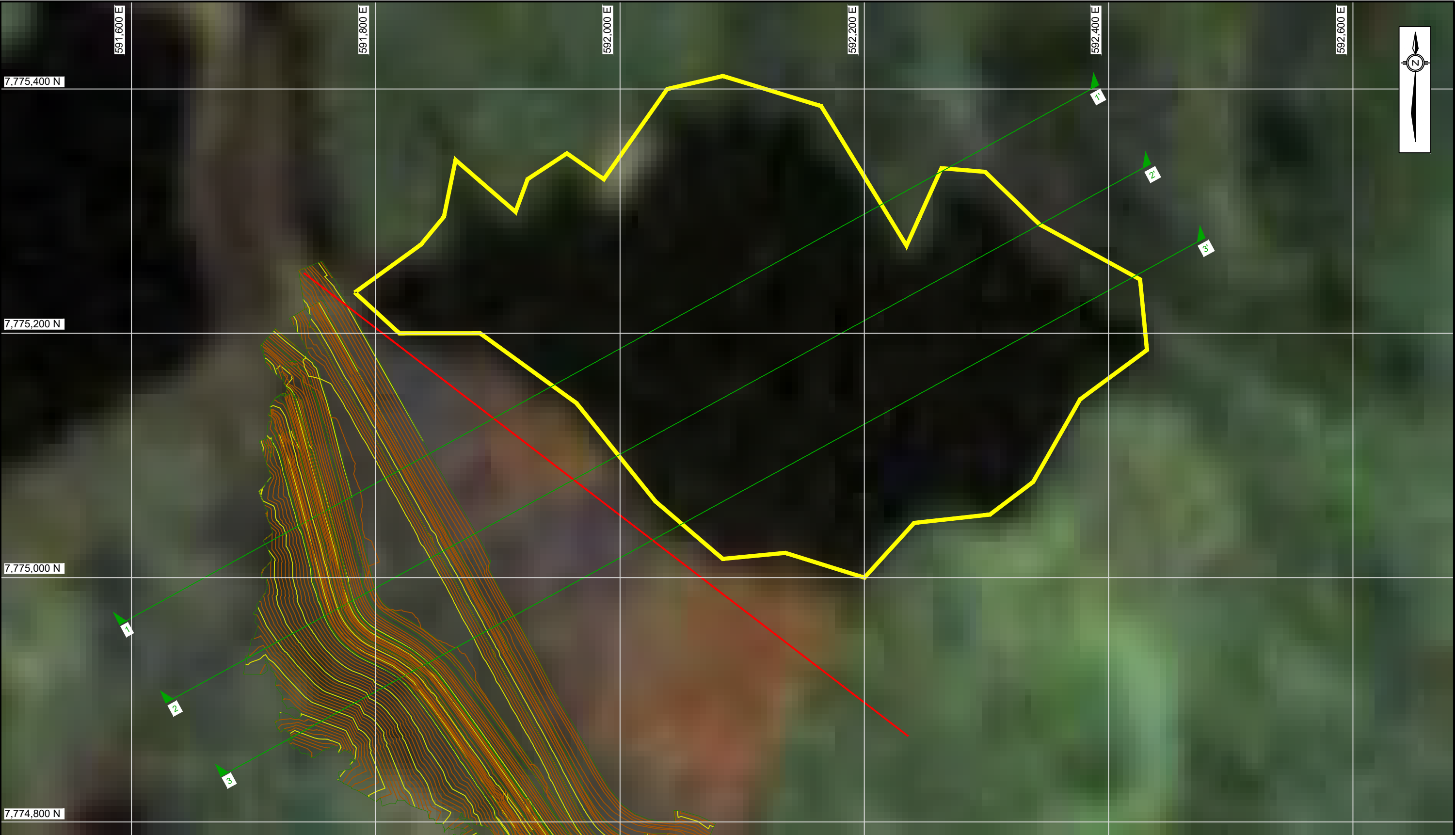
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELITE IMAGES
APRIL 18, 2001
RAISE #10
DAM CREST EL. 910 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-88
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

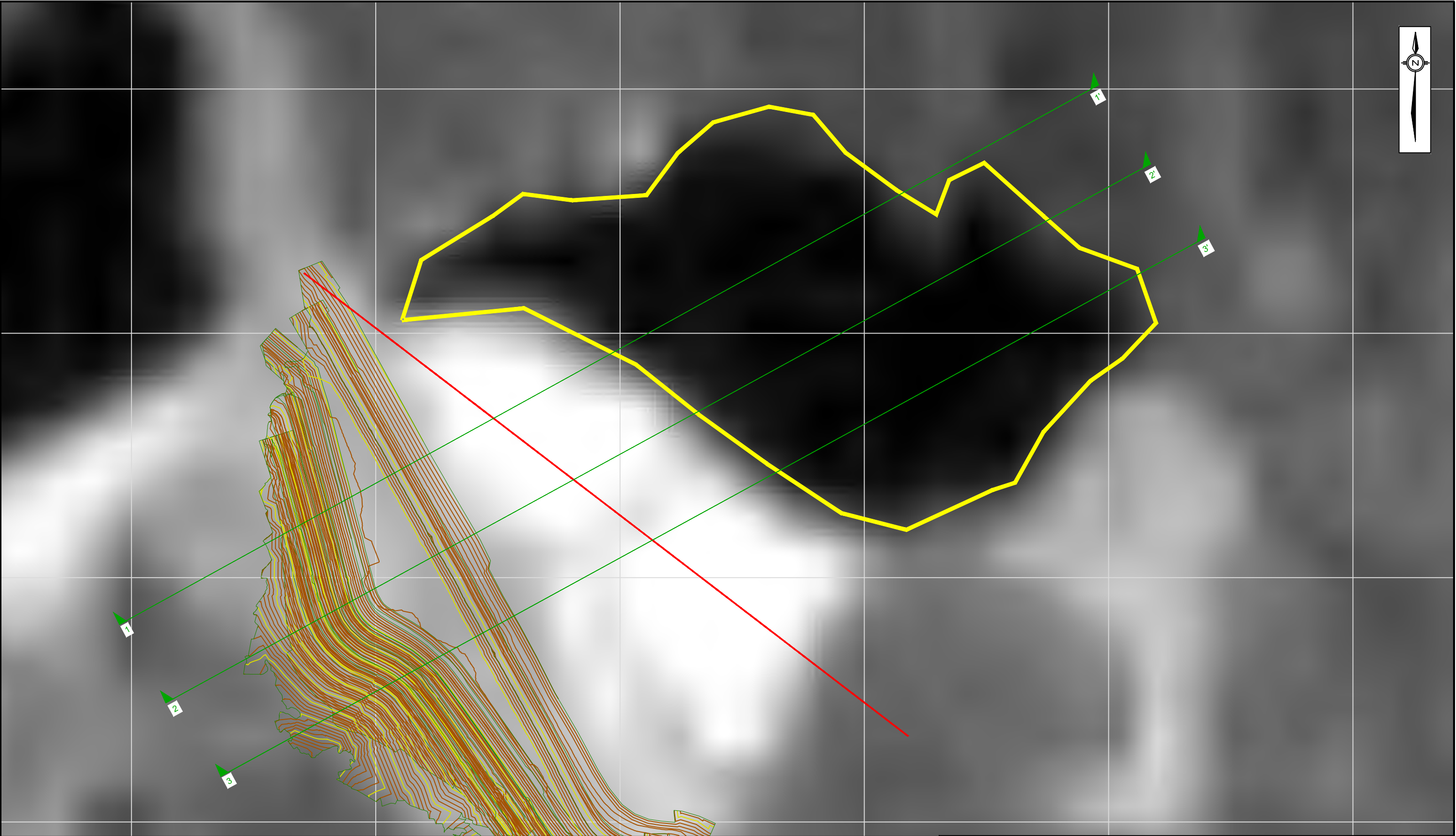
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
MAY 2001
RAISE #10
DAM CREST EL. 910.0 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-89
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

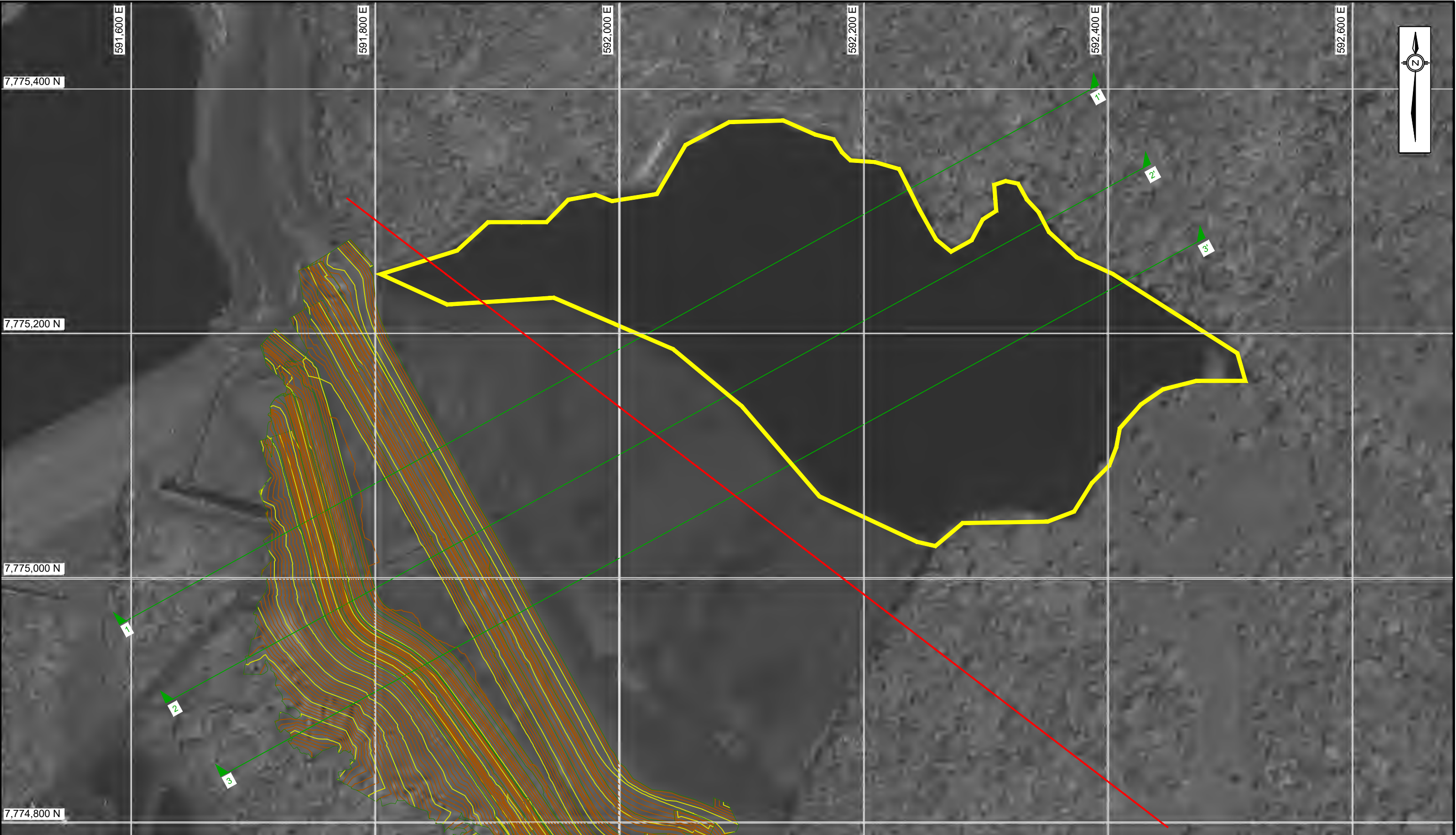
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 10)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES SEPTEMBER 9, 2001 (S) RAISE #10 DAM CREST EL. 910 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-90	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

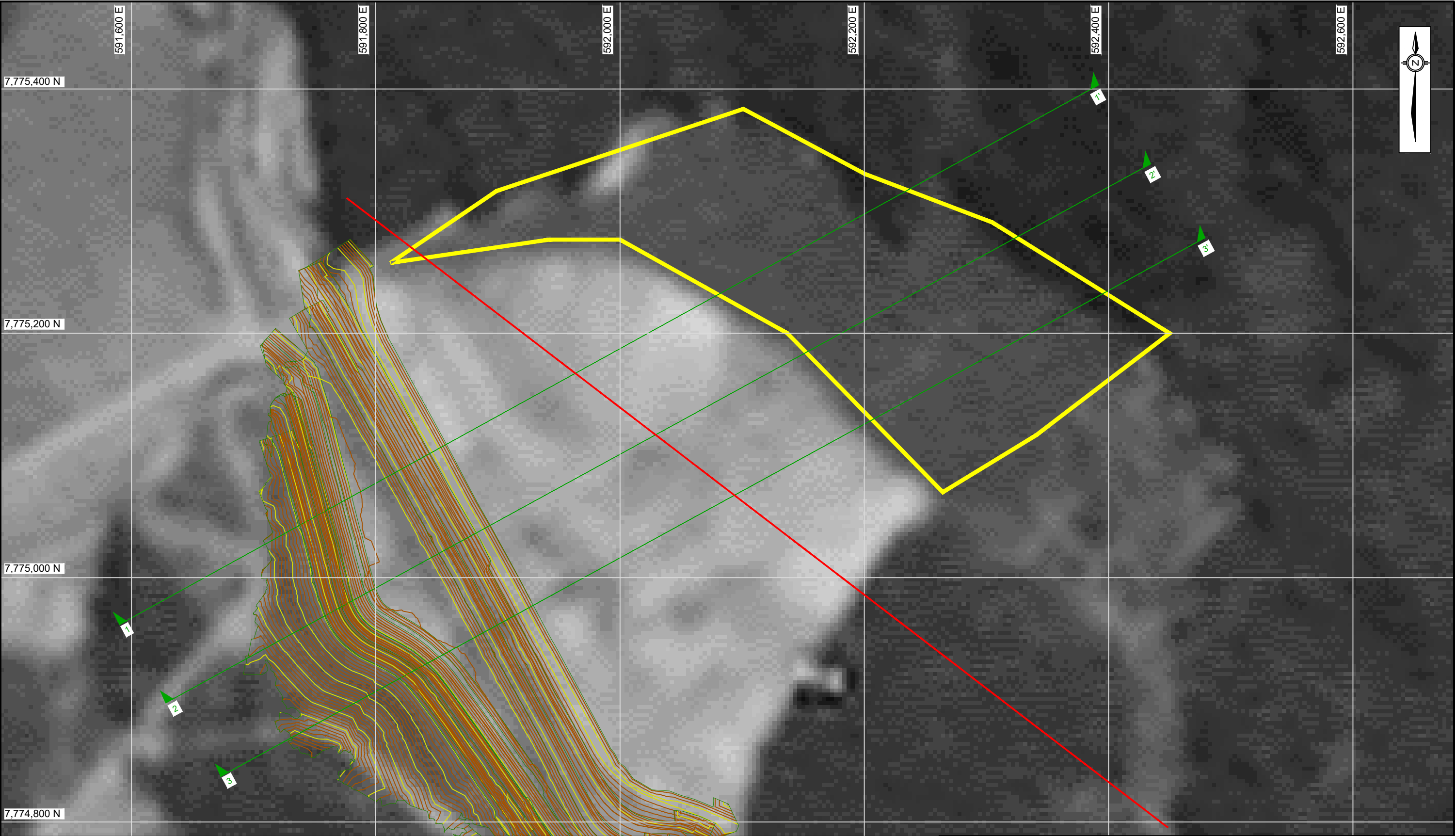
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 11)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE SATELLITE IMAGES OCTOBER 13, 2001 RAISE #11 DAM CREST EL. 916.5 m	
SCALE 1:3,000	PROJECT No. A03355A01
FIG. No. FIGURE I-91	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 11)	DAM RAISE OUTLINE

1:3,000 30 60

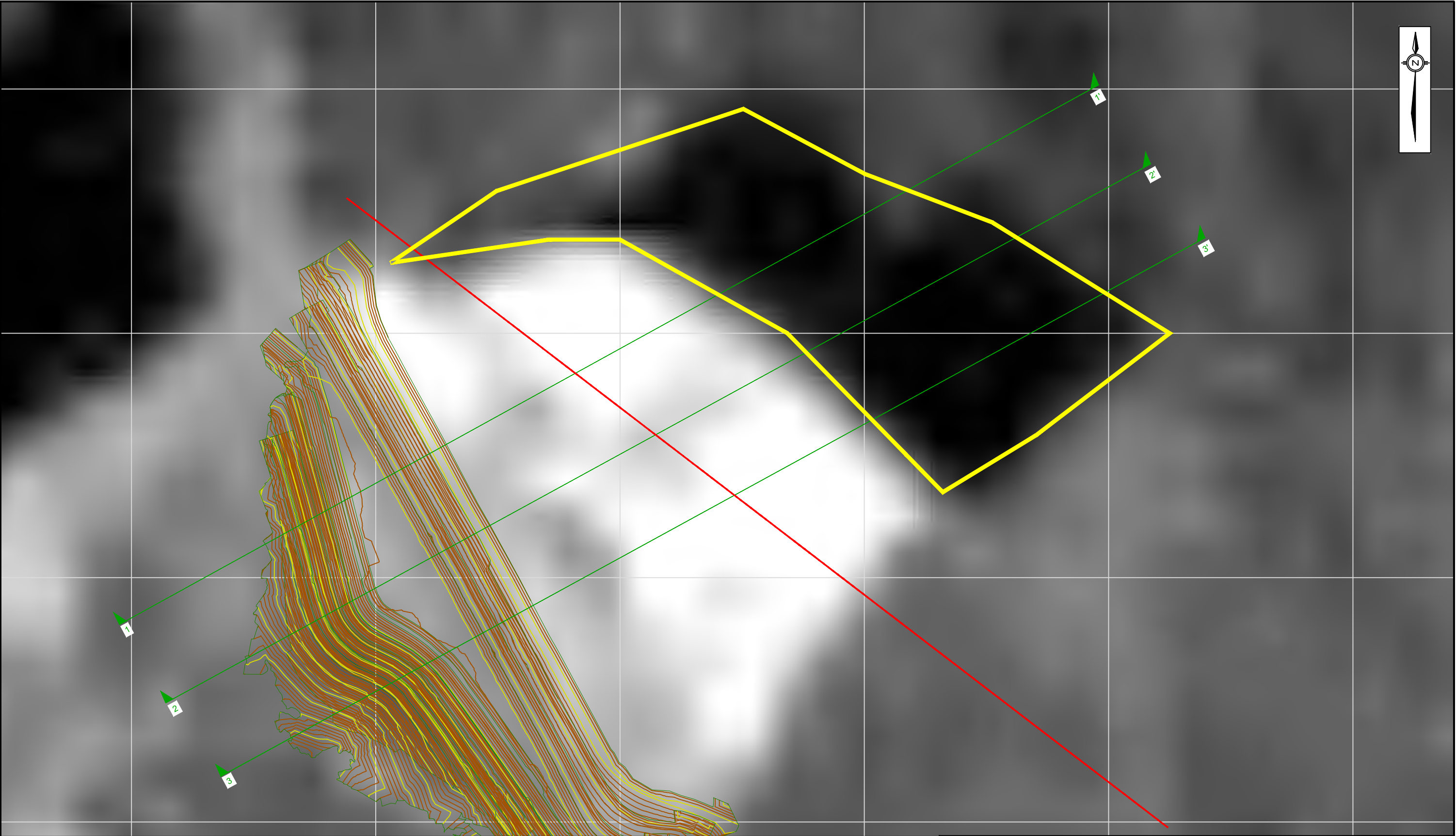
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
APRIL 21, 2002
RAISE #11
DAM CREST EL. 916.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-92
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

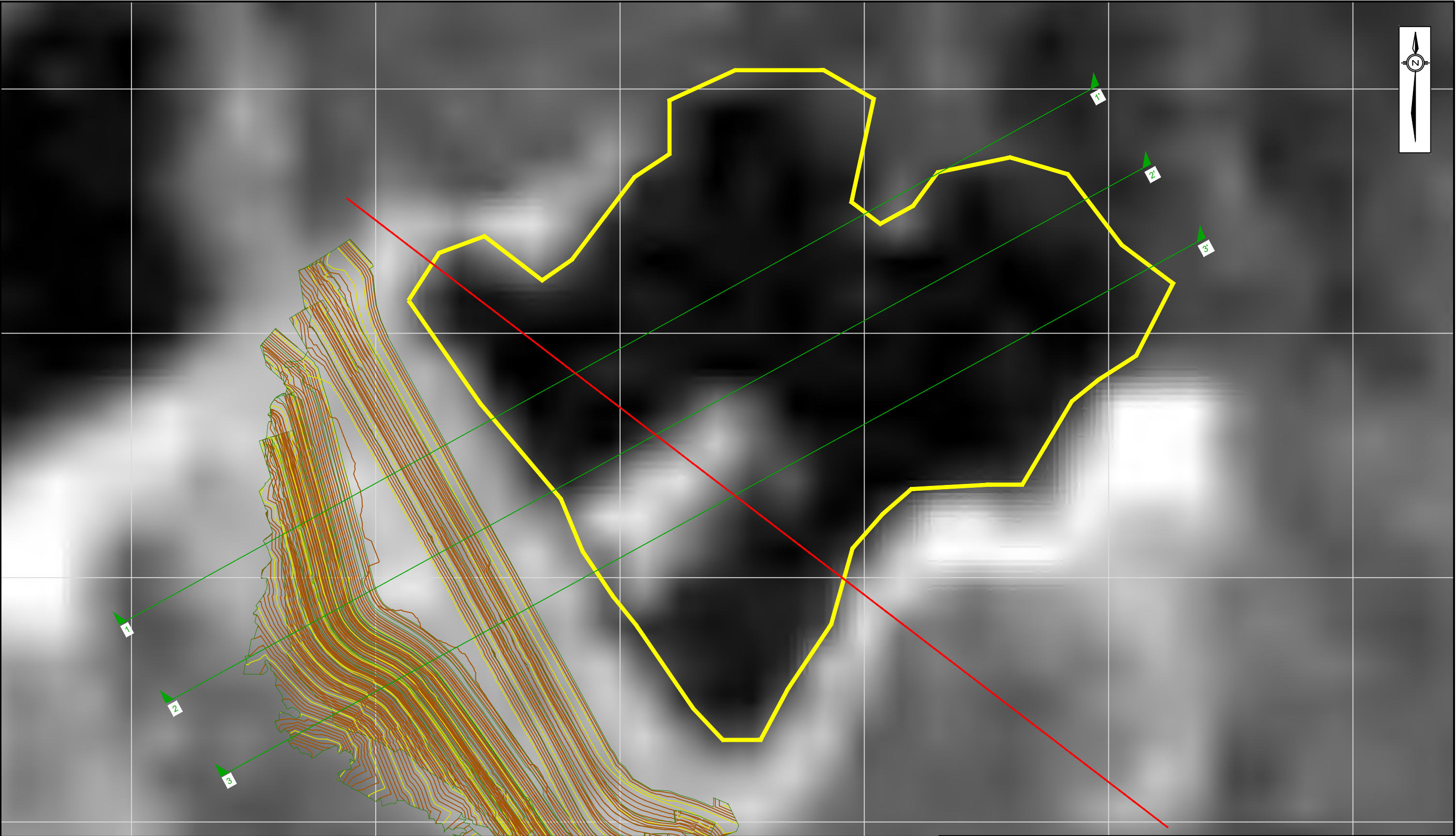
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 11)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES APRIL 21, 2002 (S) RAISE #11 DAM CREST EL. 916.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-93	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 11)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 26, 2002 (S) RAISE #11 DAM CREST EL. 916.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-94	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 11)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
JANUARY 10, 2003
RAISE #11
DAM CREST EL. 916.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-95
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 11)	DAM RAISE OUTLINE

1:3,000 30 60

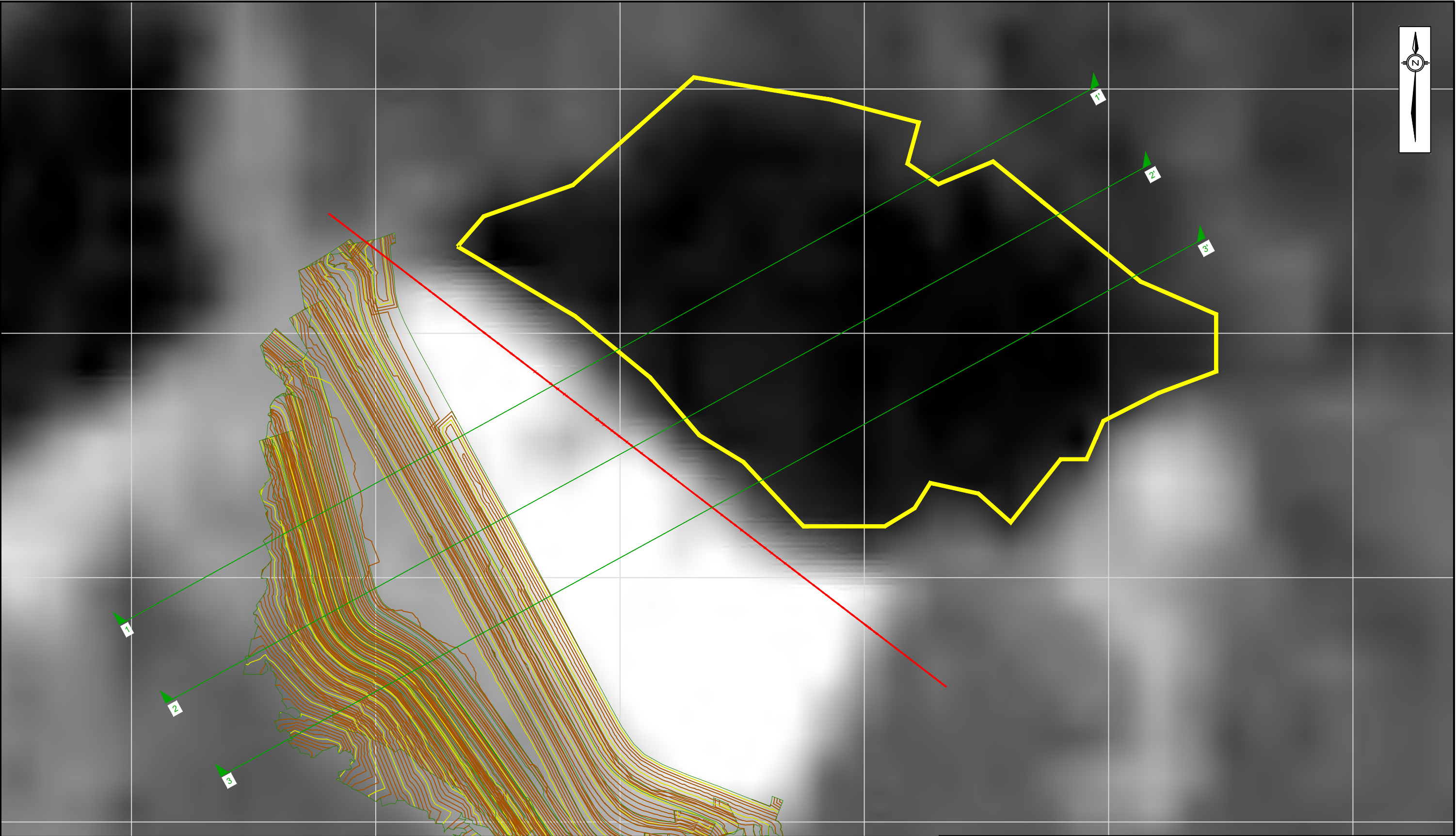
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
MAY 18, 2003
RAISE #11
DAM CREST EL. 916.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-96
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 12)	DAM RAISE OUTLINE

1:3,000 30 60

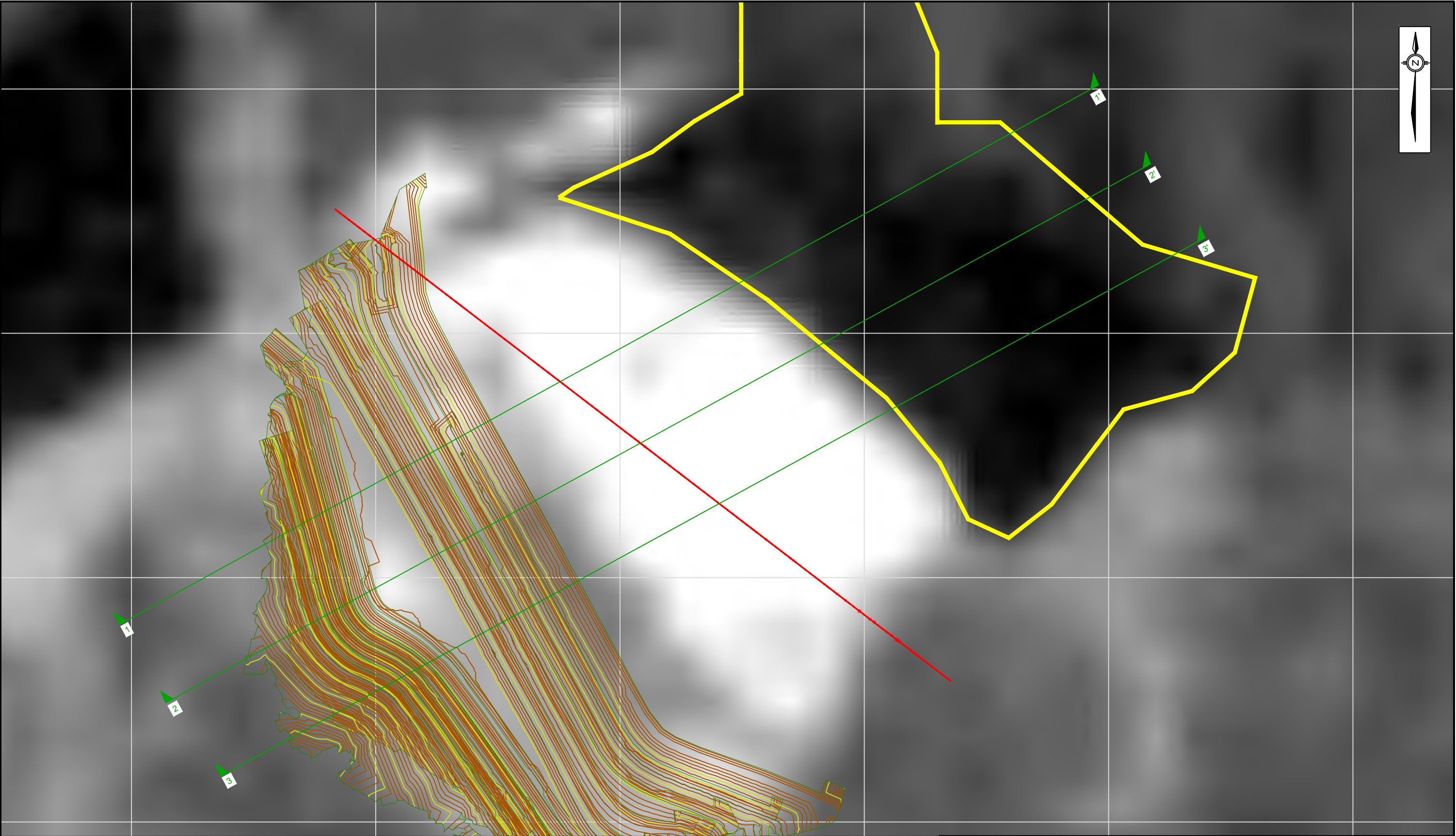
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
AUGUST 14, 2003 (S)
RAISE #12
DAM CREST EL. 922.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-97
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

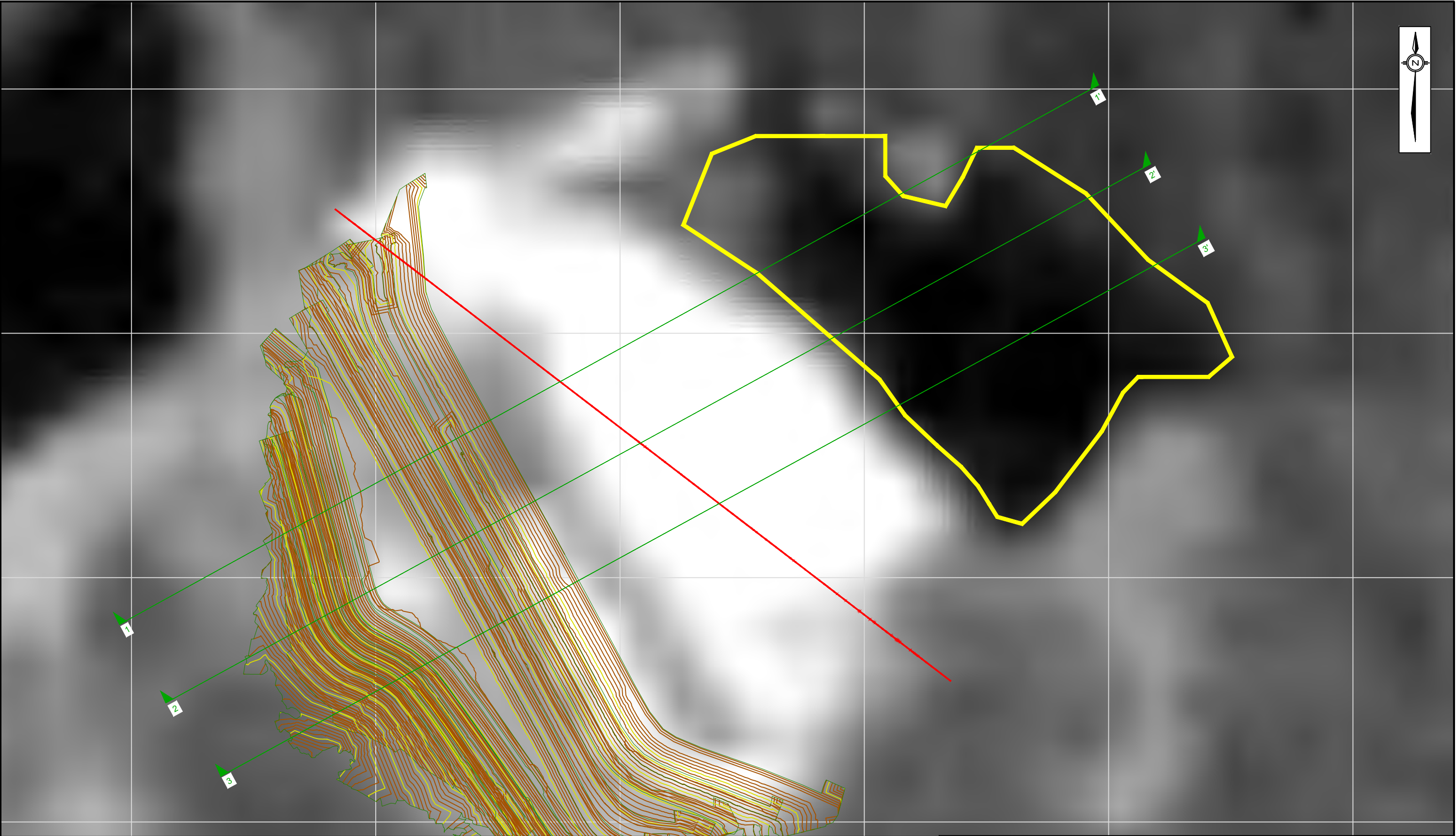
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES JULY 31, 2004 (S) RAISE #13 DAM CREST EL. 929.5 m	
SCALE	PROJECT No.
1:3,000	A03355A02
FIG. No.	
FIGURE I-98	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

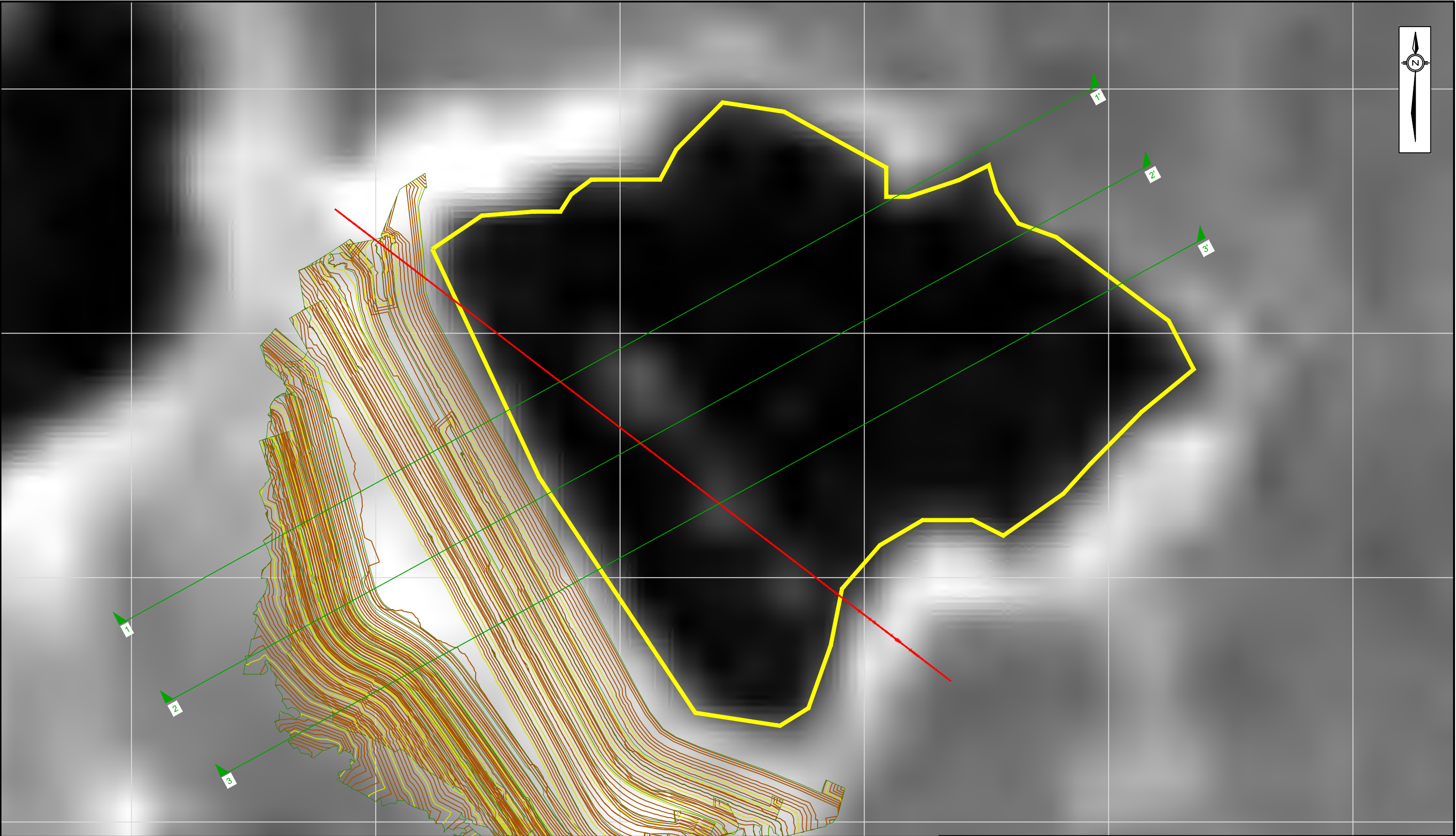
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
AUGUST 16, 2004 (S)
RAISE #13
DAM CREST EL. 929.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-99
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

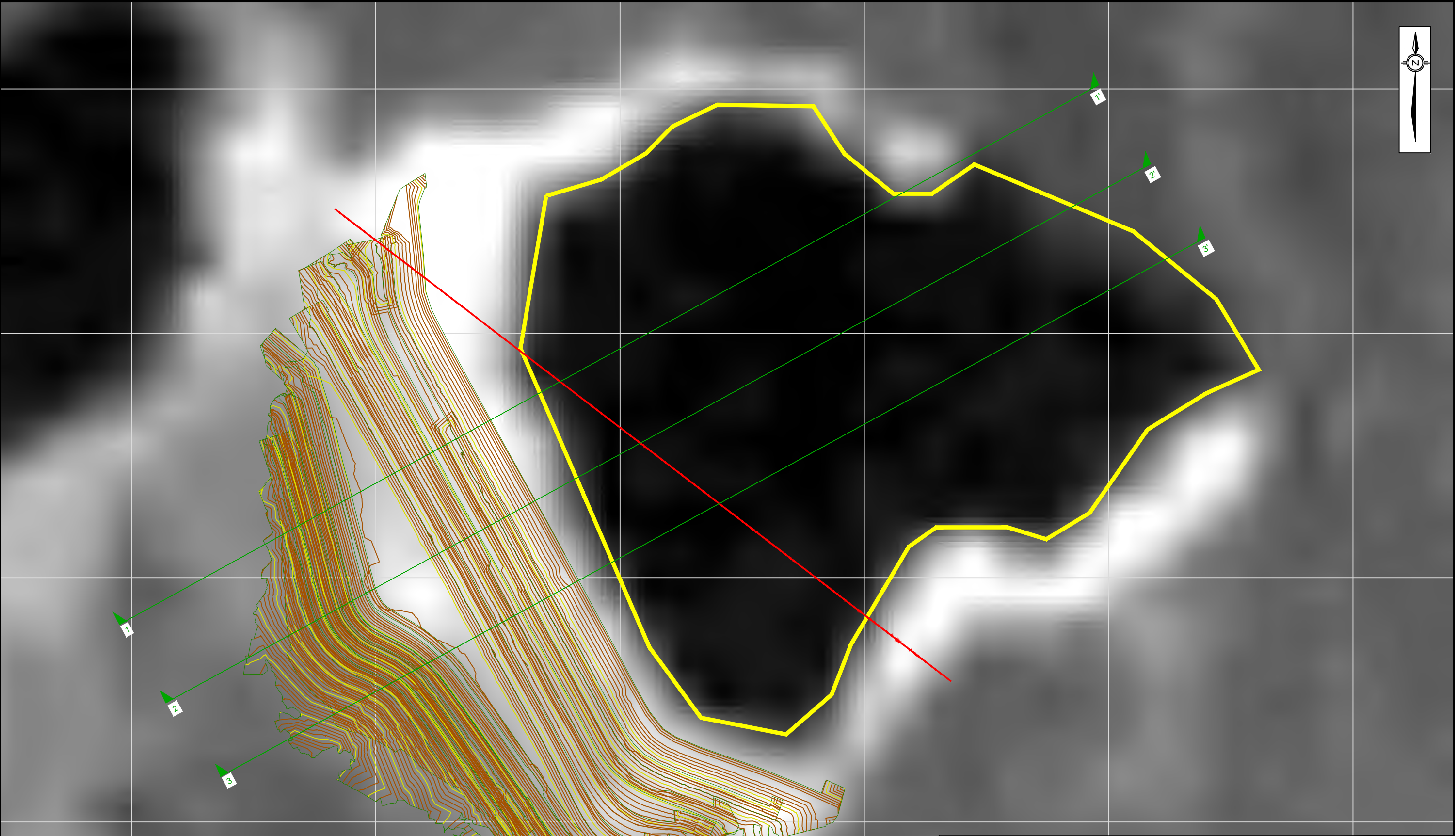
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES DECEMBER 6, 2004 (S) RAISE #13 DAM CREST EL. 929.5 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-100	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

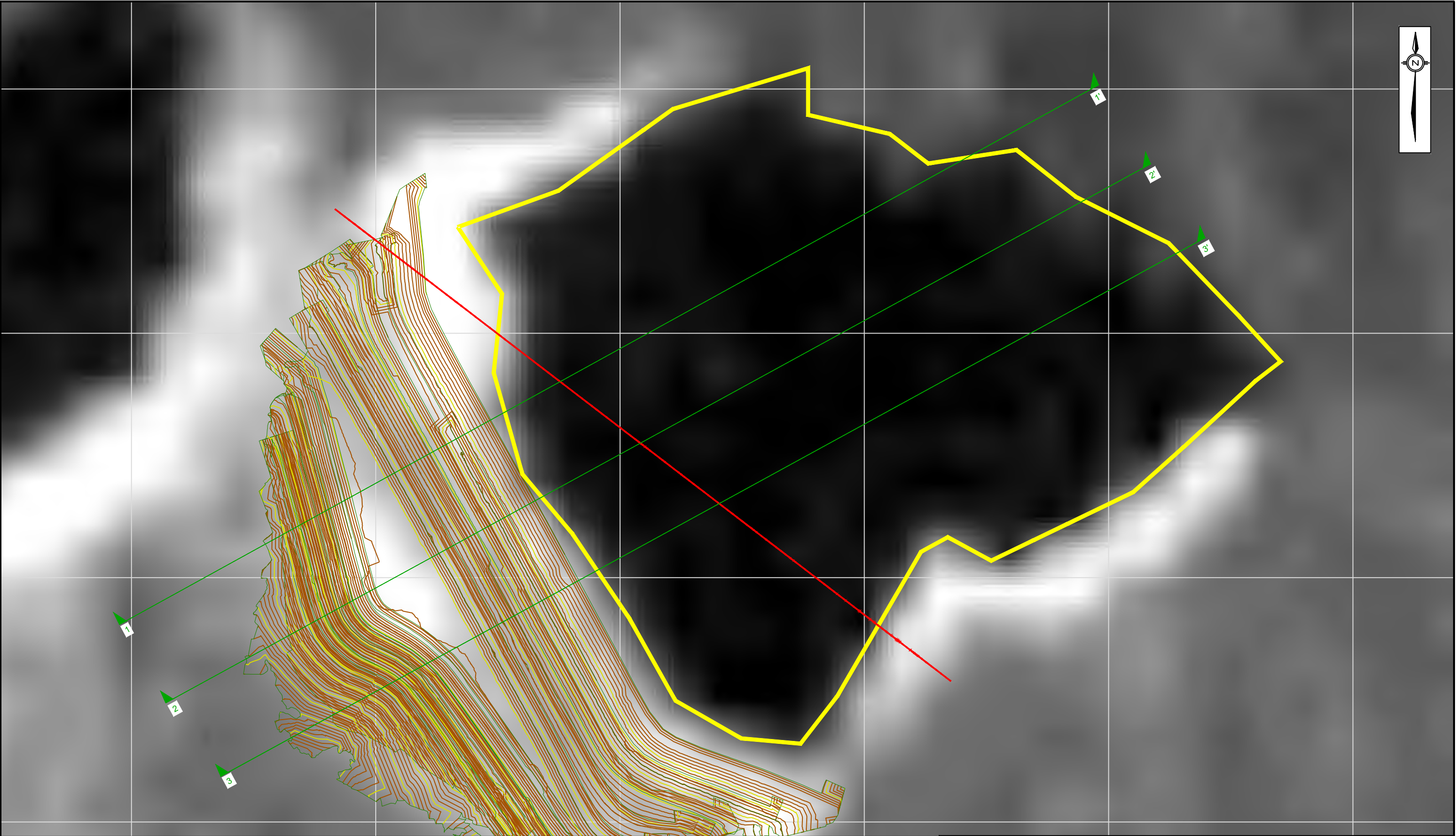
PROJECT

REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE

**SATELLITE IMAGES
FEBRUARY 24, 2005 (S)
RAISE #13
DAM CREST EL. 929.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-101
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

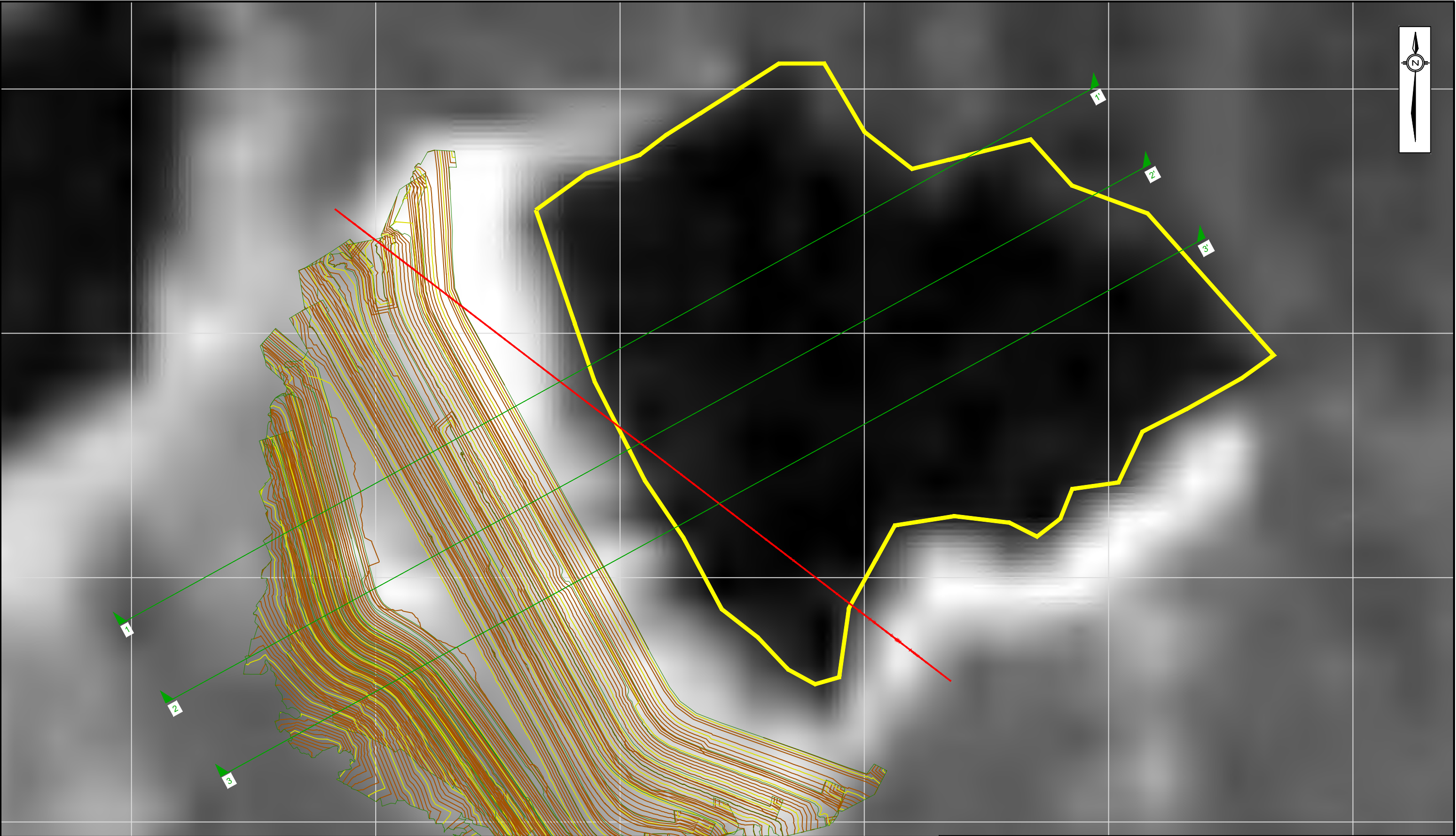
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
APRIL 13, 2005 (S)
RAISE #13
DAM CREST EL. 929.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-102
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- SATELLITES IMAGE WITH (S) IN TITLE REFER TO THE 93 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

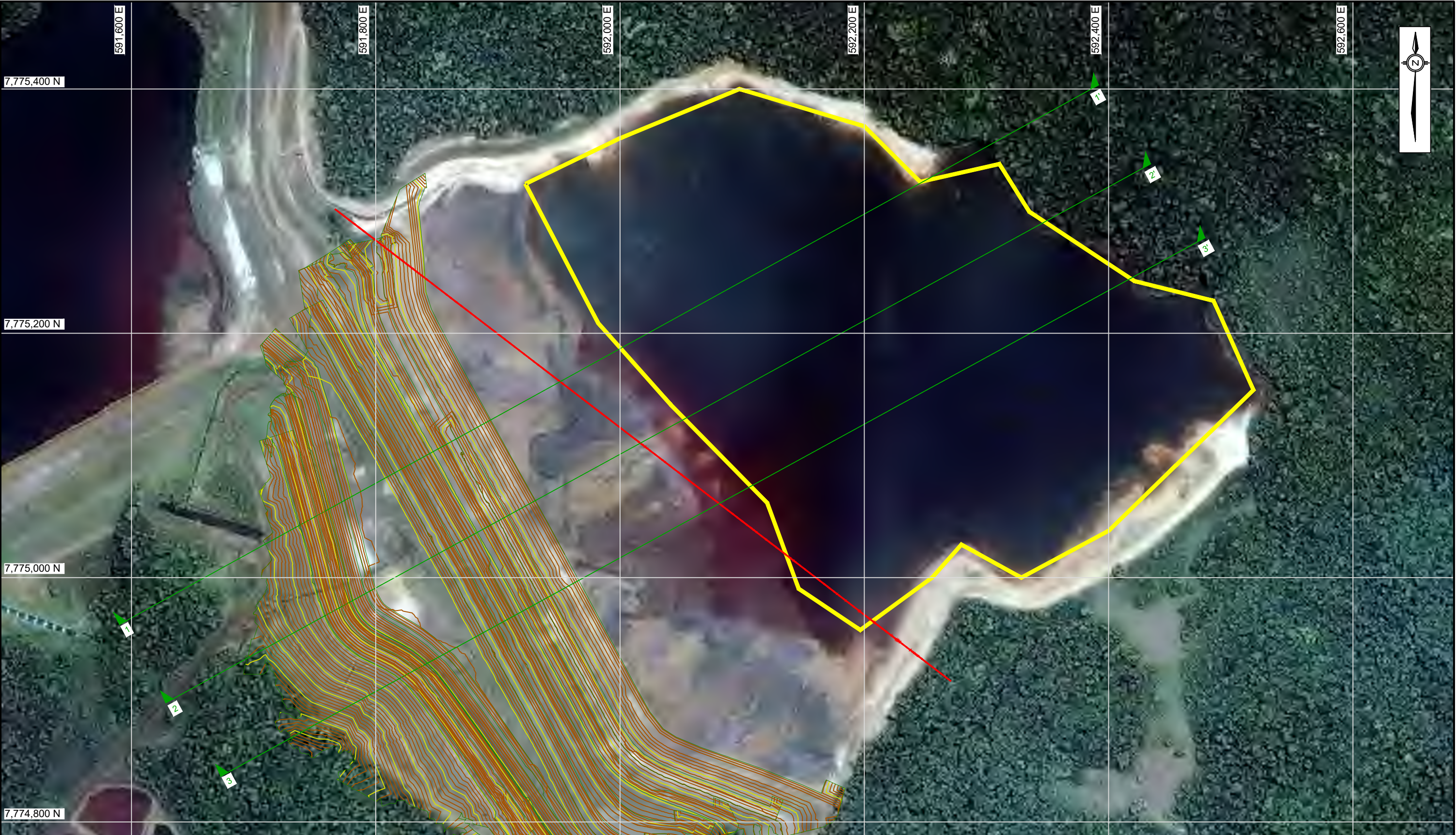
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
AUGUST 19, 2005 (S)
RAISE #13
DAM CREST EL. 929.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-103
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

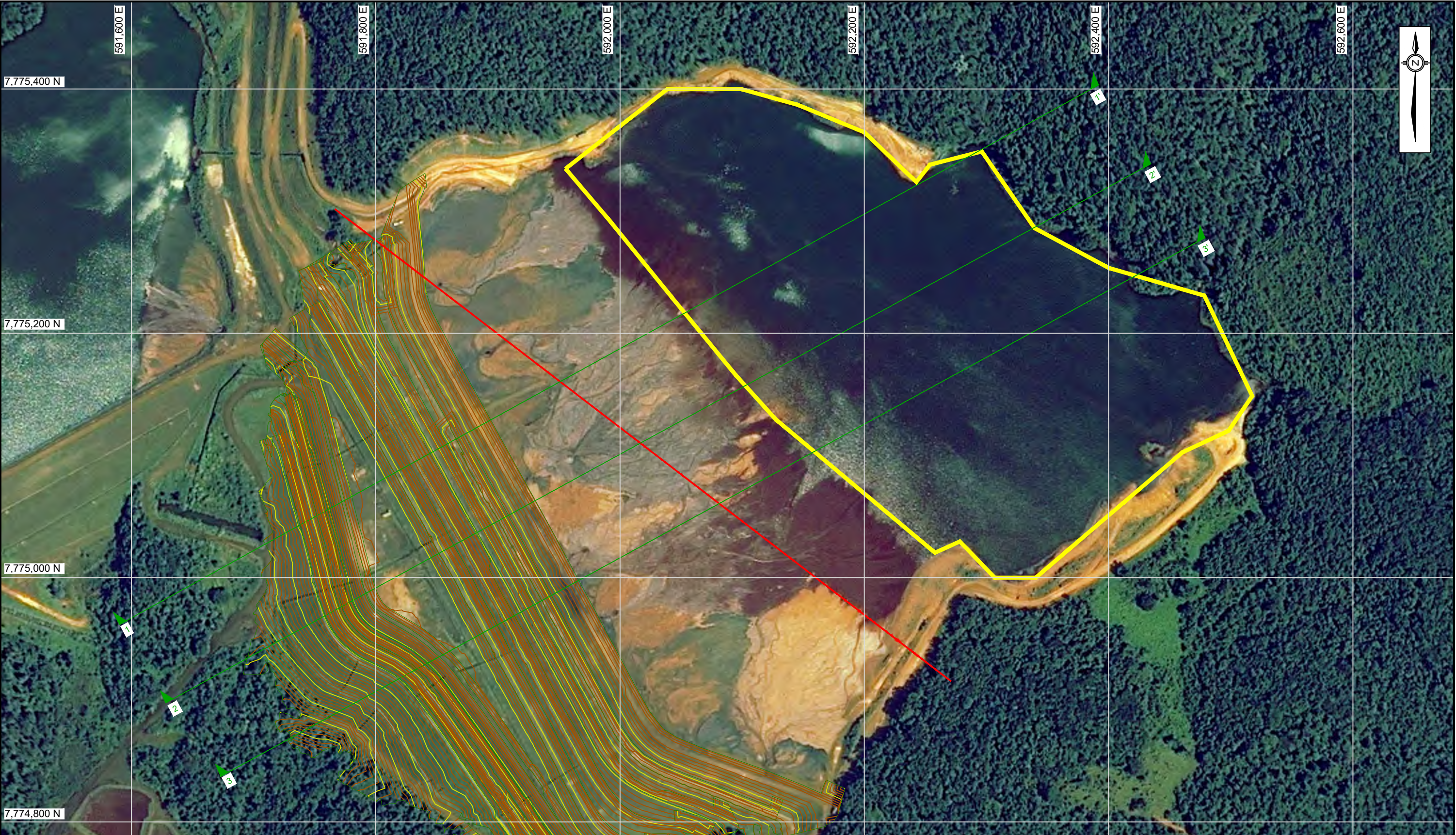
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE SATELLITE IMAGES OCTOBER 5, 2005 RAISE #13 DAM CREST EL. 929.5 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-104	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

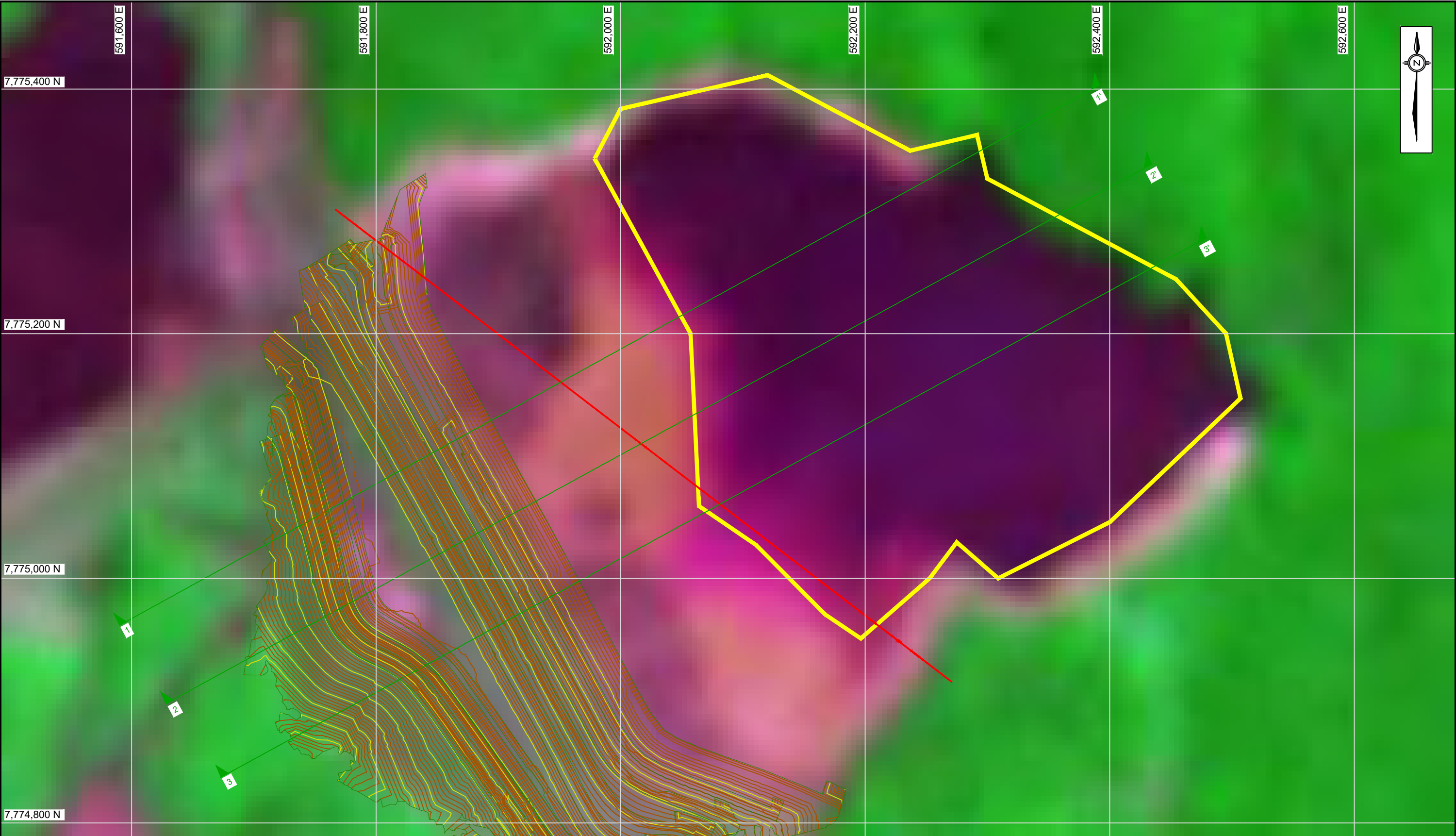
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
JANUARY 26, 2006
RAISE #13
DAM CREST EL. 929.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-105
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- SINCE WATER ABSORBS NEAR-INFRARED LIGHT, WATER OR DAMP AREAS WILL LOOK RED IN A RED-NIR-GREEN IMAGE

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

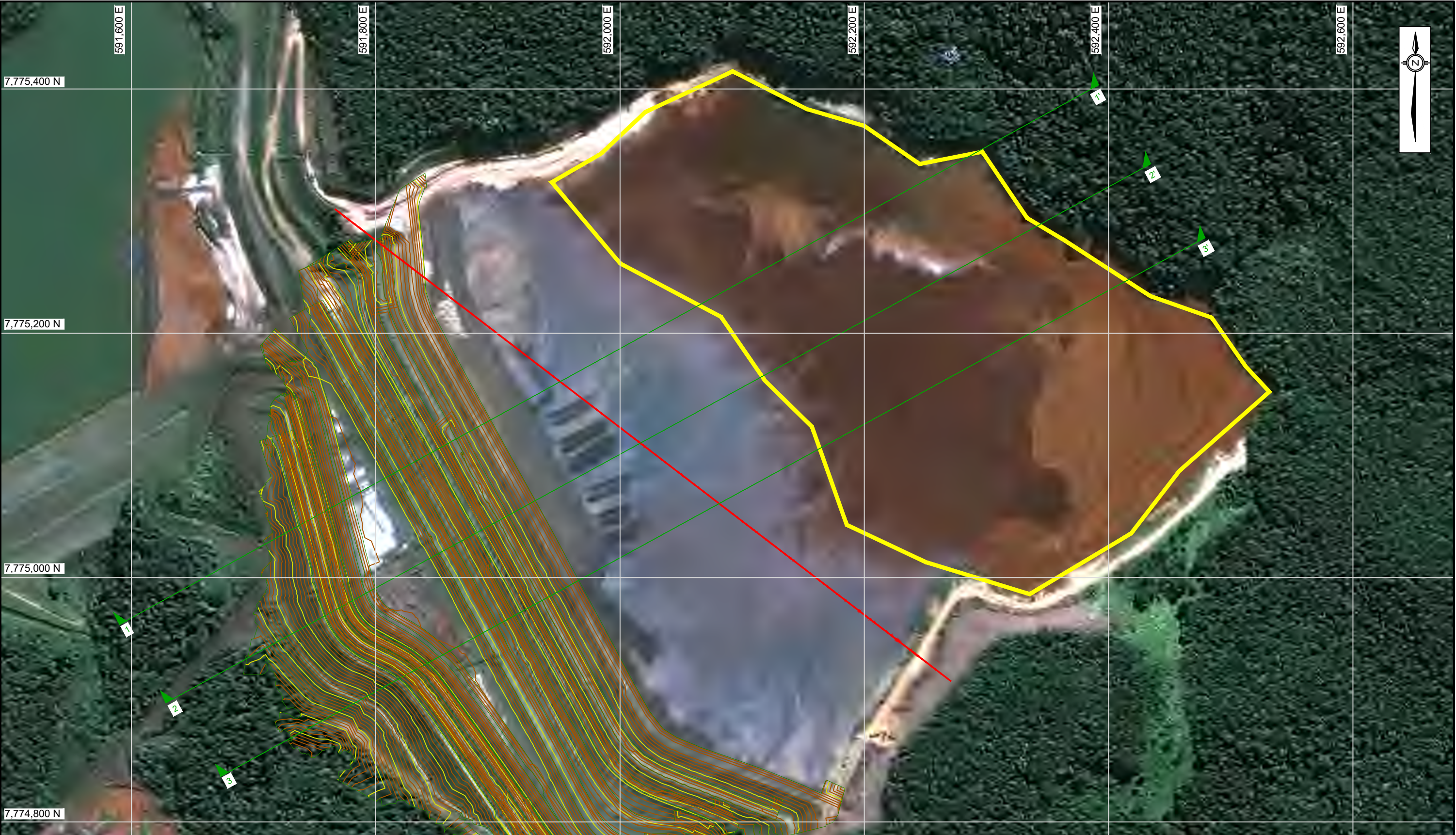
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
FEBRUARY 19, 2006
RAISE #13
DAM CREST EL. 929.5 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-106
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

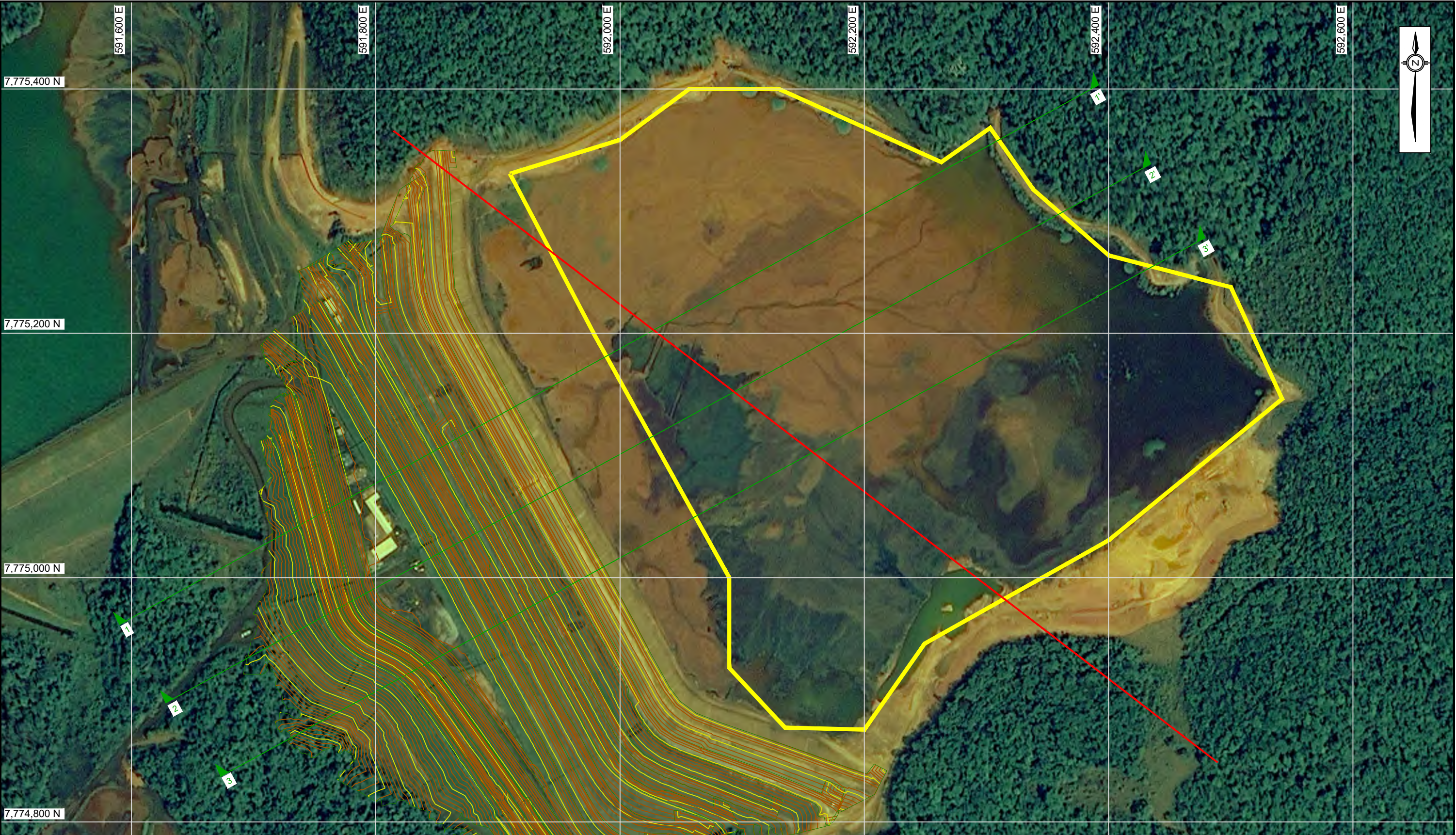
DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 13)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE SATELLITE IMAGES MAY 12, 2007 RAISE #13 DAM CREST EL. 929.5 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-107	

ROB-1168-L



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

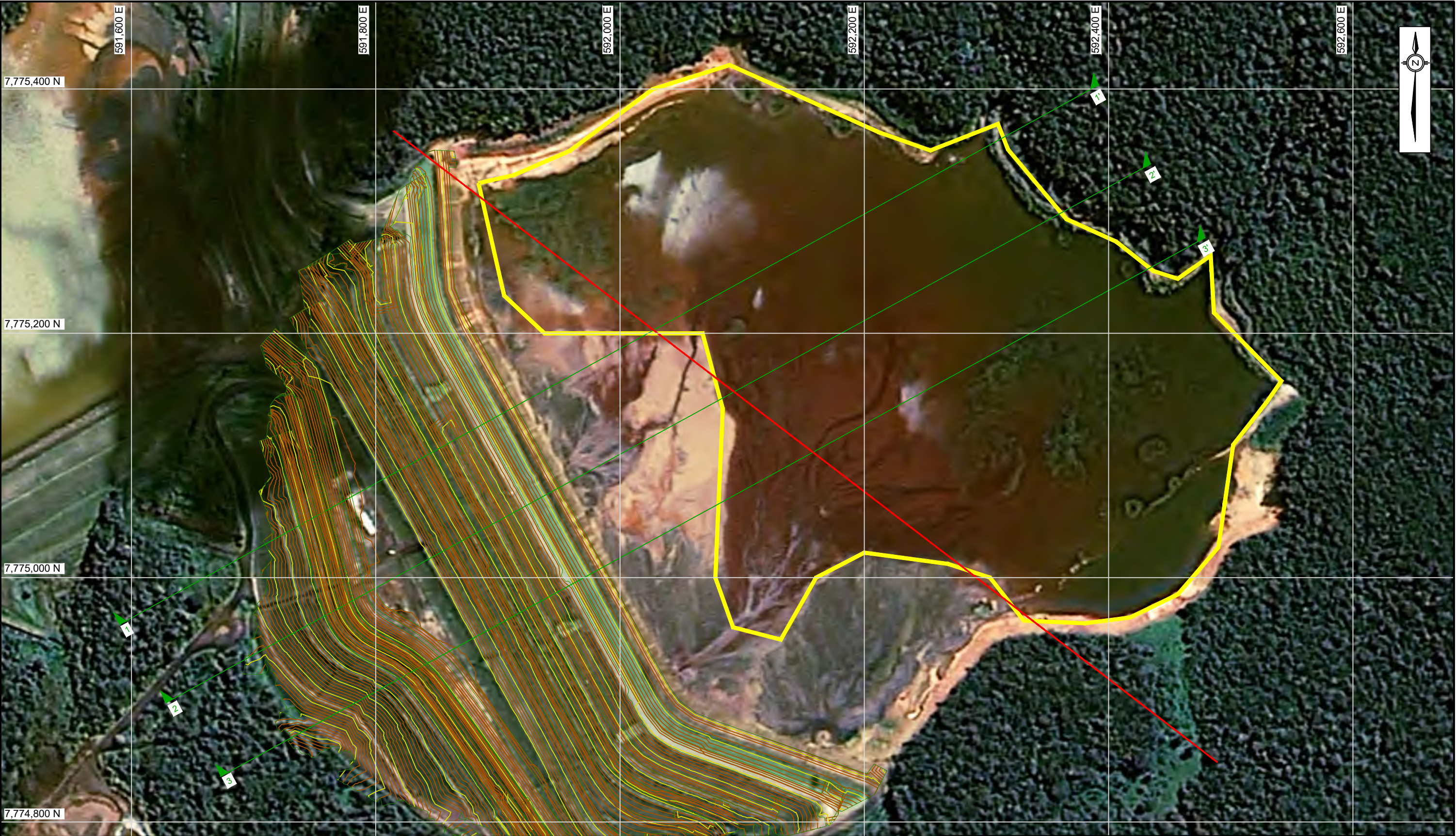
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES NOVEMBER 1, 2007 RAISE #14 DAM CREST EL. 937 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-108	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

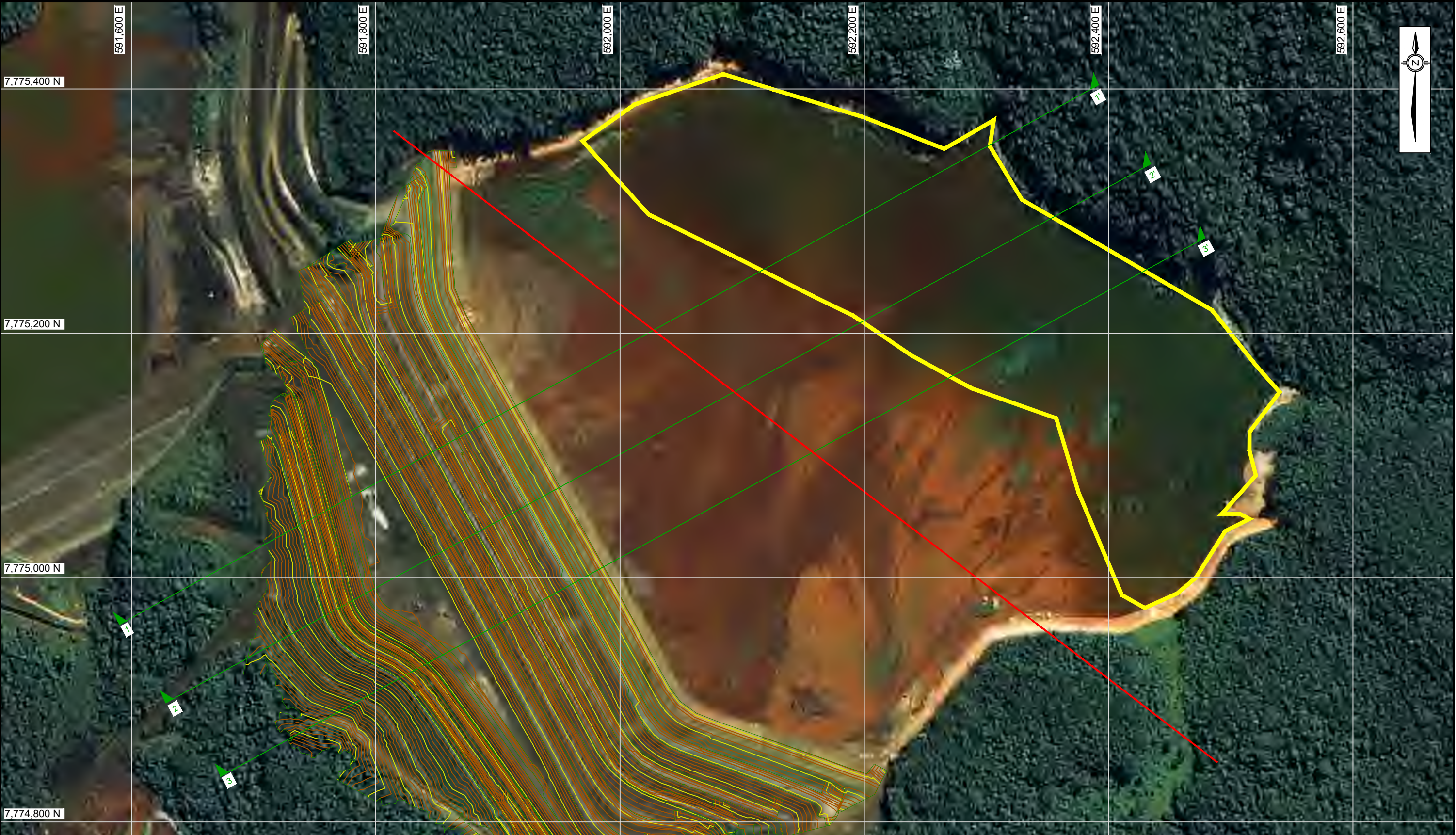
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
MARCH 30, 2008
RAISE #14
DAM CREST EL. 937 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-109
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

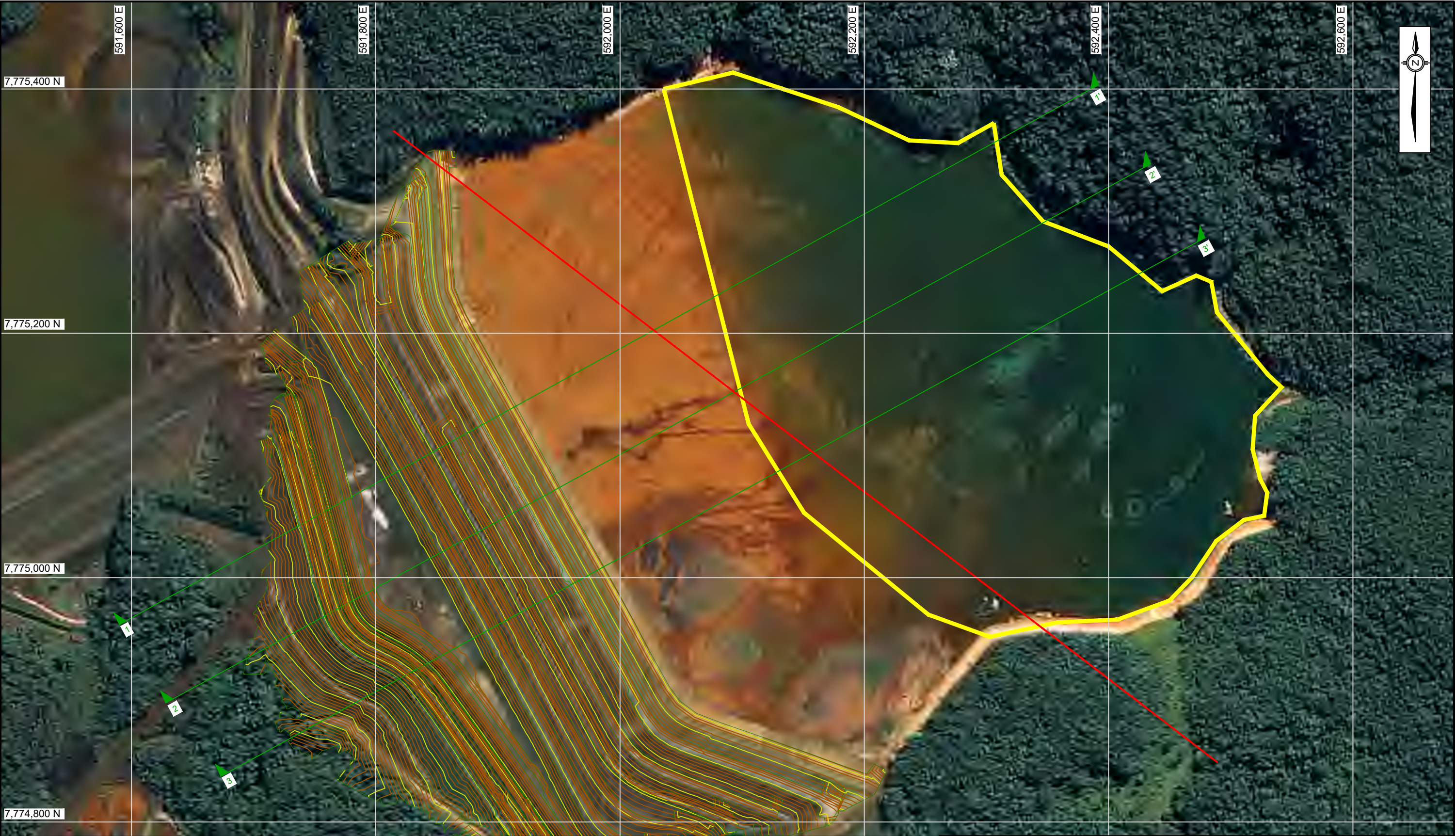
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE SATELLITE IMAGES JUNE 6, 2008 RAISE #14 DAM CREST EL. 937 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-110	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

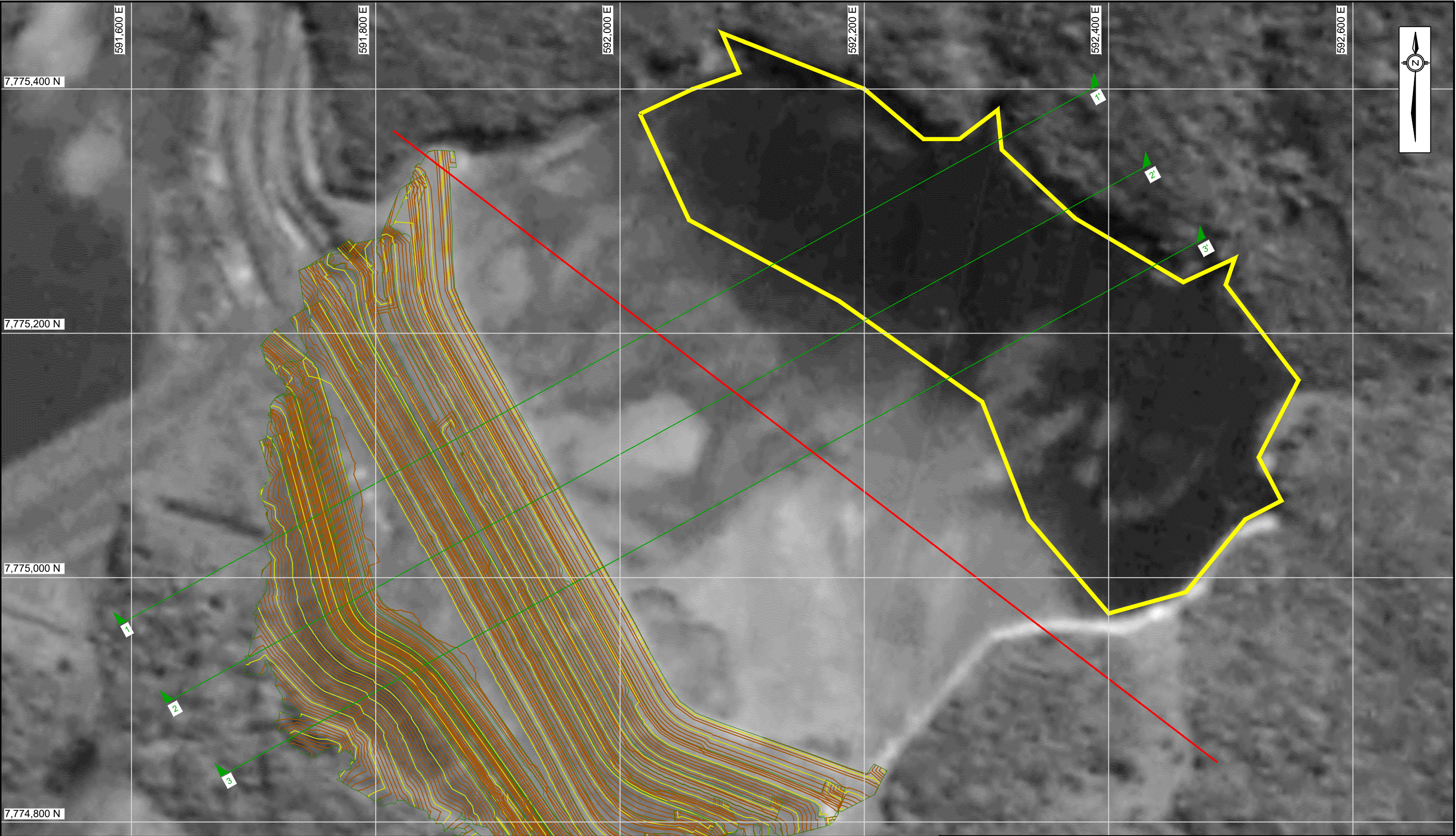
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
JULY 7, 2008
RAISE #14
DAM CREST EL. 937 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-111
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

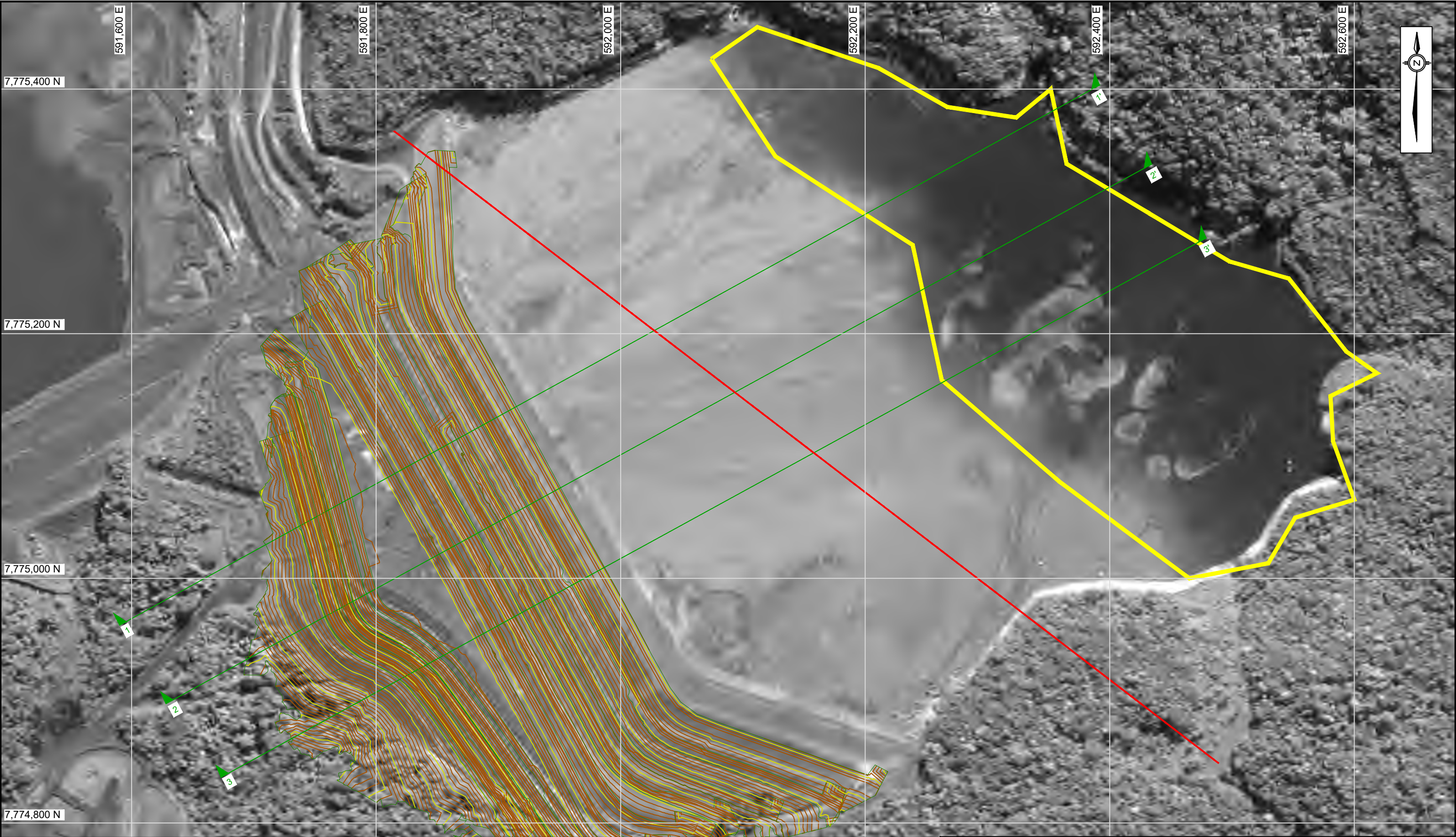
PROJECT

REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE

SATELLITE IMAGES
APRIL 28, 2009
RAISE #14
DAM CREST EL. 937 m

SCALE	PROJECT No.	FIG. No.
1:3,000	A03355A02	FIGURE I-112



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

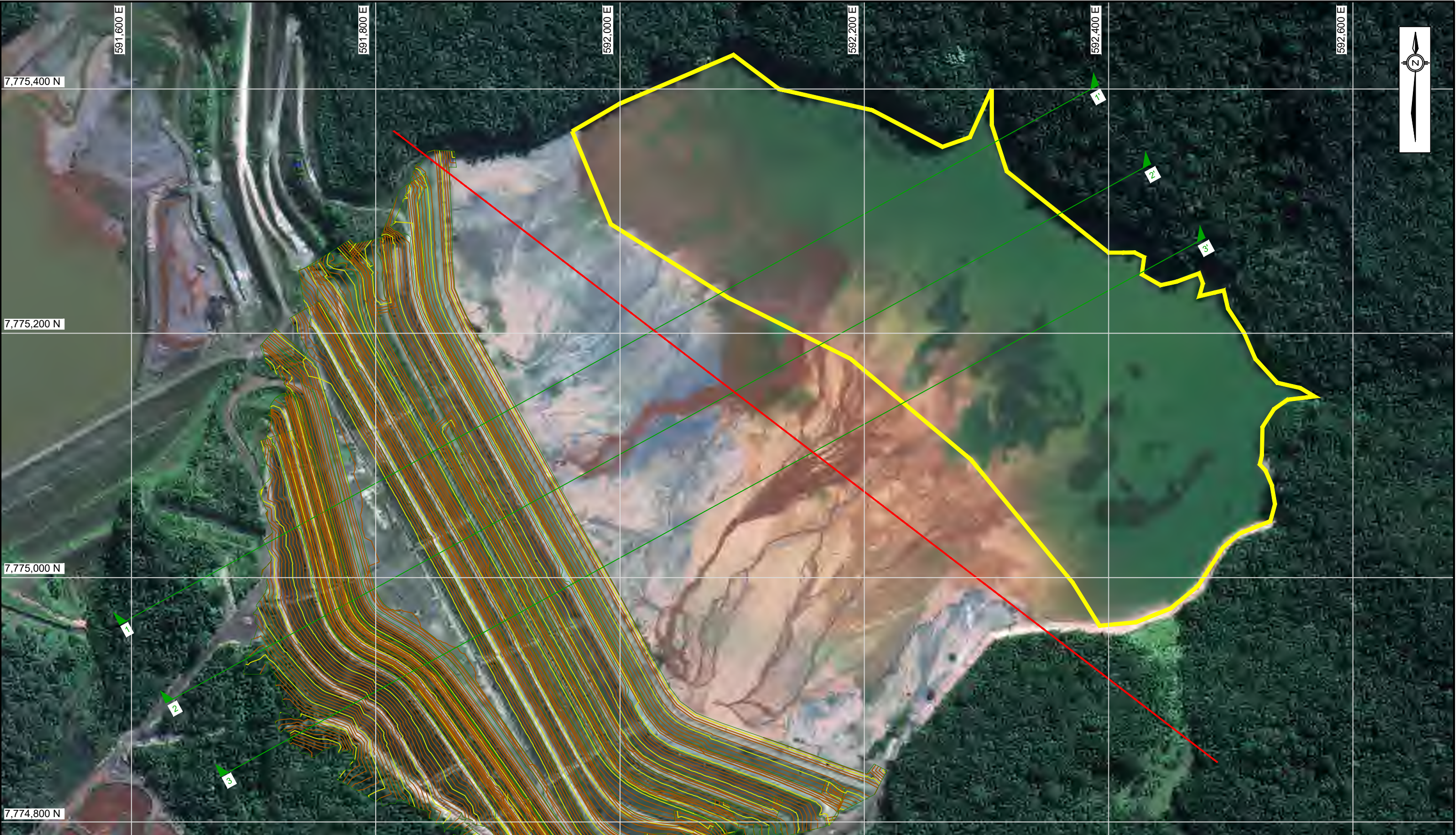
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE SATELLITE IMAGES JULY 26, 2009 RAISE #14 DAM CREST EL. 937 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-113	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

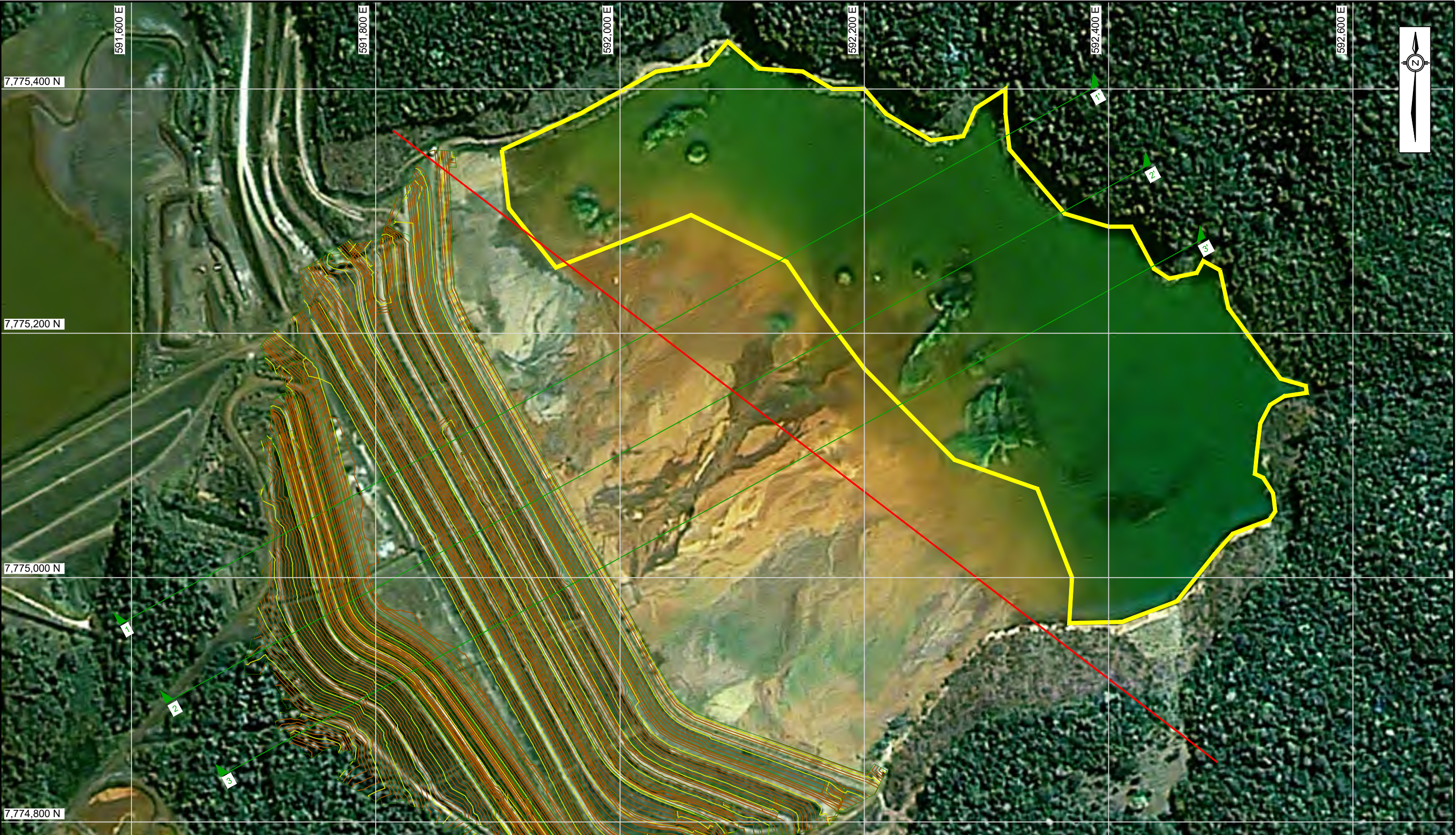
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
JUNE 13, 2010
RAISE #14
DAM CREST EL. 937 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-114
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

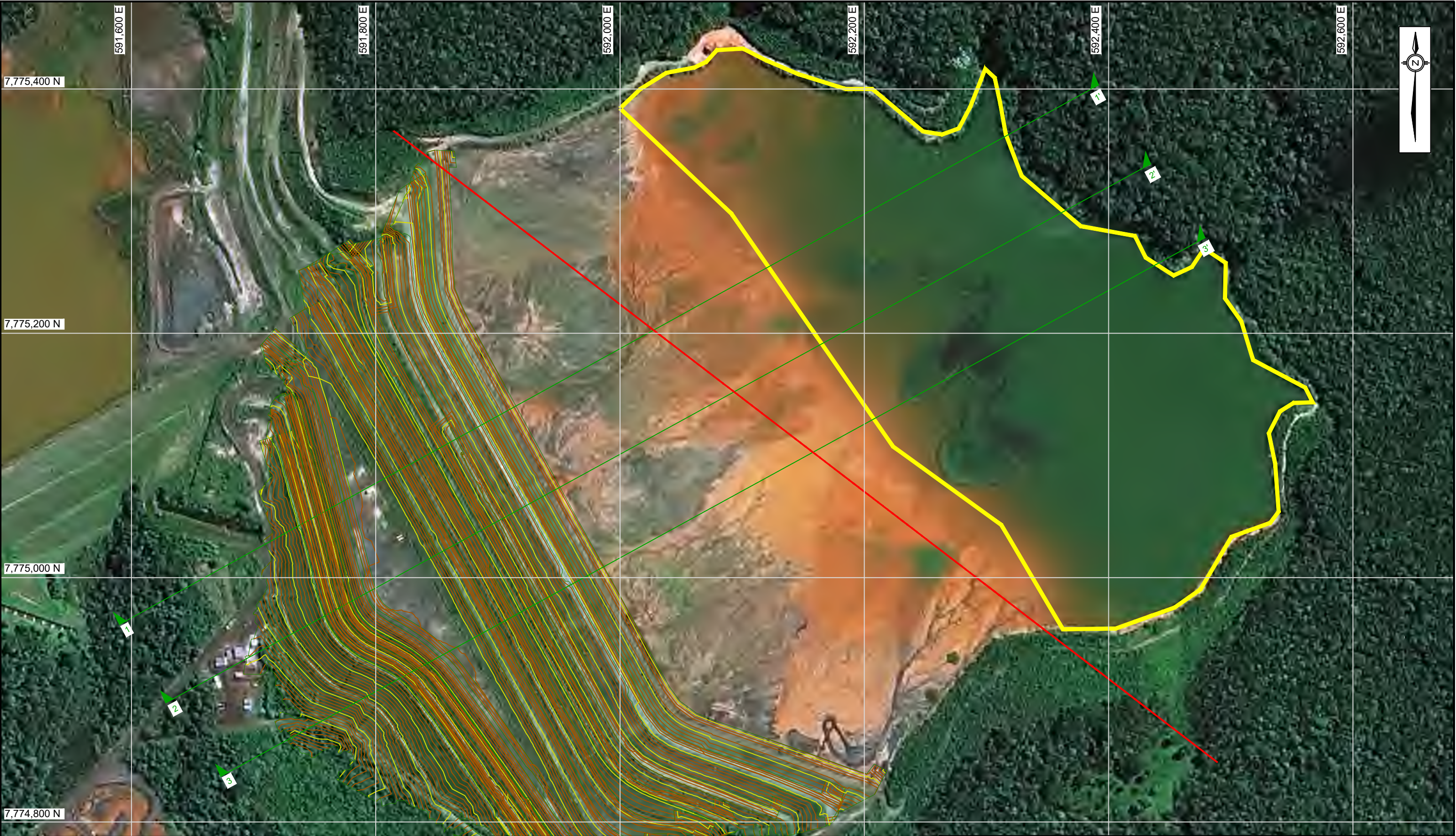
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
AUGUST 24, 2010
RAISE #14
DAM CREST EL. 937 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-115
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

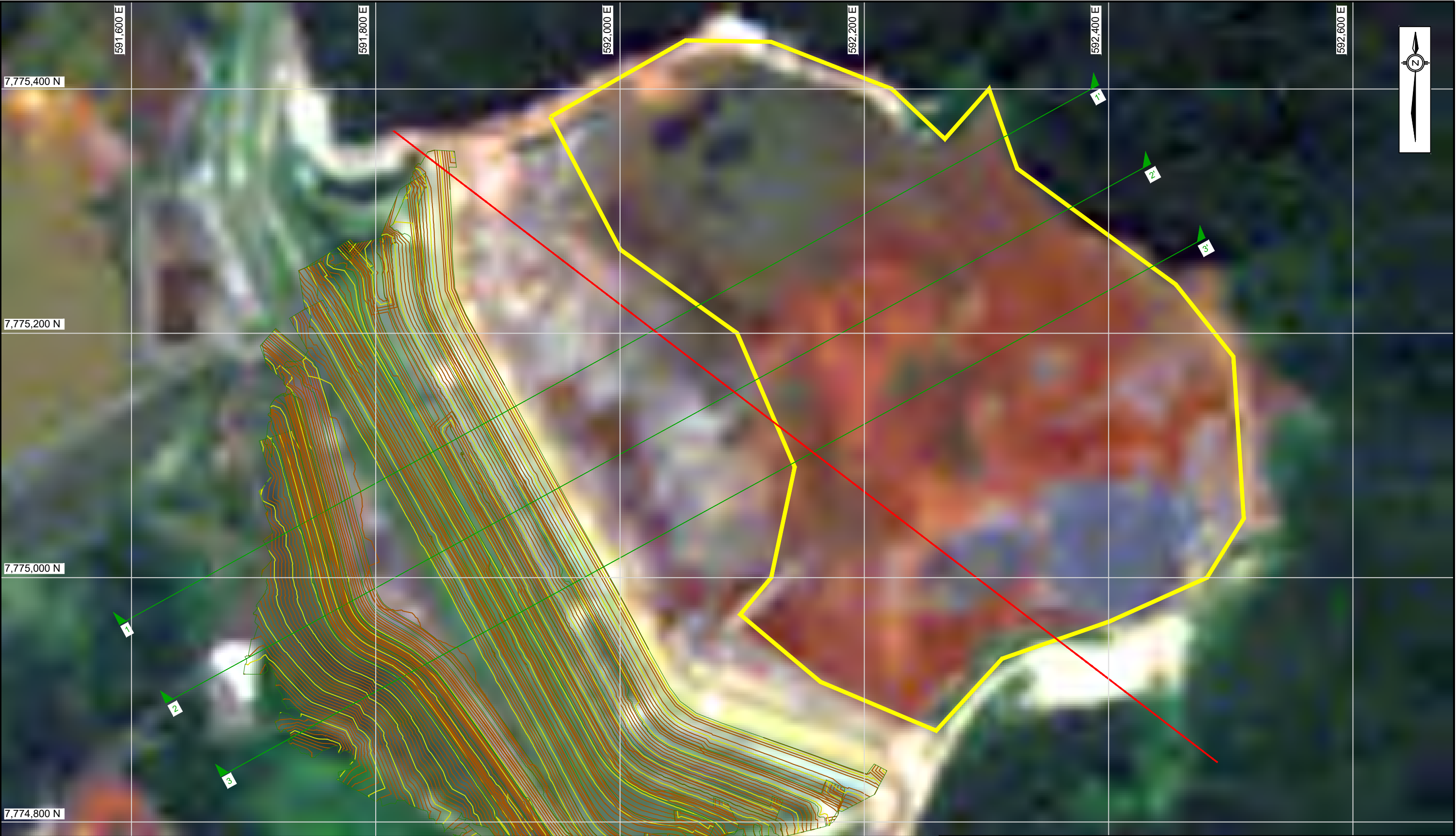
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT	
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE	
SATELLITE IMAGES APRIL 10, 2012 RAISE #14 DAM CREST EL. 937 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-116	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

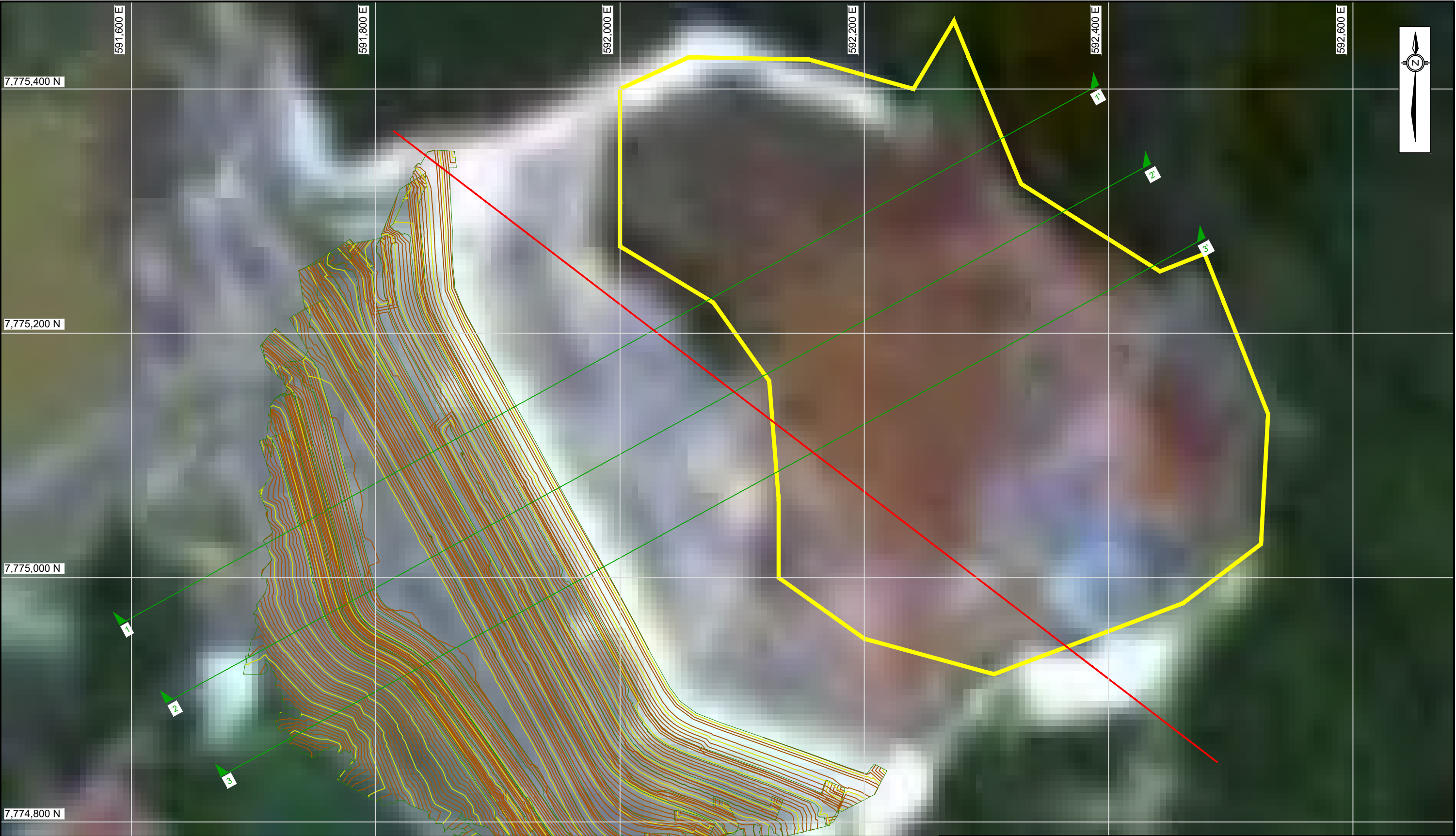
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
APRIL 27, 2013
RAISE #14
DAM CREST EL. 937 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-117
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

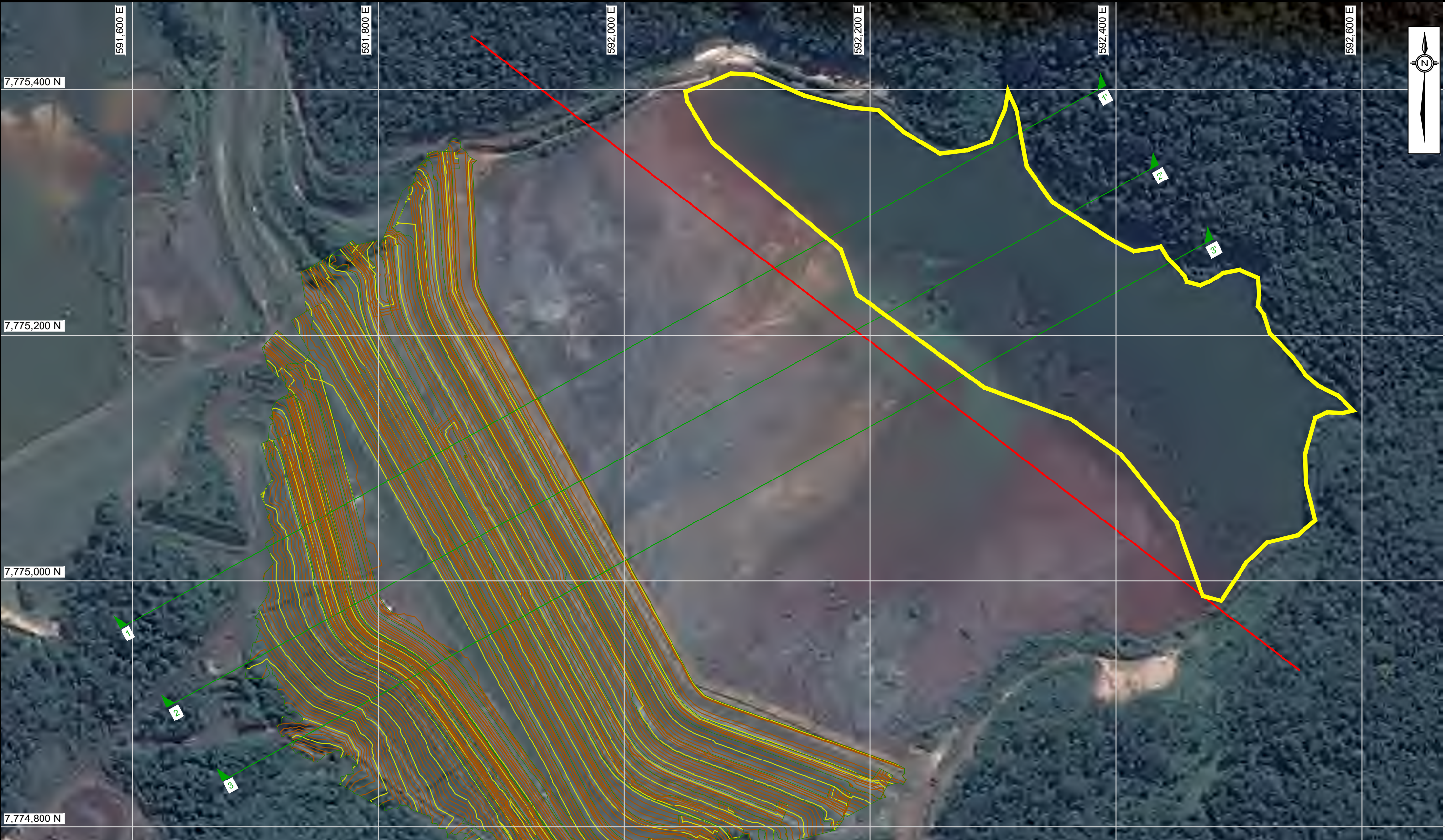
LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 14)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT	
PROJECT REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT	
TITLE SATELLITE IMAGES SEPTEMBER 26, 2013 RAISE #14 DAM CREST EL. 937 m	
SCALE 1:3,000	PROJECT No. A03355A02
FIG. No. FIGURE I-118	



NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 15)	DAM RAISE OUTLINE

1:3,000 30 60

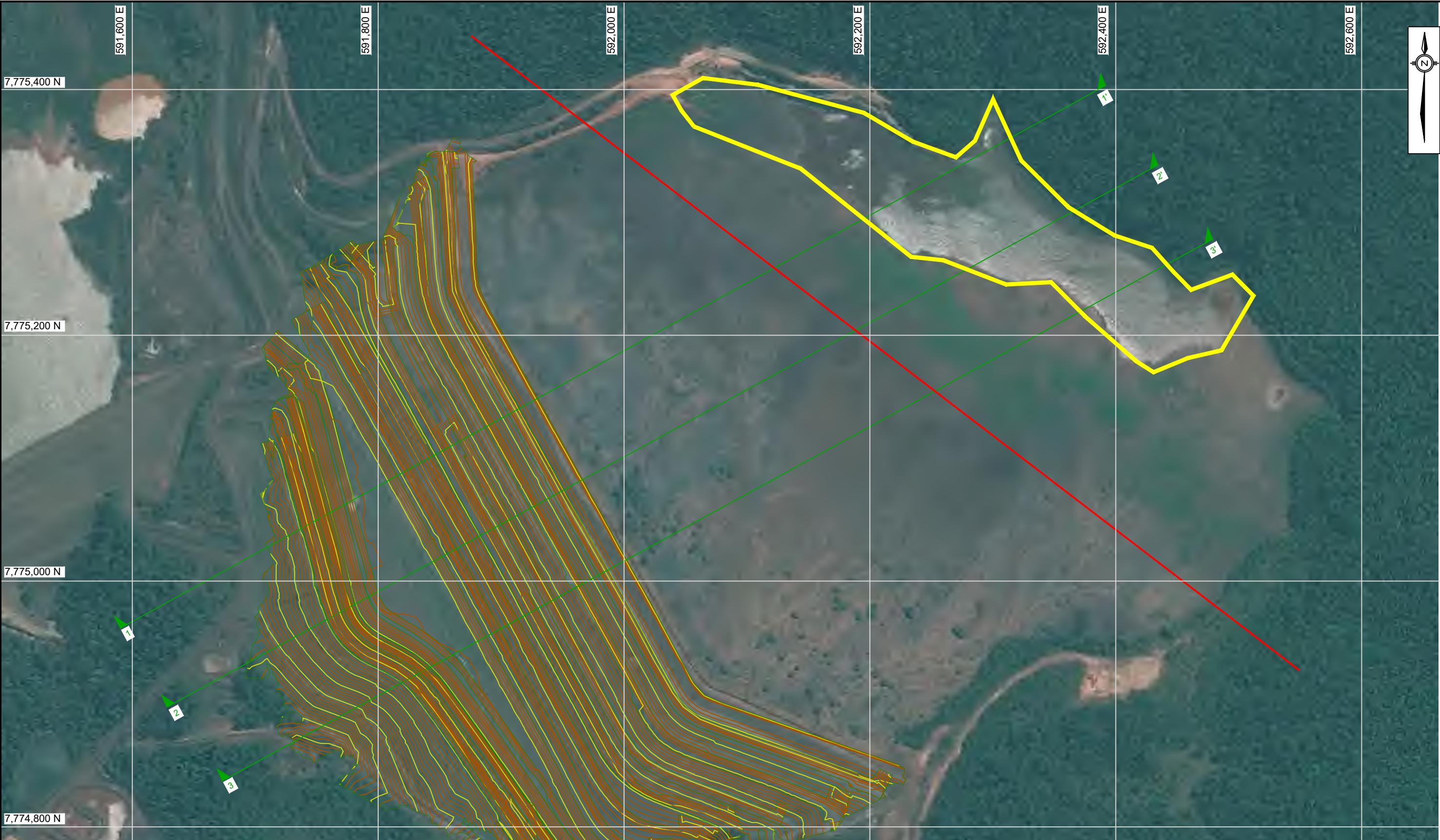
BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
SEPTEMBER 11, 2016
RAISE #15
DAM CREST EL. 942 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-119
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NOTES:

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS STATED OTHERWISE.
- ALL COORDINATES AND ELEVATIONS ARE REFERENCED TO UTM SIRGAS2000 ZONE 23S.
- ALL SUPPLEMENTARY SATELLITE IMAGES WERE PROVIDED BY GeoApp. IMAGES USED IN THE ORIGINAL ASSESSMENT WERE PROVIDED BY PhotoSat.
- IMAGES WITH (S) IN THE TITLE REFER TO THE 90 IMAGES PROVIDED AS PART OF THE SUPPLEMENTARY ASSESSMENT. IMAGES WITHOUT (S) WERE USED IN THE INITIAL ASSESSMENT.

LEGEND:

DESIGN SECTIONS	1 m CONTOURS
POND OUTLINE	5 m CONTOURS
MODELED POND BOUNDARY (AVERAGE FOR RAISE 15)	DAM RAISE OUTLINE

1:3,000 30 60

BASED ON A 11"X 17" DRAWING SIZE

CLIENT

PROJECT
REPORT OF THE EXPERT PANEL ON THE TECHNICAL CAUSES OF
THE FAILURE OF FEIJÃO DAM 1- SUPPLEMENTAL ASSESSMENT

TITLE
**SATELLITE IMAGES
OCTOBER 9, 2016
RAISE #15
DAM CREST EL. 942 m**

SCALE 1:3,000	PROJECT No. A03355A02	FIG. No. FIGURE I-120
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