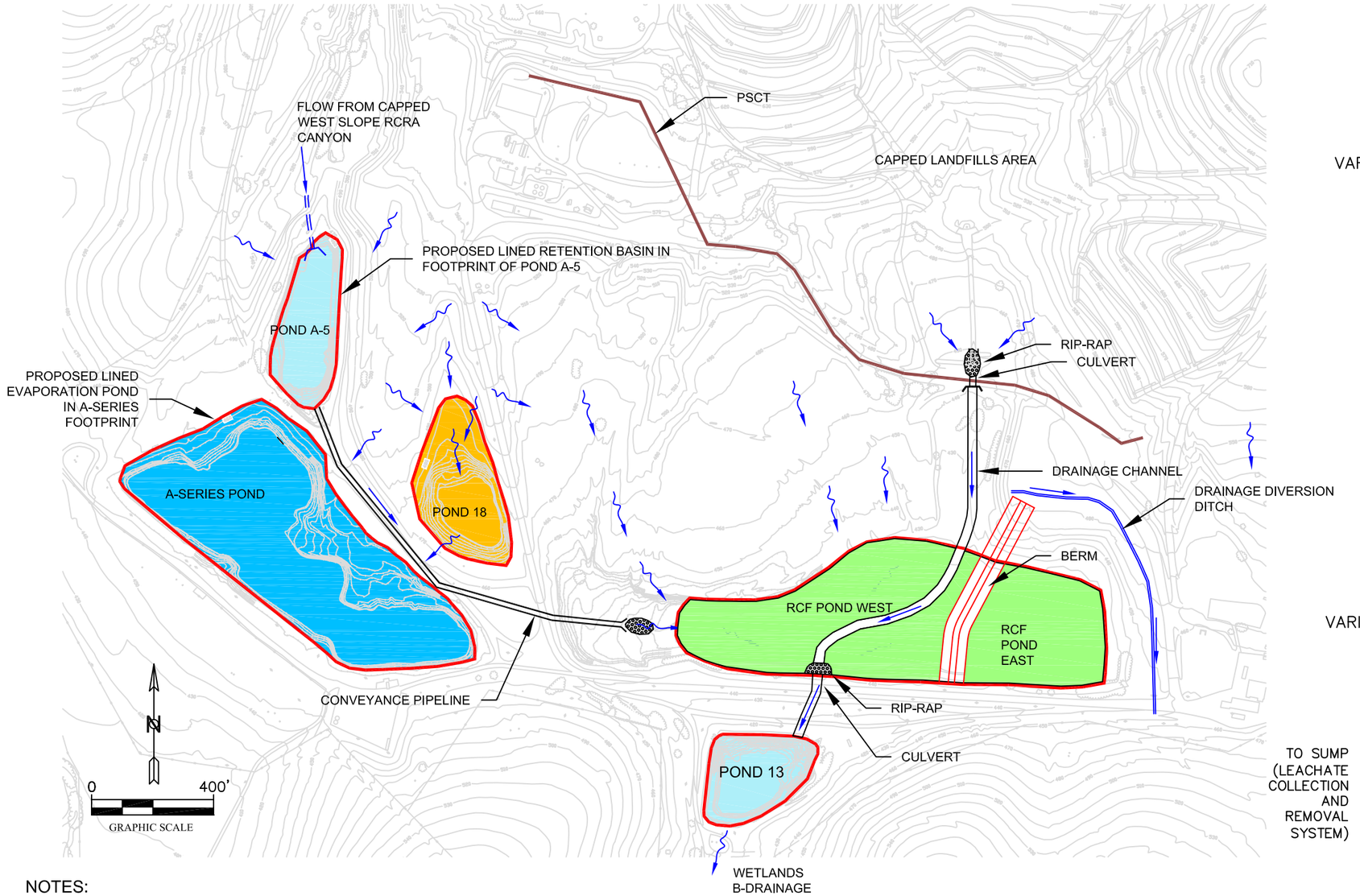
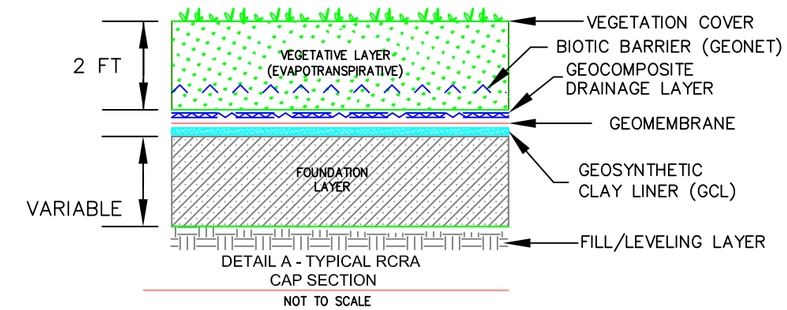
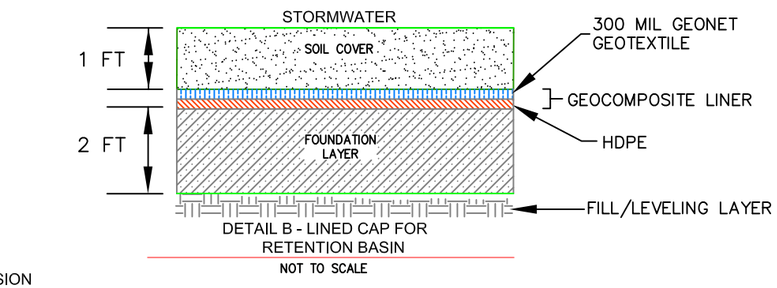
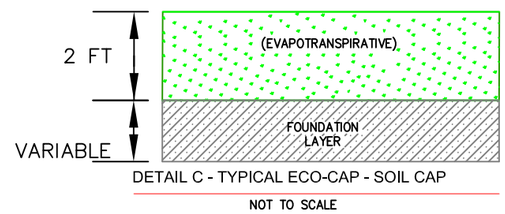
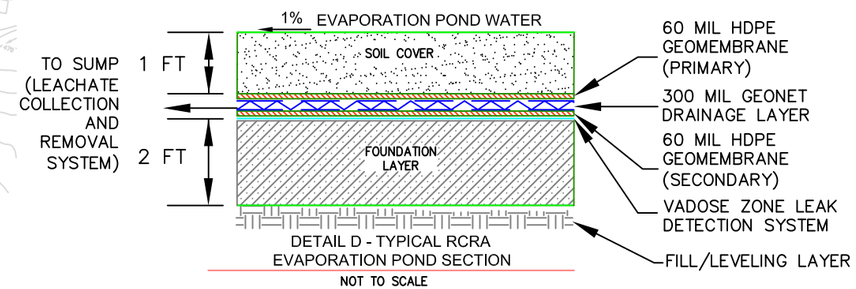










NOTES:

1. THE BOTTOM OF THE A-SERIES POND IS LINED WITH HDPE TO CREATE A NEW EVAPORATION POND THAT HANDLES TREATED PSCT AND PCT GROUNDWATER. THE LOW LYING AREAS OF THE A-SERIES AND RCF PONDS WILL BE FILLED TO AVOID ANY GROUNDWATER INTRUSION.
2. THE WEST END OF THE RCF POND WILL BE PARTIALLY BACKFILLED TO RAISE THE MINIMUM ELEVATION TO 410 FEET MSL AND ENSURE IT IS ABOVE THE GROUNDWATER LEVEL. THE RCF POND IS SEPARATED BY A 5-FOOT HIGH BERM INTO AN EAST RCF AND WEST RCF POND.
3. POND 18 WILL BE BACKFILLED USING DIKE MATERIAL AND OTHER BORROW SOIL TO ALLOW STORM WATER RUNOFF TO FLOW OFF THE FOOTPRINT TO THE NEW EVAPORATION POND.
4. POND A-5 WILL BE BACKFILLED WITH MATERIAL FROM THE EXCAVATION OF THE WCSA AND THEN LINED TO CREATE A NEW STORM WATER RETENTION BASIN.
5. POND 13 WILL BE BACKFILLED TO RAISE THE BOTTOM ABOVE THE WATER TABLE AND THEN LINED TO CREATE A RETENTION BASIN BEFORE THE STORMWATER FLOWS INTO THE WETLANDS.
6. STORMWATER FROM THE CAPPED LANDFILLS WILL BE TRANSPORTED THROUGH THE DRAINAGE CHANNEL RUNNING THROUGH THE RCF POND WHERE IT WILL COMMINGLE WITH OTHER STORMWATER FROM THE CAPPED RCRA CANYON AND THE ECO-CAPPED RCF AND FLOW TO POND 13 AND ON TO THE WETLANDS.
7. UNCAPPED AREAS OF FS AREA 3 SOUTH OF THE PSCT WILL INCORPORATE STORMWATER CONTROLS AND BEST MANAGEMENT PRACTICES (BMPs) TO MINIMIZE EROSION.
8. THE EVAPORATION POND INCLUDES A LEACHATE COLLECTION AND RECOVERY SYSTEM (LCRS) COMPOSED OF A 300 MIL GEONET DRAINAGE LAYER THAT DRAINS TO A SUMP. THE POND BOTTOM IS SLOPED AT 1% TO COLLECT ANY LEACHATE THAT PENETRATES THE PRIMARY LAYER

LEGEND:

- LIMITS OF STUDY AREA (AREA 4)
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- RIP-RAP
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF
- BERM
- RCRA CAP (POND 18) (SEE DETAIL A)
- LINED EVAPORATION POND (A-SERIES POND) (SEE DETAIL B)
- LINED RETENTION BASIN (POND A-5, POND 13) (SEE DETAIL B)
- ECO-CAP (RCF POND) (SEE DETAIL C)

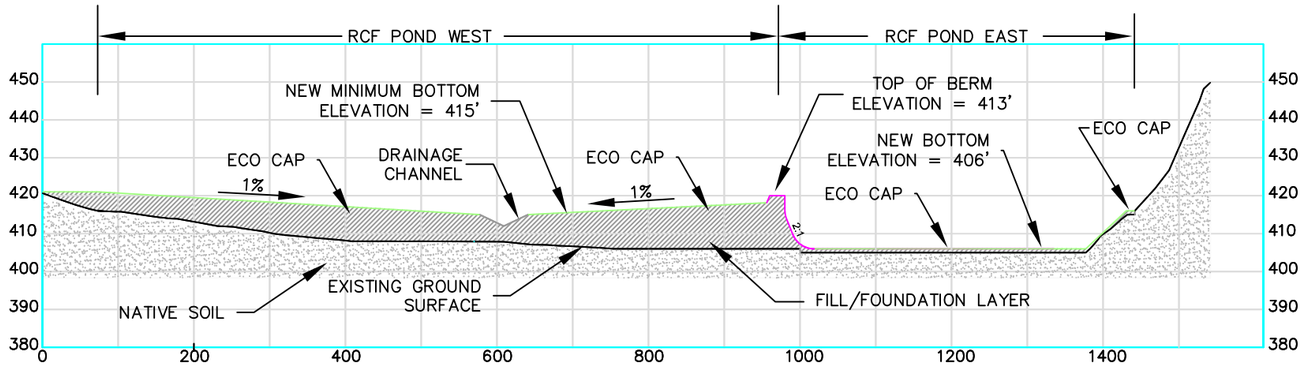
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 4 - ALTERNATIVE 3
ECO CAP (RCF POND) + RCRA CAP (18) + LINED EVAPORATION POND (A-SERIES POND) + LINED RETENTION BASIN (A-5, 13)

FIGURE 11-18A



SECTION A-A

1"=200' HORIZ; 1"=40' VERT

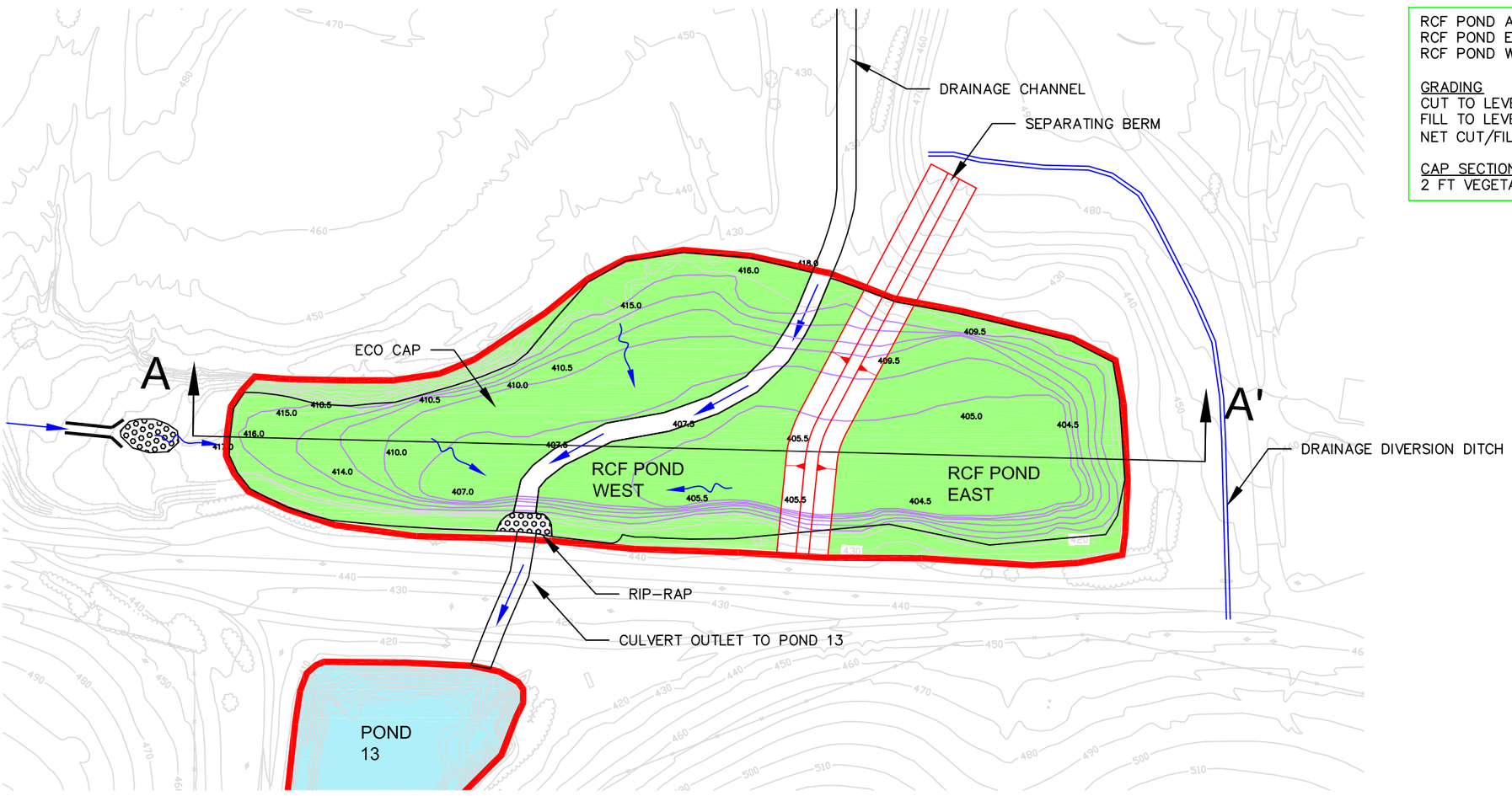
LEGEND:

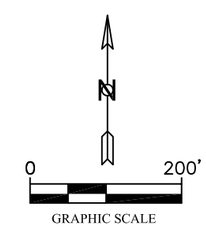
- ECO CAP– SOIL CAP (1')
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF

PRELIMINARY EARTHWORK SUMMARY

RCF POND AREA =496,300 SQ FT (11.39 ACRES)
RCF POND EAST =2.78 ACRES
RCF POND WEST =8.61 ACRES

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	55,000
NET CUT/FILL (55,000 – 0)	55,000 (IMPORT)
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	32,800





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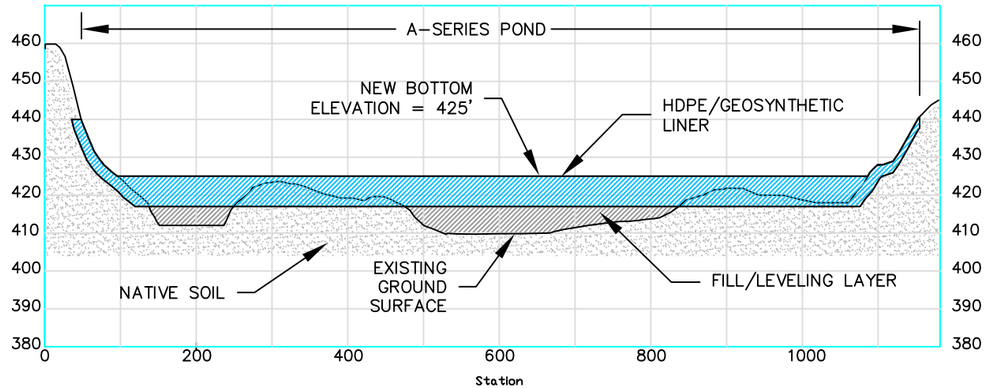
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 3
ECO CAP (RCF POND) + GRADING PLAN

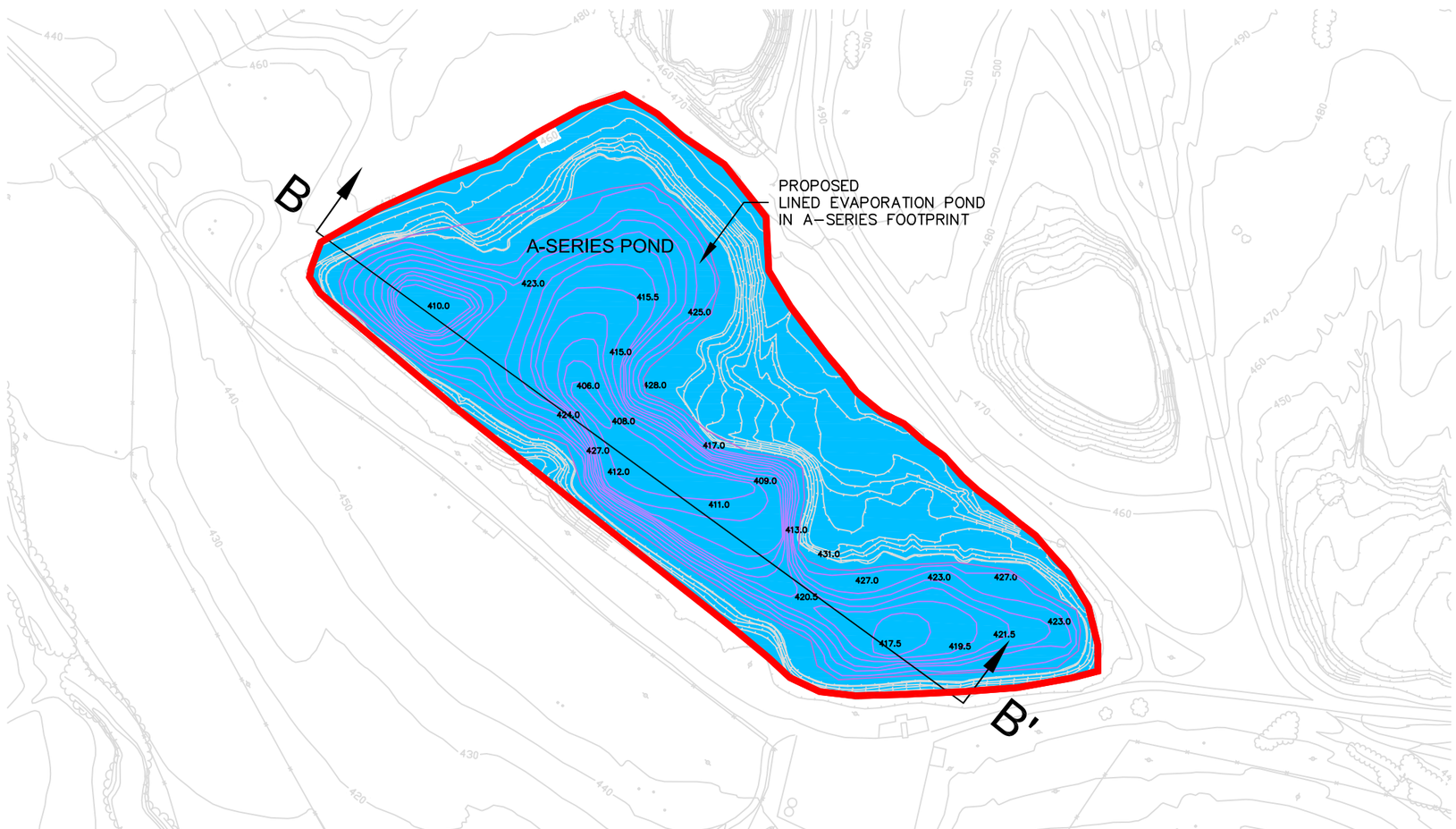
FIGURE 11-18B

M:\Blanco\Casmalia\Figures\EPA Revised\FS AREA 4\Figure 11-18B-C.dwg , File date: 11/8/2012 3:30 PM, Print date: 3/14/2013 2:01 PM by: Munson, Chris



SECTION B-B

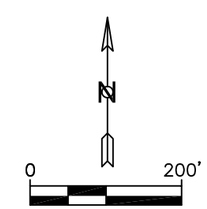
1"=200' HORIZ; 1"=40' VERT



PRELIMINARY EARTHWORK SUMMARY

A-SERIES POND AREA =480,900 SQ FT (11.04 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	37,000
FILL TO LEVELING LAYER =	37,000
NET CUT/FILL (37,000 – 37,000)	0
CAP SECTION VOLUMES	
1 FT SOIL COVER =	18,000
2 FT FOUNDATION LAYER =	36,000



GRAPHIC SCALE

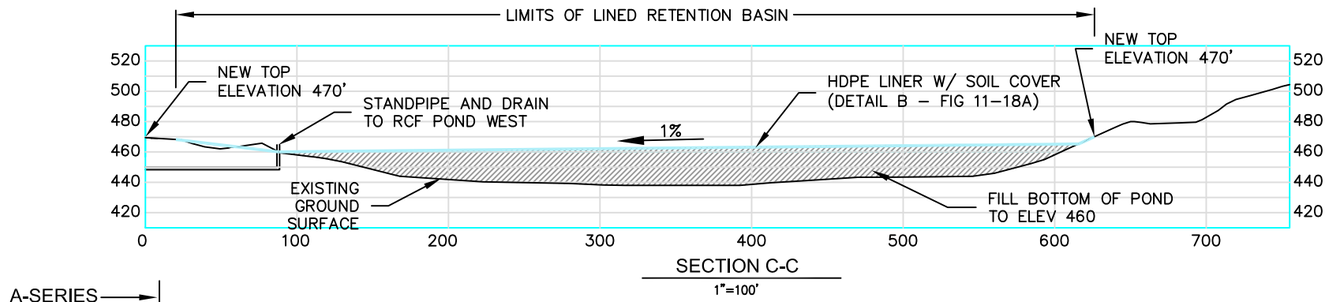
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

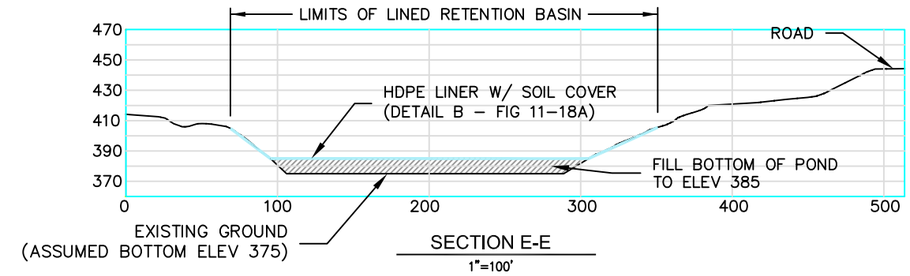
PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 3
EXCAVATION + LINED EVAPORATION POND
(A-SERIES POND) + GRADING PLAN

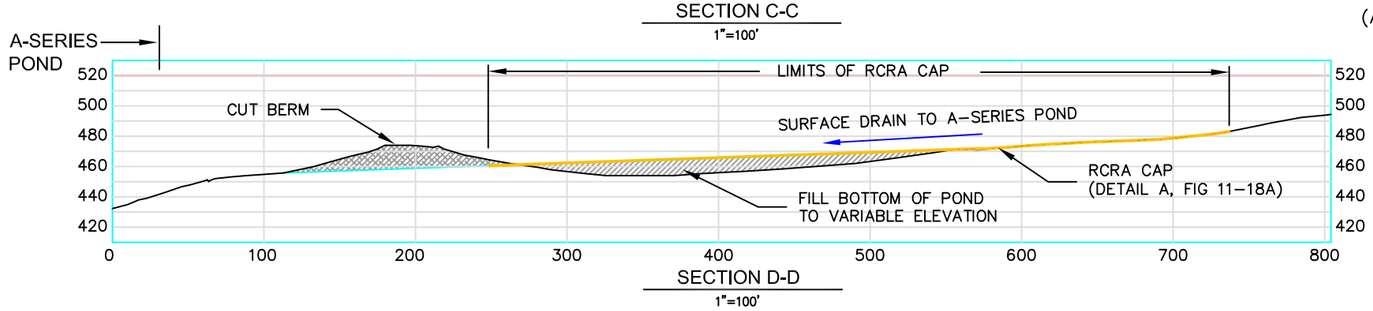
FIGURE 11-18C



SECTION C-C
1"=100'



SECTION E-E
1"=100'



SECTION D-D
1"=100'

PRELIMINARY EARTHWORK SUMMARY

POND A–5 AREA = 92,300 SQ FT (2.13 ACRES)

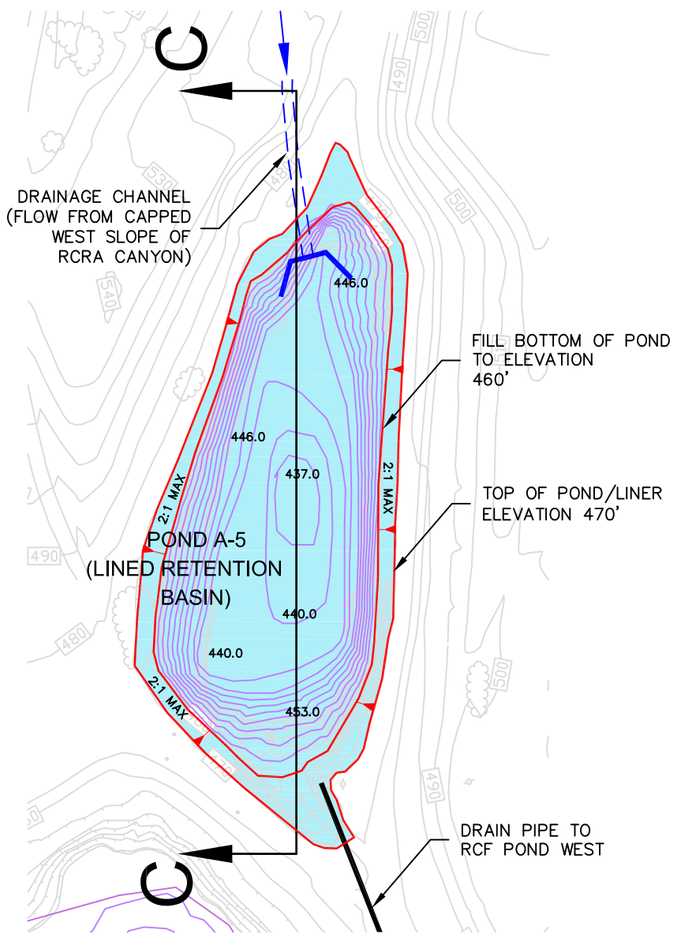
GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	50,000
NET CUT/FILL (50,000 –0)	50,000 (IMPORT)
CAP SECTION VOLUMES	
1 FT SOIL COVER =	3,400
2 FT FOUNDATION LAYER =	6,800

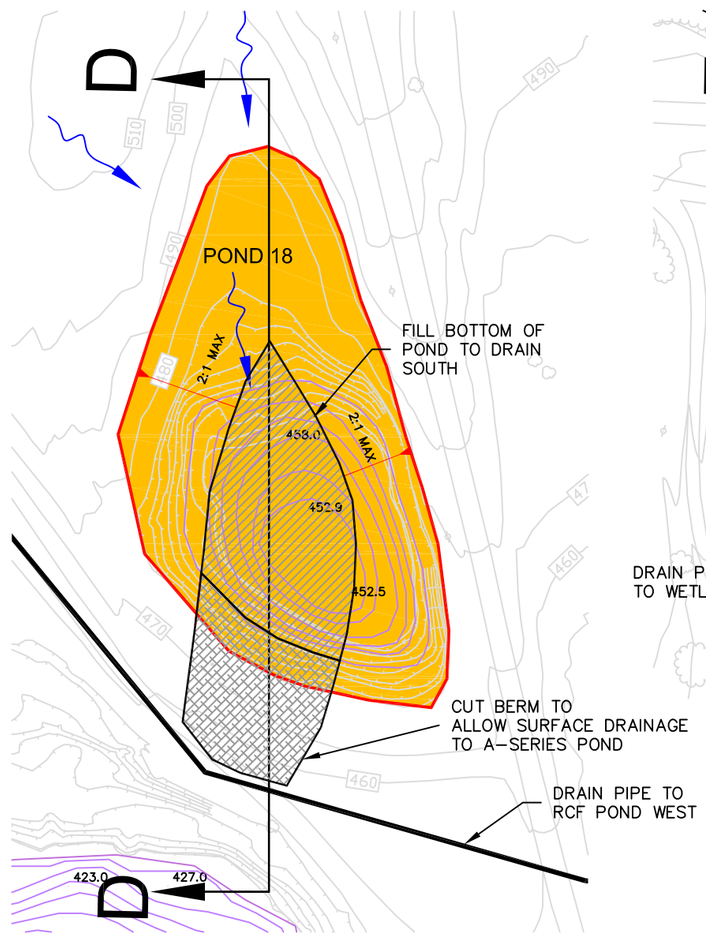
POND 18 AREA =119,600 SQ FT (2.75 ACRES)

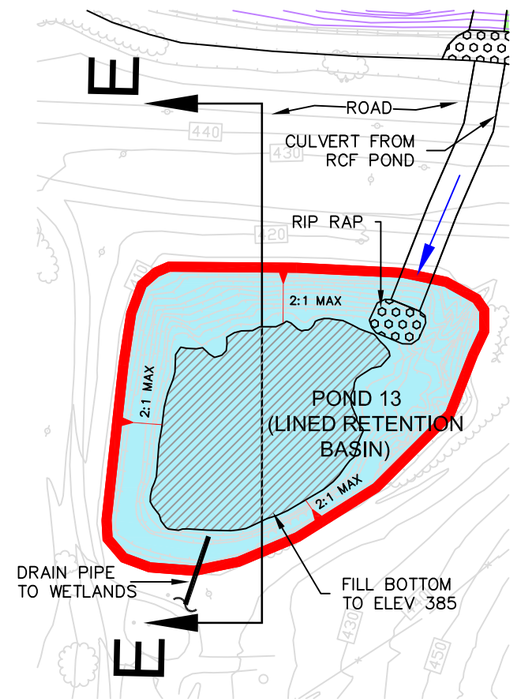
GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	8,000
FILL TO LEVELING LAYER =	8,000
NET CUT/FILL (8,000 – 8,000)	0
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	8,900

POND 13 AREA =84,600 SQ FT (1.94 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	13,000
NET CUT/FILL (13,000 – 0)	13,000 (IMPORT)
CAP SECTION VOLUMES	
1 FT SOIL COVER =	3,200
2 FT FOUNDATION LAYER =	6,400







LEGEND:

NATURAL STORMWATER RUNOFF

CHANNELED STORMWATER RUNOFF

N

0 150'

GRAPHIC SCALE

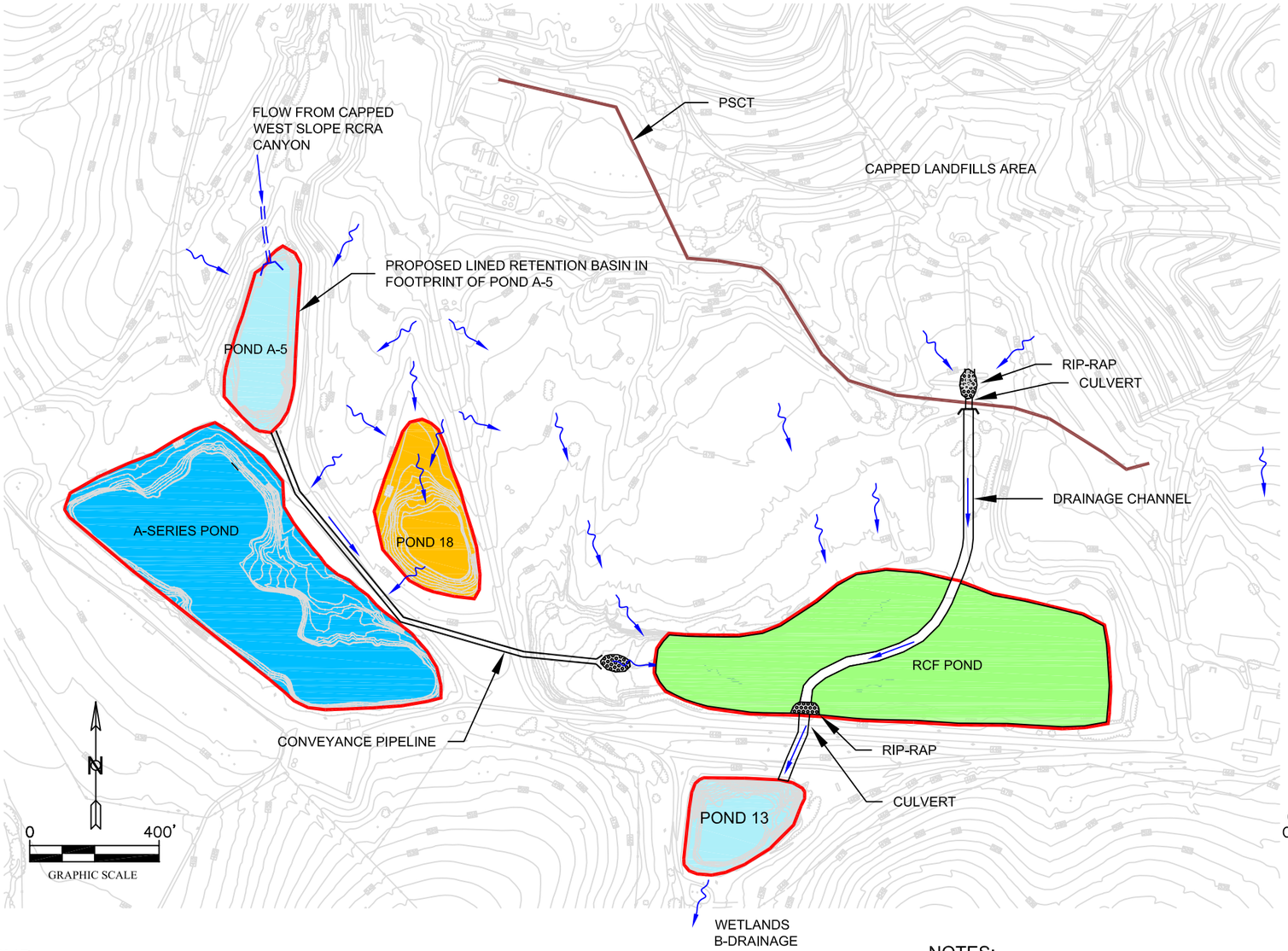
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

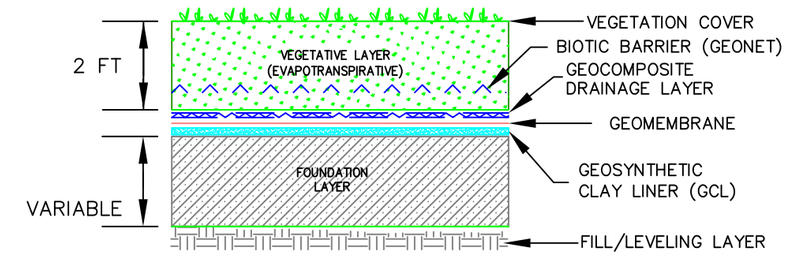
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 3
LINED RETENTION BASIN (POND A-5, POND 13) +
RCRA CAP (POND 18) + GRADING PLAN

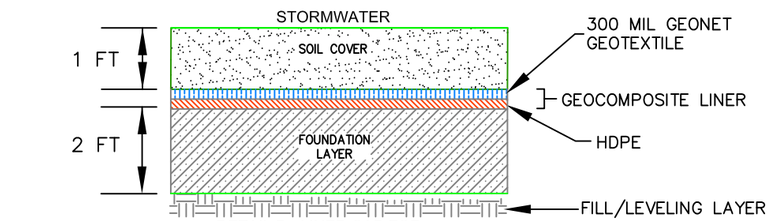
FIGURE 11-18D





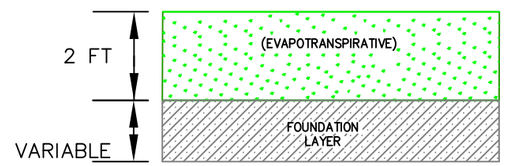
DETAIL A - TYPICAL RCRA CAP SECTION

NOT TO SCALE



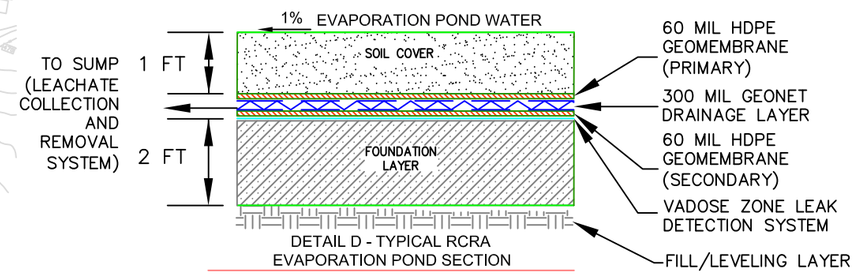
DETAIL B - LINED CAP FOR RETENTION BASIN

NOT TO SCALE



DETAIL C - TYPICAL ECO-CAP - SOIL CAP

NOT TO SCALE



DETAIL D - TYPICAL RCRA EVAPORATION POND SECTION

NOT TO SCALE

LEGEND:

- LIMITS OF STUDY AREA (AREA 4)
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- RIP-RAP
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF
- RCRA CAP (POND 18) (SEE DETAIL A)
- LINED EVAPORATION POND (A-SERIES POND) (SEE DETAIL B)
- LINED RETENTION BASIN (POND A-5, POND 13) (SEE DETAIL B)
- ECO-CAP (RCF POND) (SEE DETAIL C)

NOTES:

1. THE BOTTOM OF THE A-SERIES POND IS LINED WITH HDPE TO CREATE A NEW EVAPORATION POND THAT HANDLES TREATED PSCT AND PCT GROUNDWATER. THE LOW LYING AREAS OF THE A-SERIES AND RCF PONDS WILL BE FILLED TO AVOID ANY GROUNDWATER INTRUSION.
2. POND 18 WILL BE BACKFILLED USING DIKE MATERIAL AND OTHER BORROW SOIL TO ALLOW STORM WATER RUNOFF TO FLOW OFF THE FOOTPRINT TO THE NEW EVAPORATION POND.
3. POND A-5 WILL BE BACKFILLED WITH MATERIAL FROM THE EXCAVATION OF THE WCSA AND THEN LINED TO CREATE A NEW STORM WATER RETENTION BASIN.
4. POND 13 WILL BE BACKFILLED TO RAISE THE BOTTOM ABOVE THE WATER TABLE AND THEN LINED TO CREATE A RETENTION BASIN BEFORE THE STORMWATER FLOWS INTO THE WETLANDS.
5. STORMWATER FROM THE CAPPED LANDFILLS WILL BE TRANSPORTED THROUGH THE DRAINAGE CHANNEL RUNNING THROUGH THE RCF POND WHERE IT WILL COMMINGLE WITH OTHER STORMWATER FROM THE CAPPED RCRA CANYON AND THE ECO-CAPPED RCF AND FLOW TO POND 13 AND ON TO THE WETLANDS.
6. UNCAPPED AREAS OF FS AREA 3 SOUTH OF THE PSCT WILL INCORPORATE STORMWATER CONTROLS AND BEST MANAGEMENT PRACTICES (BMPs) TO MINIMIZE EROSION.
7. THE EVAPORATION POND INCLUDES A LEACHATE COLLECTION AND RECOVERY SYSTEM (LCRS) COMPOSED OF A 300 MIL GEONET DRAINAGE LAYER THAT DRAINS TO A SUMP. THE POND BOTTOM IS SLOPED AT 1% TO COLLECT ANY LEACHATE THAT PENETRATES THE PRIMARY LAYER

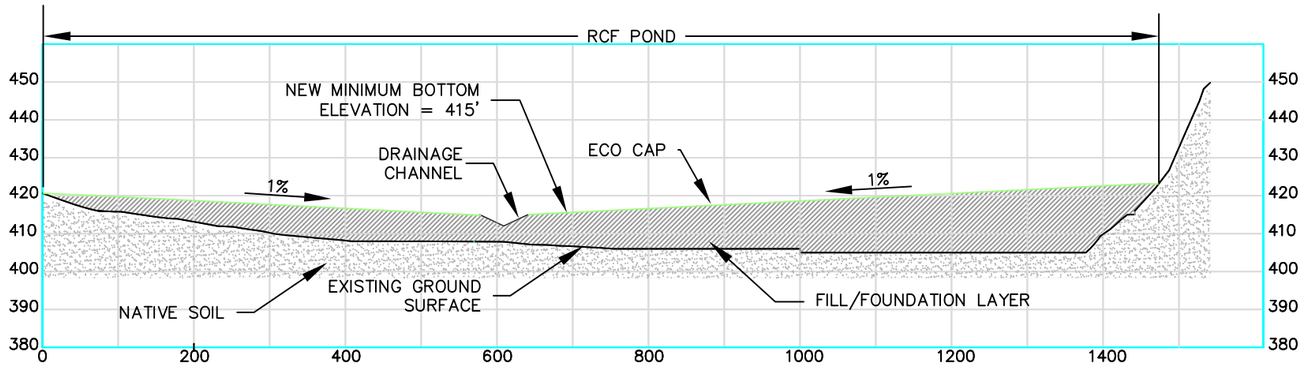
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 4 - ALTERNATIVE 4
ECO CAP (RCF POND) + RCRA CAP (18) + 11-ACRE EVAPORATION POND (A-SERIES POND) + LINED RETENTION BASIN (A-5, 13)

FIGURE 11-19A



SECTION A-A

1"=200' HORIZ; 1"=40' VERT

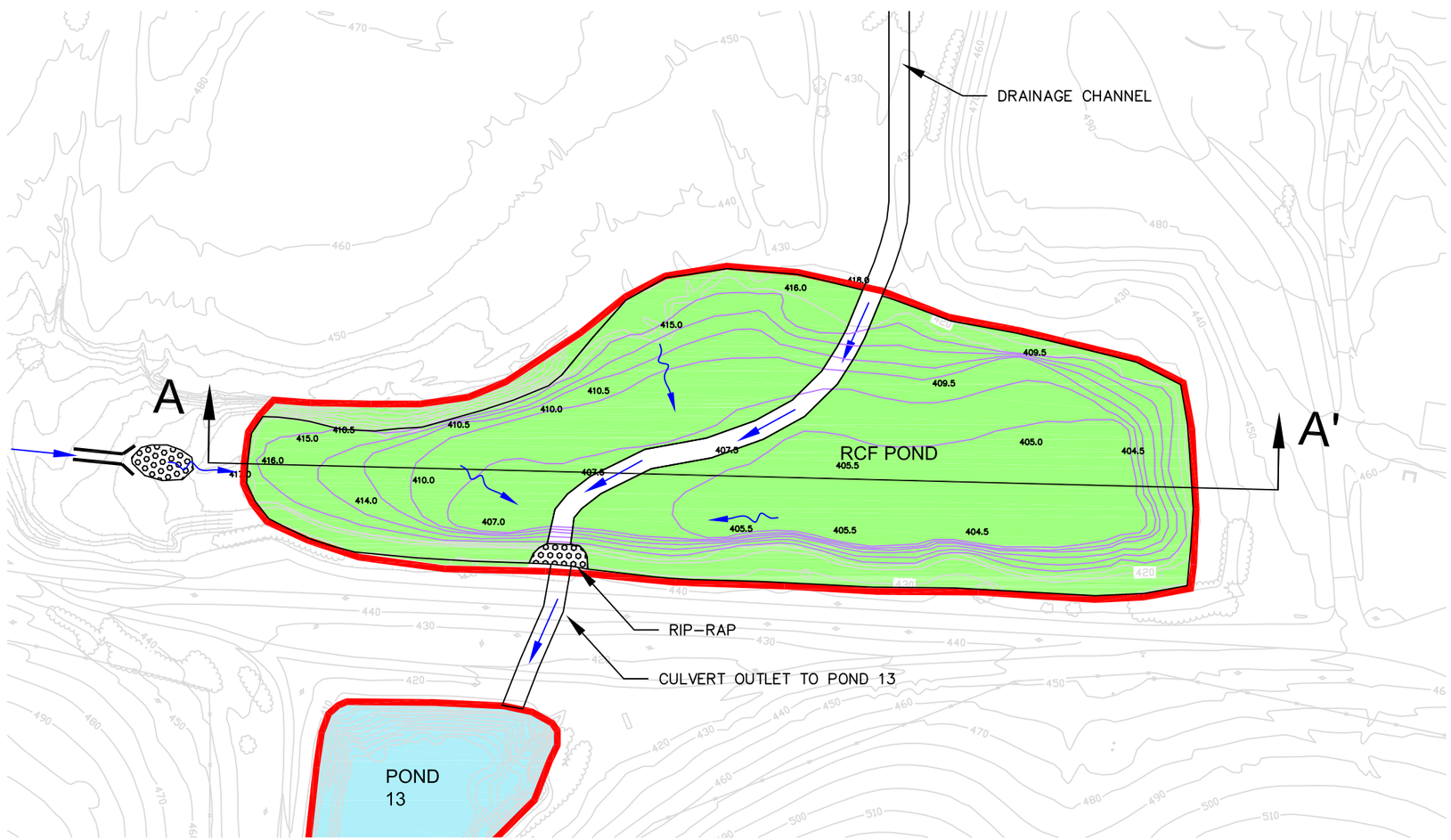
LEGEND:

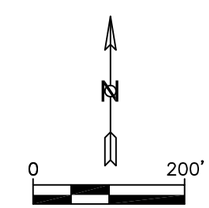
- ECO CAP– SOIL CAP (2')
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF

PRELIMINARY EARTHWORK SUMMARY

RCF POND AREA =496,300 SQ FT (11.39 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	95,000
NET CUT/FILL (95,000 – 0)	95,000 (IMPORT)
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	33,900





GRAPHIC SCALE

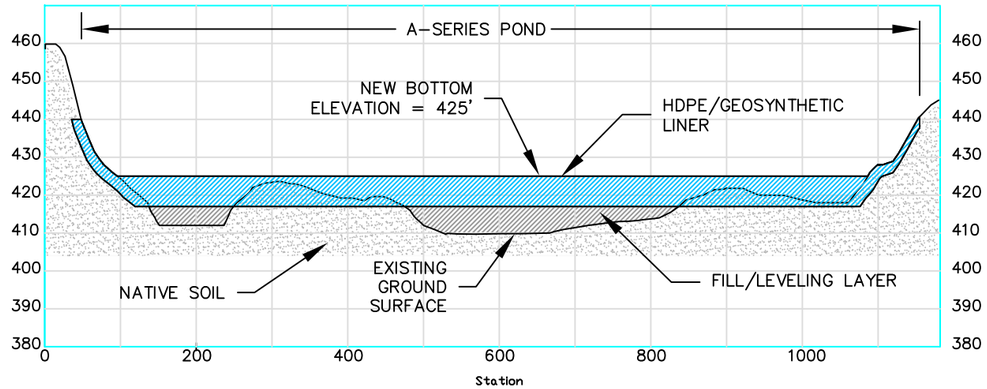
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 4
ECO CAP (RCF POND) + GRADING PLAN

FIGURE 11-19B

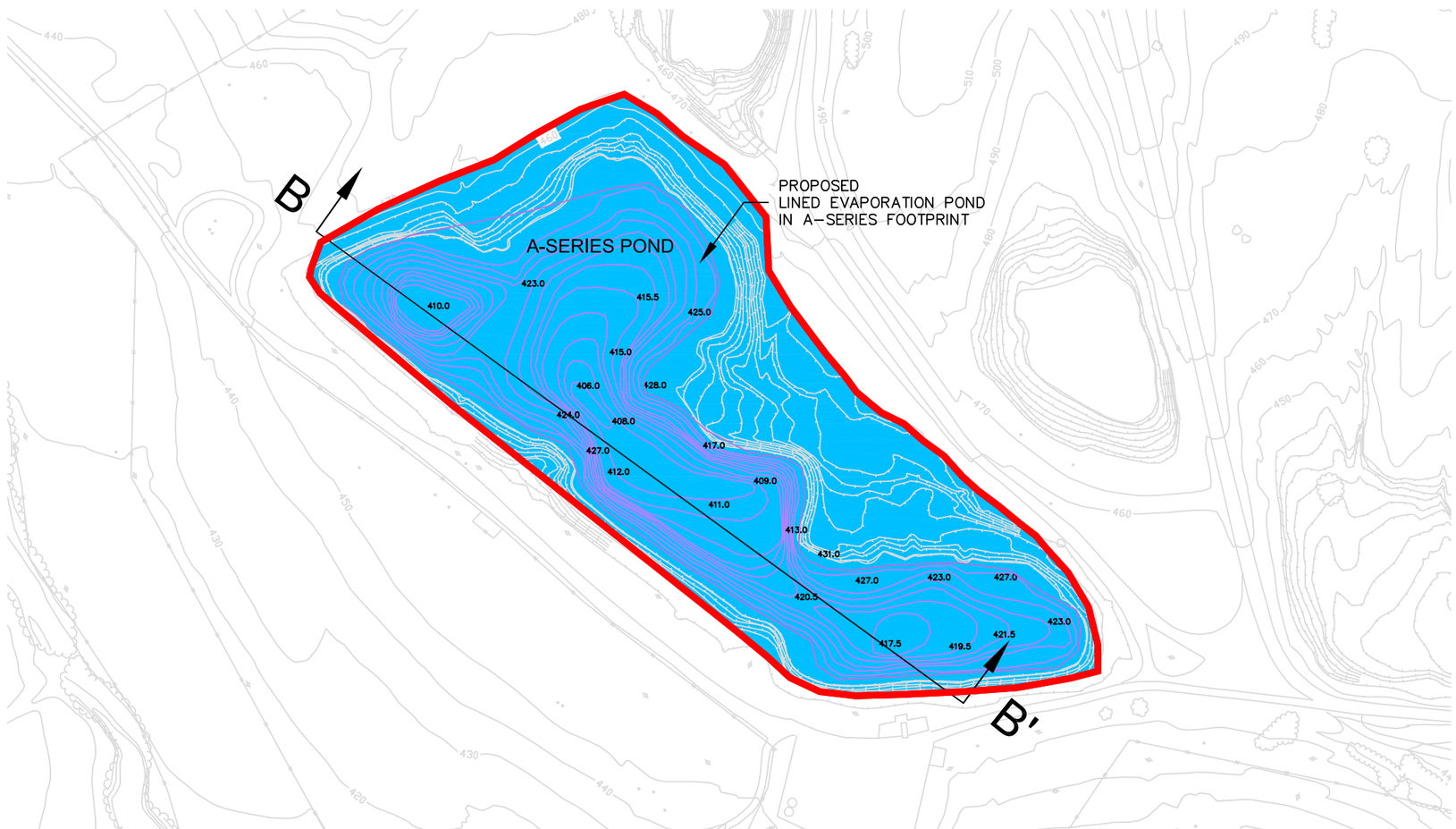


SECTION B-B

1"=200' HORIZ; 1"=40' VERT

LEGEND:

LINED EVAPORATION POND (A-SERIES POND) (SEE FIGURE 11-19A DETAIL D)



PRELIMINARY EARTHWORK SUMMARY

A-SERIES POND AREA =480,900 SQ FT (11.04 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	37,000
FILL TO LEVELING LAYER =	37,000
NET CUT/FILL (37,000 – 37,000)	0
CAP SECTION VOLUMES	
1 FT SOIL COVER =	18,000
2 FT FOUNDATION LAYER =	36,000

N

0 200'

GRAPHIC SCALE

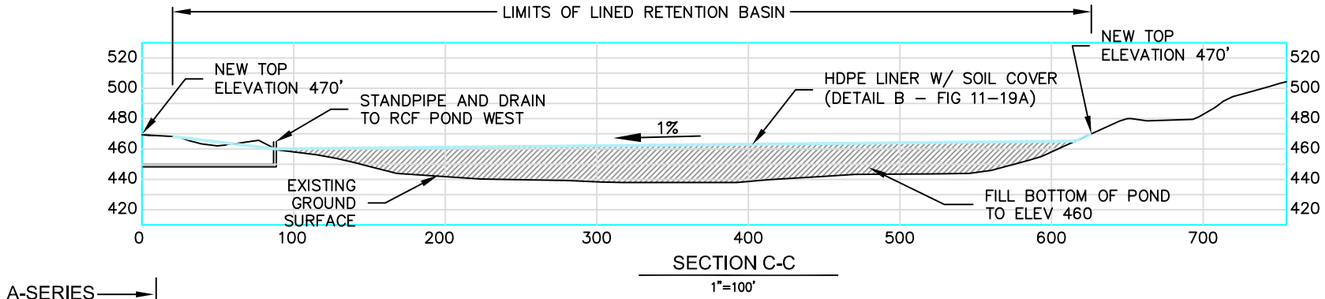
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

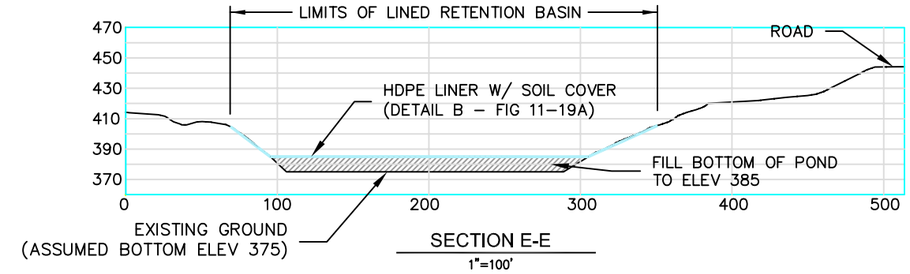
PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 4
EXCAVATION + LINED EVAPORATION POND
(A-SERIES POND) + GRADING PLAN

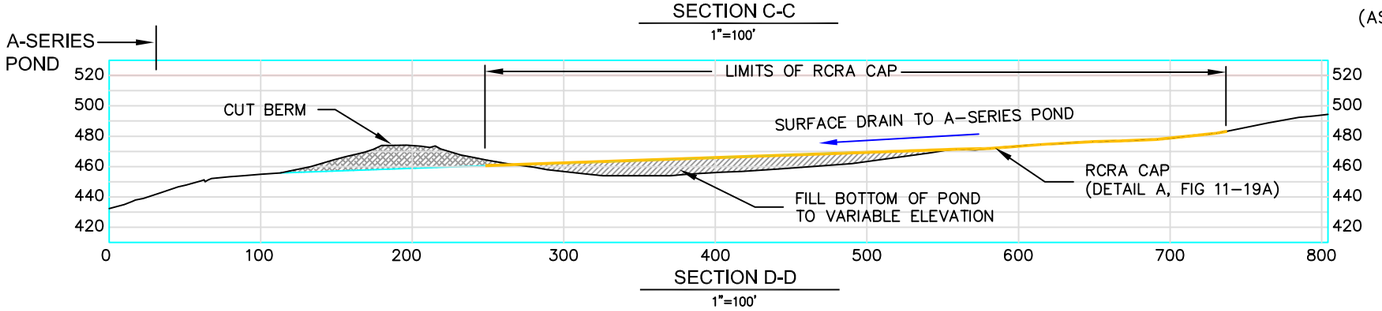
FIGURE 11-19C



SECTION C-C
1"=100'



SECTION E-E
1"=100'



SECTION D-D
1"=100'

PRELIMINARY EARTHWORK SUMMARY

POND A–5 AREA = 92,300 SQ FT (2.13 ACRES)

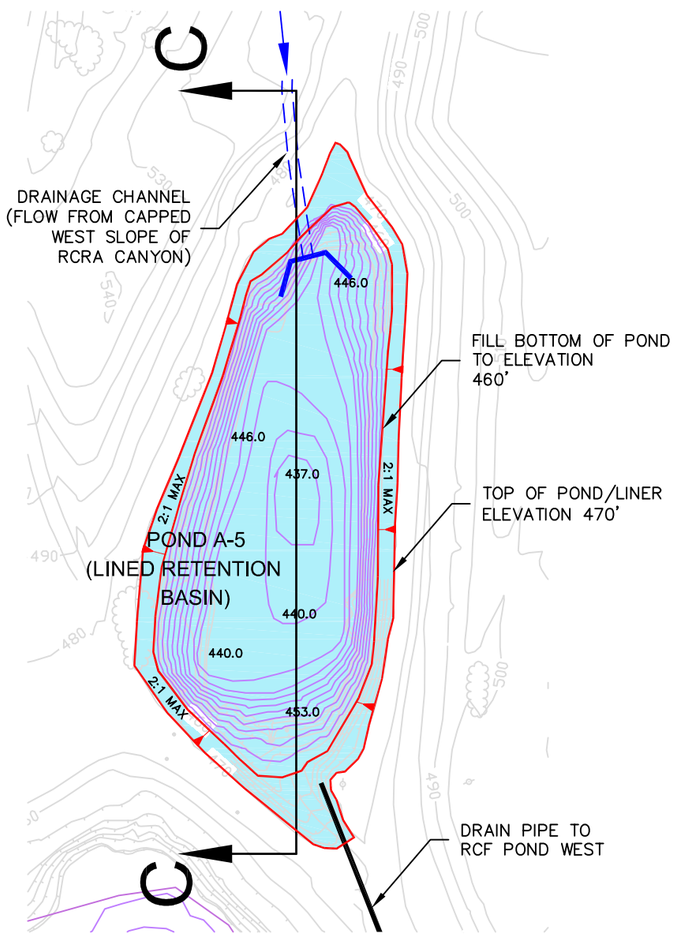
GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	50,000
NET CUT/FILL (50,000 –0)	50,000 (IMPORT)
CAP SECTION VOLUMES	
1 FT SOIL COVER =	3,400
2 FT FOUNDATION LAYER =	6,800

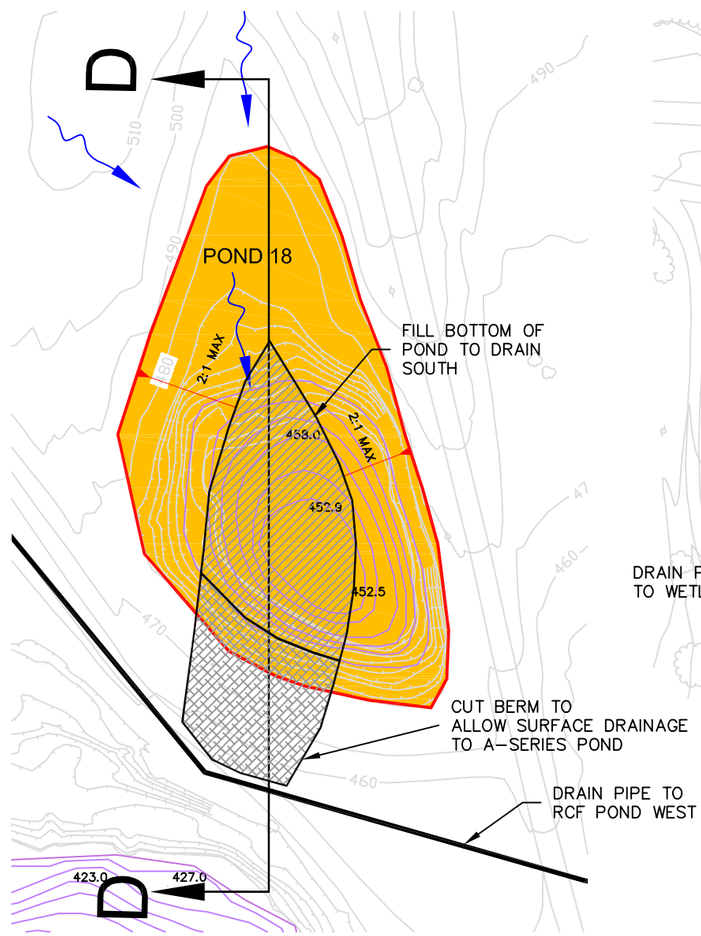
POND 18 AREA =119,600 SQ FT (2.75 ACRES)

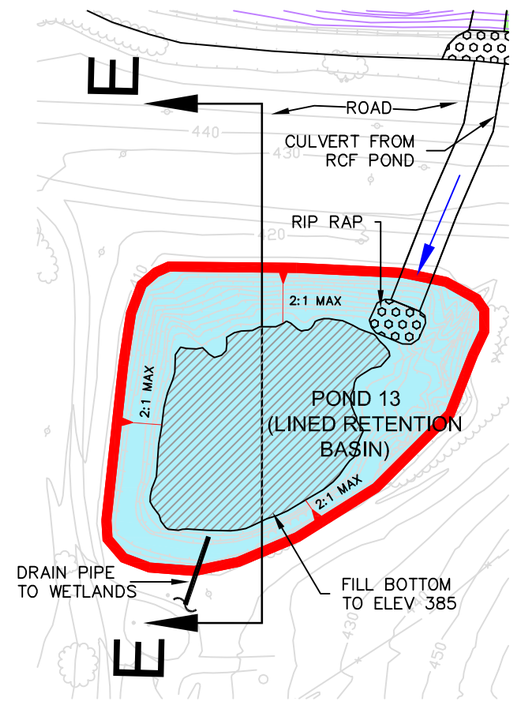
GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	8,000
FILL TO LEVELING LAYER =	8,000
NET CUT/FILL (8,000 – 8,000)	0
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	8,900

POND 13 AREA =84,600 SQ FT (1.94 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	13,000
NET CUT/FILL (13,000 – 0)	13,000 (IMPORT)
CAP SECTION VOLUMES	
1 FT SOIL COVER =	3,200
2 FT FOUNDATION LAYER =	6,400







LEGEND:

NATURAL STORMWATER RUNOFF

CHANNELED STORMWATER RUNOFF

N

0 150'

GRAPHIC SCALE

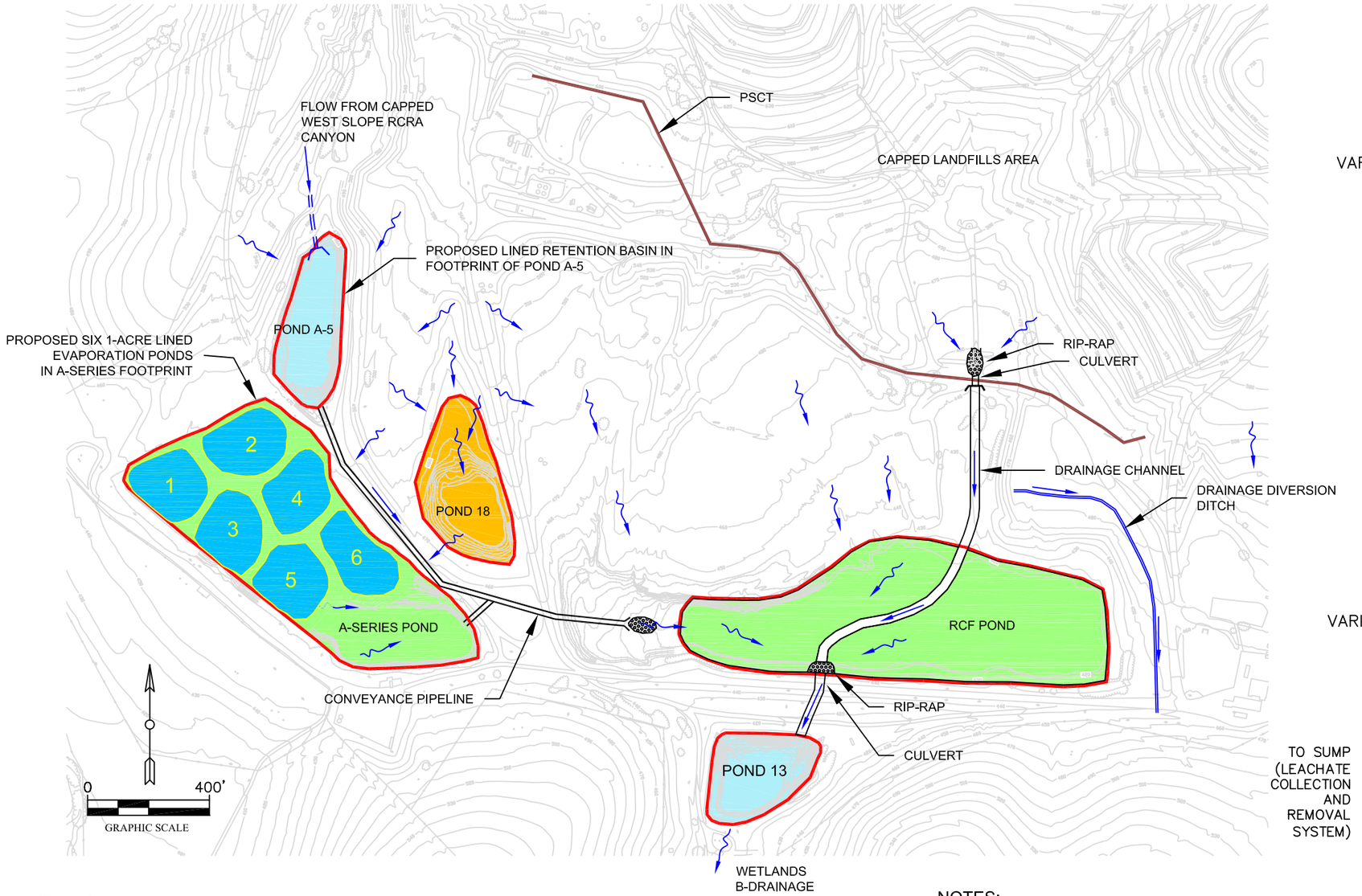
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

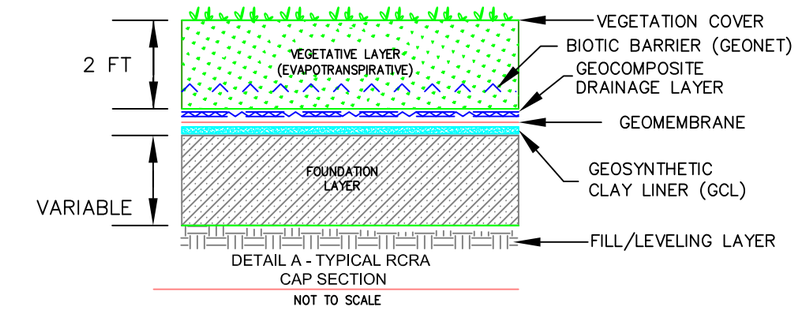
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

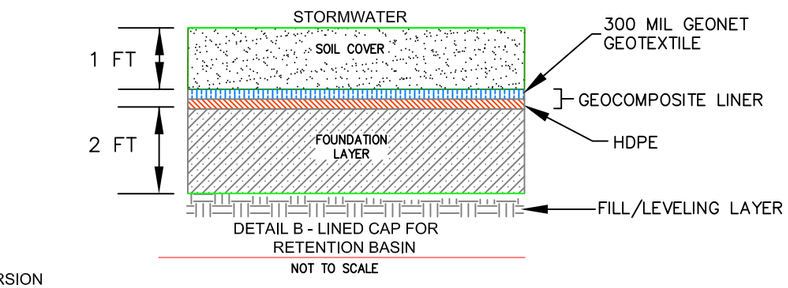
PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

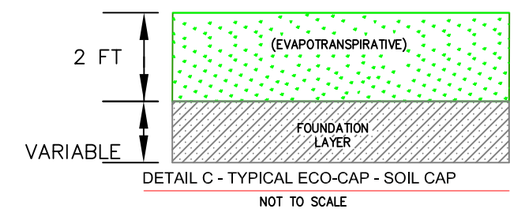
FS AREA 4 - ALTERNATIVE 4
LINED RETENTION BASIN (POND A-5, POND 13) +
RCRA CAP (POND 18) + GRADING PLAN

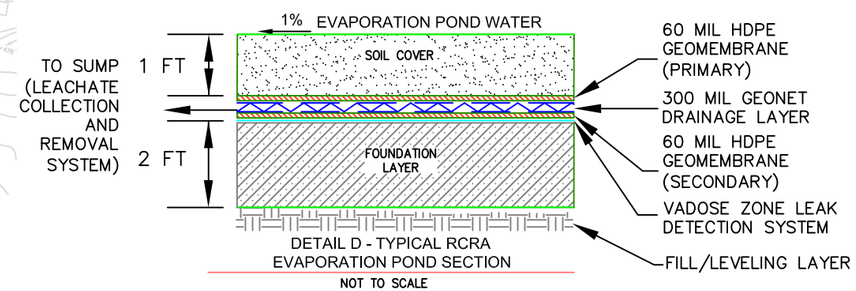
FIGURE 11-19D











LEGEND:

- LIMITS OF STUDY AREA (AREA 4)
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- RIP-RAP
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF
- RCRA CAP (POND 18) (SEE DETAIL A)
- LINED EVAPORATION POND (PORTION OF A-SERIES POND) (SEE DETAIL B)
- LINED RETENTION BASIN (POND A-5, POND 13) (SEE DETAIL B)
- ECO-CAP (RCF POND, PORTION OF A-SERIES POND) (SEE DETAIL C)

NOTES:

1. A PORTION OF THE BOTTOM OF THE A-SERIES POND IS LINED WITH HDPE TO CREATE SIX NEW 1-ACRE EVAPORATION PONDS THAT HANDLE TREATED PSCT AND PCT GROUNDWATER. THE LOW LYING AREAS OF THE A-SERIES AND RCF PONDS WILL BE FILLED TO AVOID ANY GROUNDWATER INTRUSION.
2. POND 18 WILL BE BACKFILLED USING DIKE MATERIAL AND OTHER BORROW SOIL TO ALLOW STORM WATER RUNOFF TO FLOW OFF THE FOOTPRINT TO THE NEW EVAPORATION POND.
3. POND A-5 WILL BE BACKFILLED WITH MATERIAL FROM THE EXCAVATION OF THE WCSA AND THEN LINED TO CREATE A NEW STORM WATER RETENTION BASIN.
4. POND 13 WILL BE BACKFILLED TO RAISE THE BOTTOM ABOVE THE WATER TABLE AND THEN LINED TO CREATE A RETENTION BASIN BEFORE THE STORMWATER FLOWS INTO THE WETLANDS.
5. STORMWATER FROM THE CAPPED LANDFILLS WILL BE TRANSPORTED THROUGH THE DRAINAGE CHANNEL RUNNING THROUGH THE RCF POND WHERE IT WILL COMMINGLE WITH OTHER STORMWATER FROM THE CAPPED RCRA CANYON AND THE ECO-CAPPED RCF AND FLOW TO POND 13 AND ON TO THE WETLANDS.
6. UNCAPPED AREAS OF FS AREA 3 SOUTH OF THE PSCT WILL INCORPORATE STORMWATER CONTROLS AND BEST MANAGEMENT PRACTICES (BMPs) TO MINIMIZE EROSION.
7. THE EVAPORATION POND INCLUDES A LEACHATE COLLECTION AND RECOVERY SYSTEM (LCRS) COMPOSED OF A 300 MIL GEONET DRAINAGE LAYER THAT DRAINS TO A SUMP. THE POND BOTTOM IS SLOPED AT 1% TO COLLECT ANY LEACHATE THAT PENETRATES THE PRIMARY LAYER

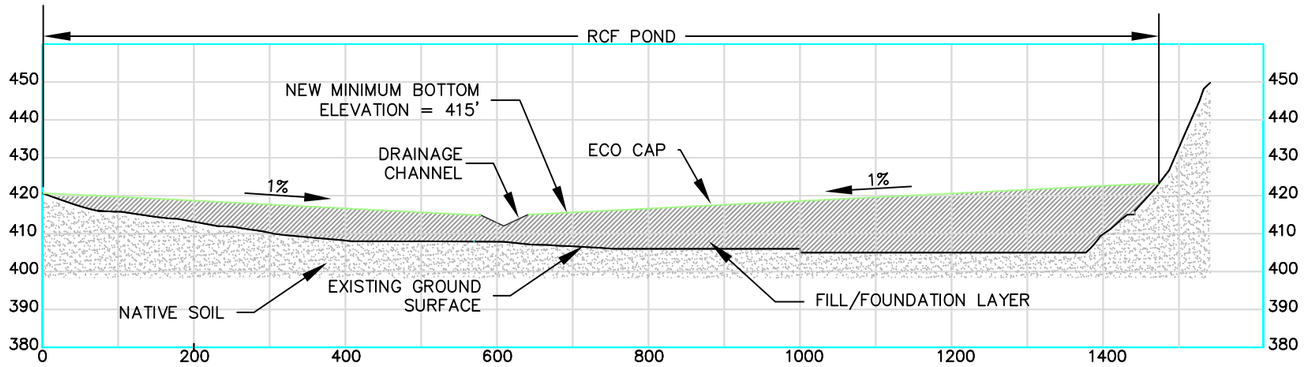
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 4 - ALTERNATIVE 5
ECO CAP (RCF POND, PORTION OF A-SERIES POND) + RCRA CAP (18) + SIX 1-ACRE EVAPORATION PONDS (PORTION OF A-SERIES POND) + LINED RETENTION BASIN (A-5, 13)

FIGURE 11-20A



SECTION A-A

1"=200' HORIZ; 1"=40' VERT

LEGEND:

ECO CAP– SOIL CAP (2')

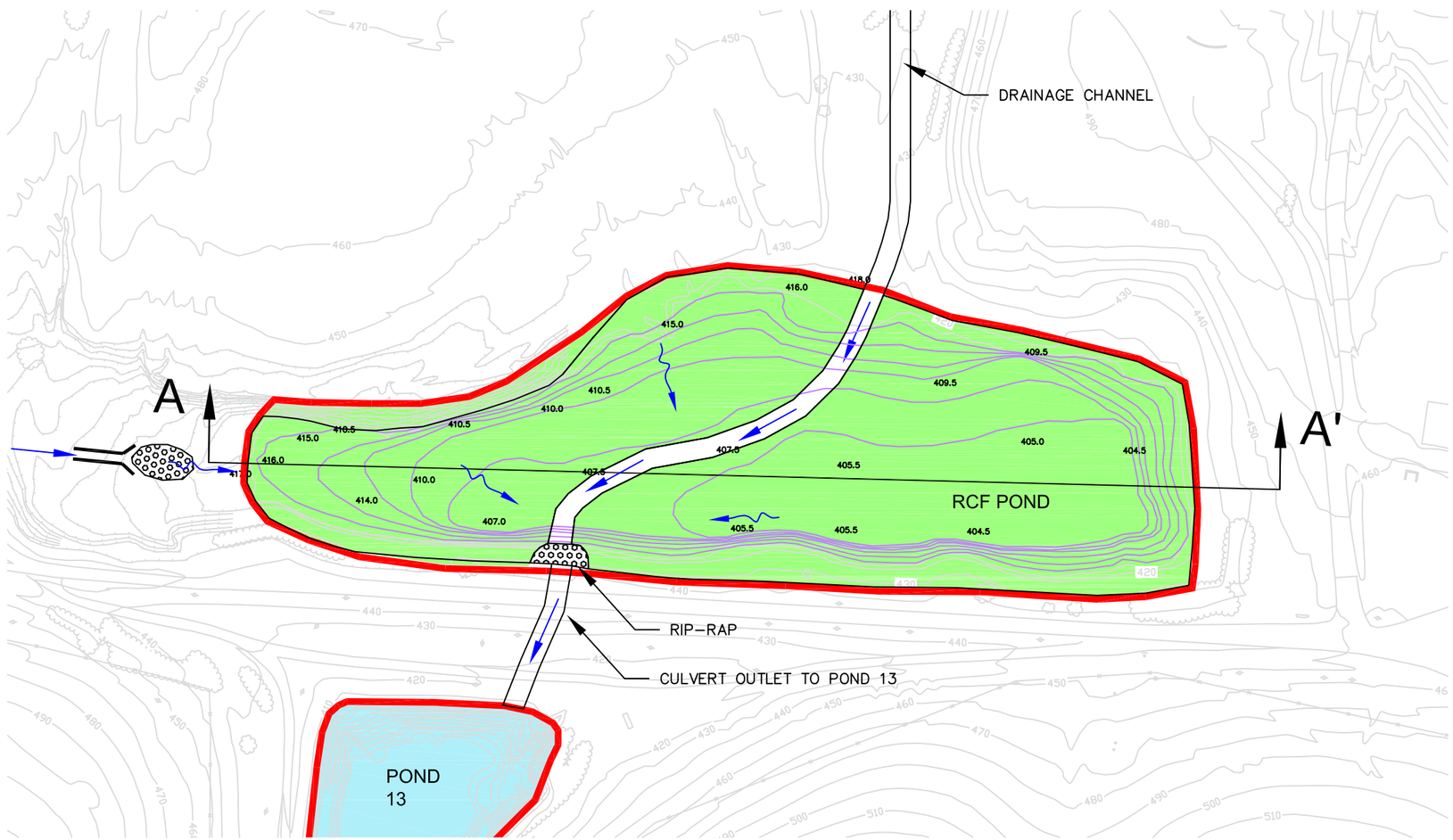
NATURAL STORMWATER RUNOFF

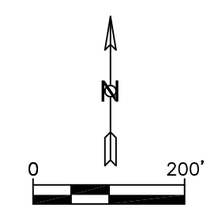
CHANNELED STORMWATER RUNOFF

PRELIMINARY EARTHWORK SUMMARY

RCF POND AREA =496,300 SQ FT (11.39 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	95,000
NET CUT/FILL (95,000 – 0)	95,000 (IMPORT)
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	33,900





GRAPHIC SCALE

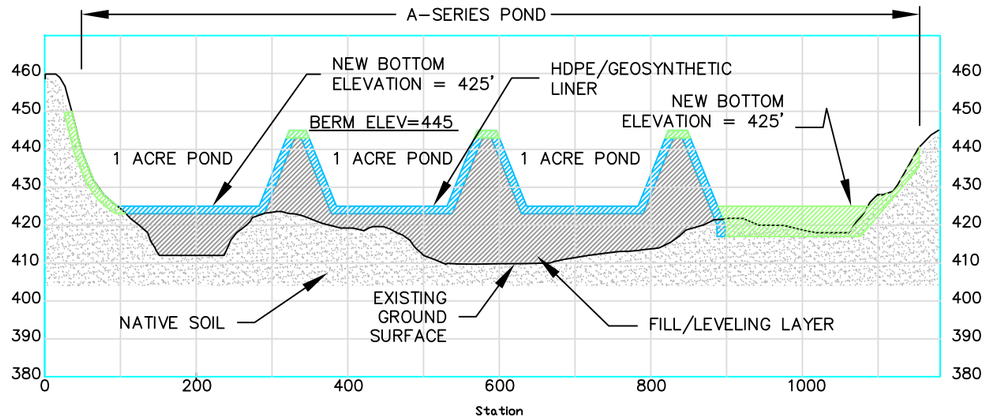
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 5
ECO CAP (RCF POND) + GRADING PLAN

FIGURE 11-20B



SECTION B-B

1"=200' HORIZ; 1"=40' VERT

LINED EVAPORATION POND

ECO CAP– SOIL CAP

PRELIMINARY EARTHWORK SUMMARY

A–SERIES POND AREA =480,900 SQ FT (11.04 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	48,000
FILL TO LEVELING LAYER =	83,000
NET CUT/FILL (83,000 – 48,000)	35,000 (IMPORT)
LINED EVAPORATION POND VOLUMES	
1 FT SOIL COVER =	13,800
2 FT FOUNDATION LAYER =	27,600
ECO–CAP VOLUMES	
2 FT VEGETATIVE LAYER =	8,100

N

0 200'

GRAPHIC SCALE

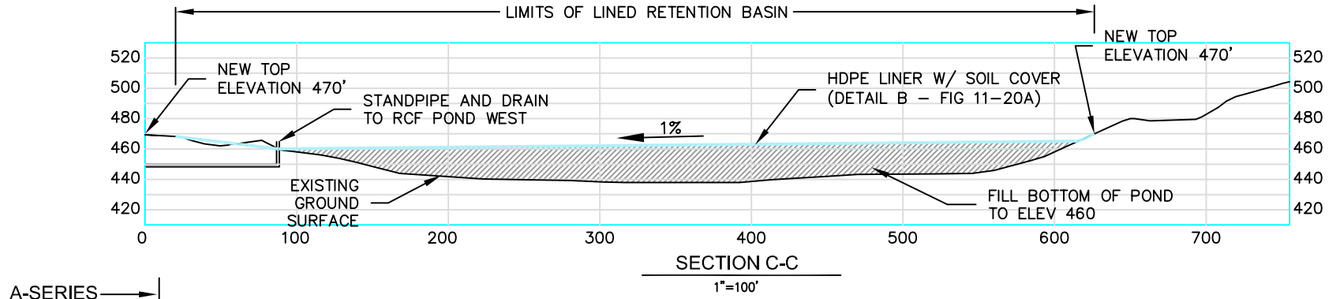
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

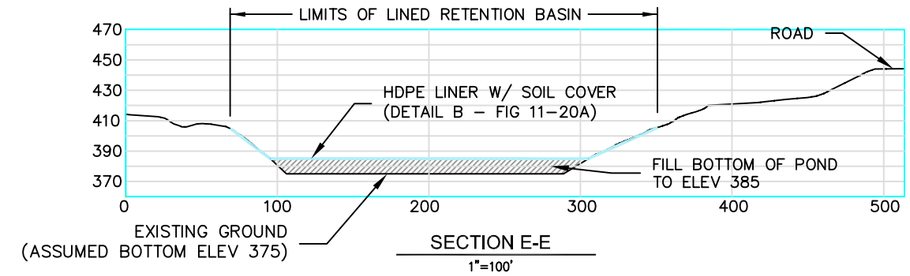
PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 5
SIX 1-ACRE LINED EVAPORATION PONDS
(A-SERIES POND) + GRADING PLAN

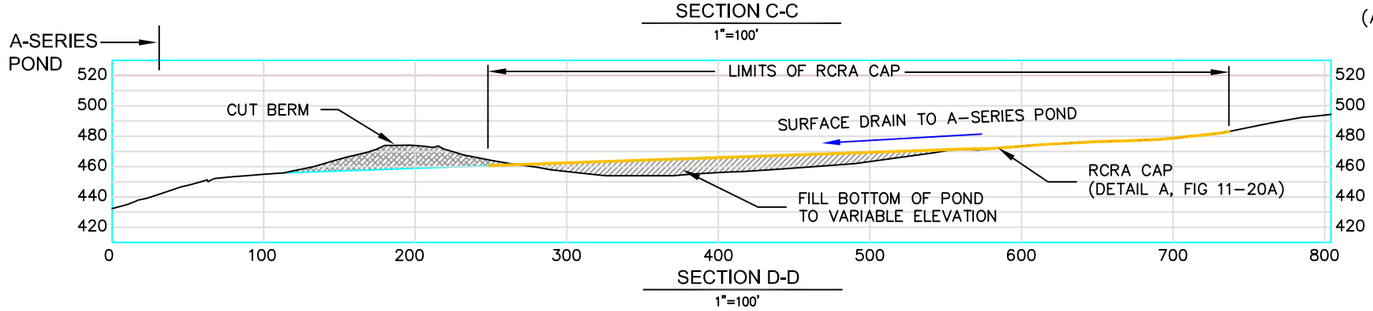
FIGURE 11-20C



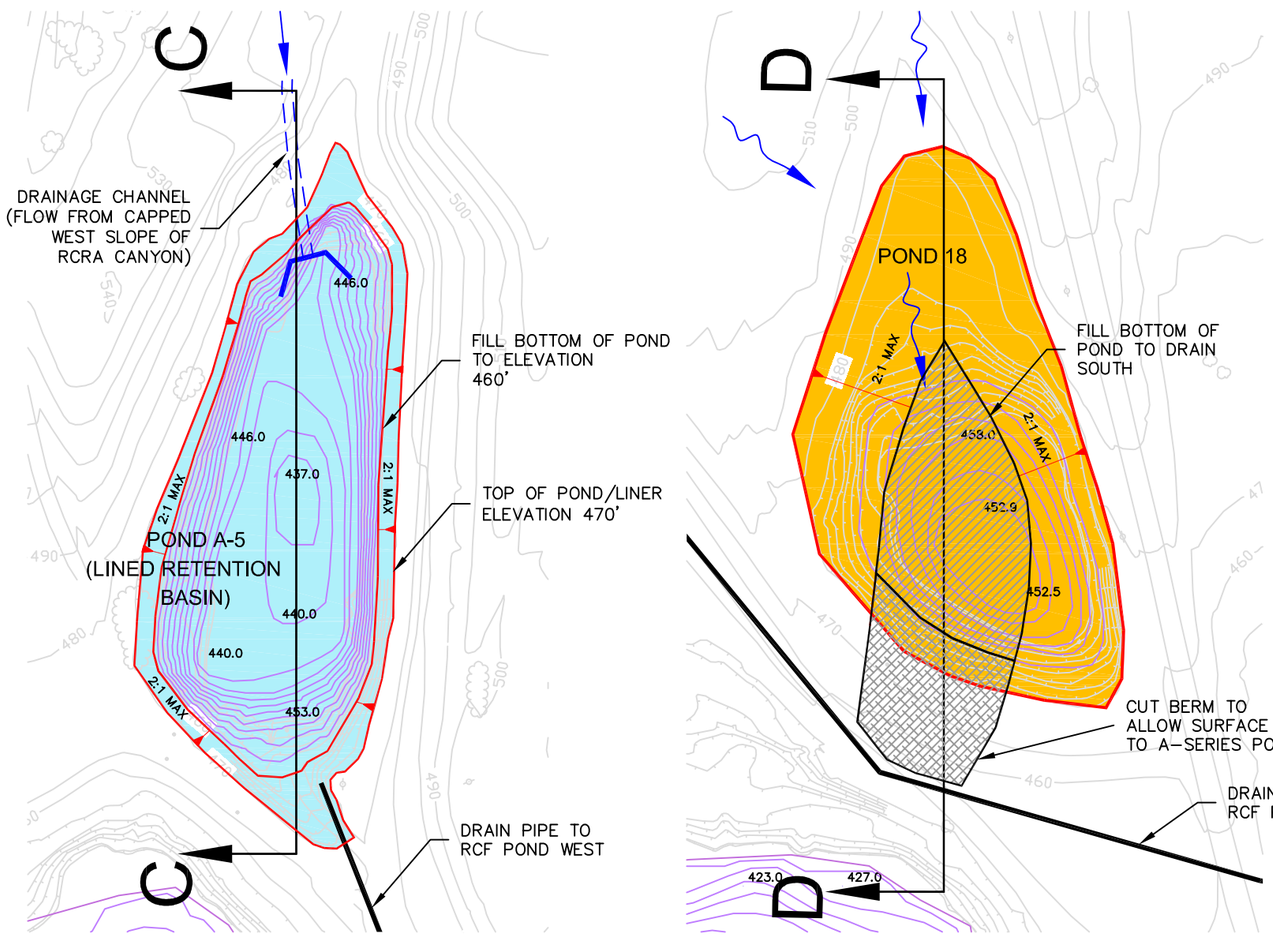
SECTION C-C
1"=100'

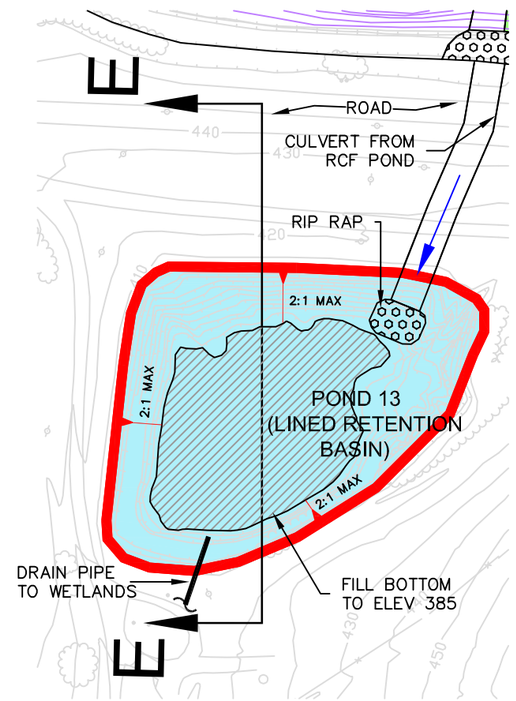


SECTION E-E
1"=100'



SECTION D-D
1"=100'





PRELIMINARY EARTHWORK SUMMARY

POND A–5 AREA = 92,300 SQ FT (2.13 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	50,000
NET CUT/FILL (50,000 –0)	50,000 (IMPORT)
CAP SECTION VOLUMES	
1 FT SOIL COVER =	3,400
2 FT FOUNDATION LAYER =	6,800

POND 18 AREA =119,600 SQ FT (2.75 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	8,000
FILL TO LEVELING LAYER =	8,000
NET CUT/FILL (8,000 – 8,000)	0
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	8,900

POND 13 AREA =84,600 SQ FT (1.94 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	13,000
NET CUT/FILL (13,000 – 0)	13,000 (IMPORT)
CAP SECTION VOLUMES	
1 FT SOIL COVER =	3,200
2 FT FOUNDATION LAYER =	6,400

LEGEND:

NATURAL STORMWATER RUNOFF

CHANNELED STORMWATER RUNOFF

N

0 150'

GRAPHIC SCALE

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

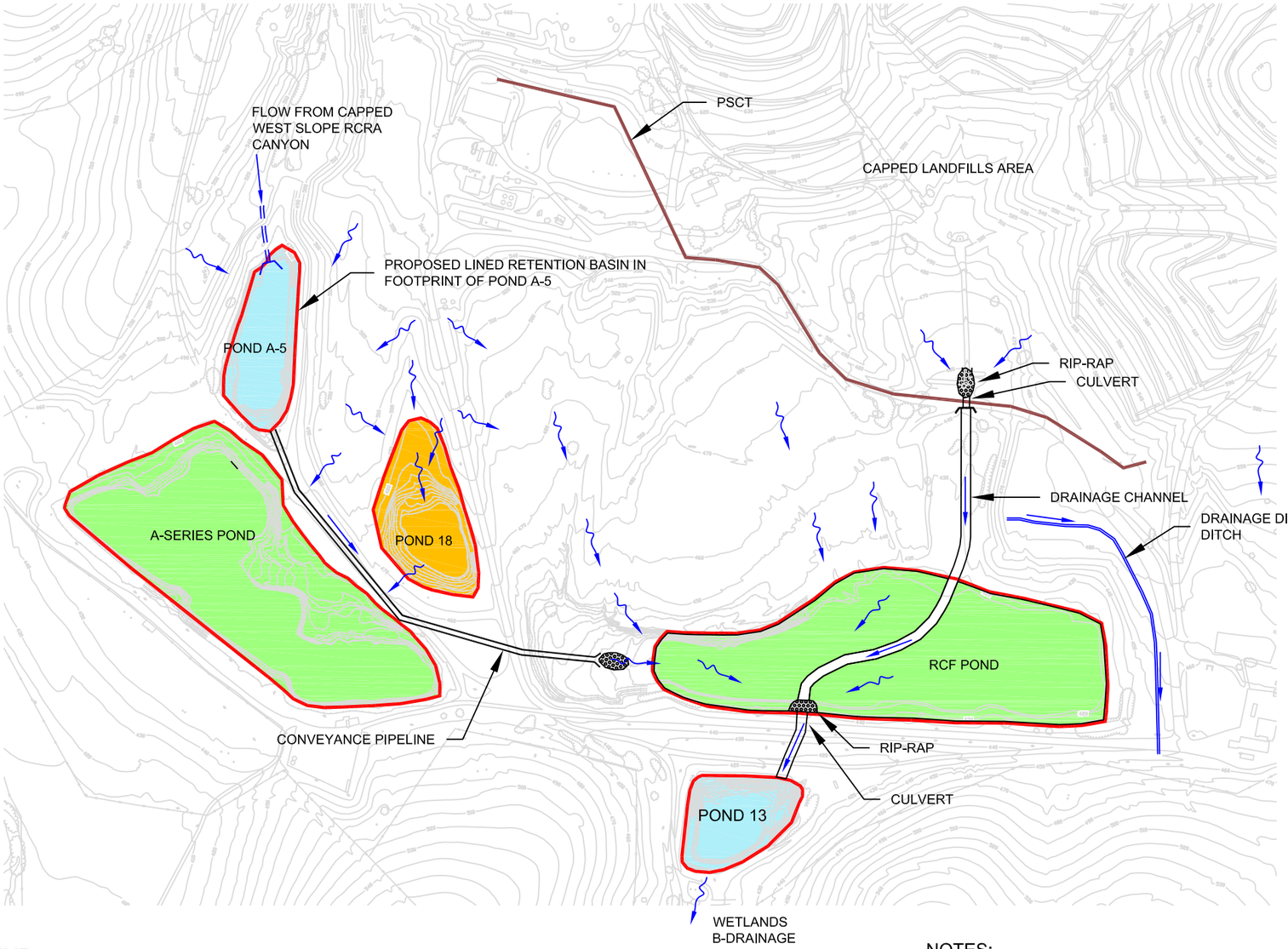
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

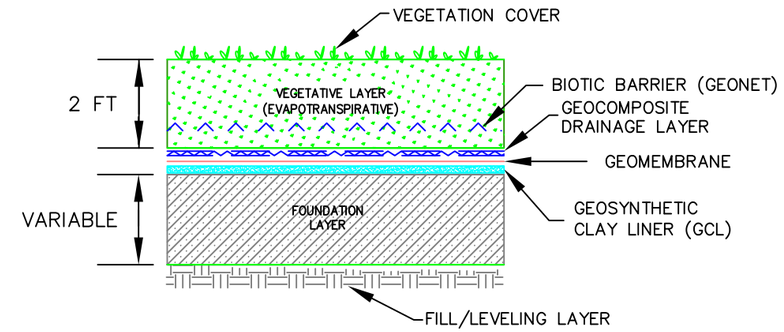
PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 5
LINED RETENTION BASIN (POND A-5, POND 13) +
RCRA CAP (POND 18) + GRADING PLAN

FIGURE 11-20D

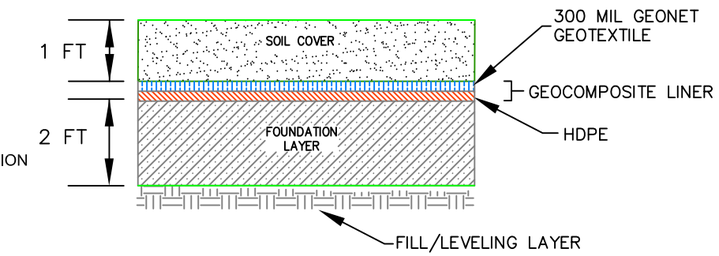
M:\Blanco\Casmalia\Figures\EPA Revised\FS AREA 4\new Fig No\Figure 11-20D.dwg , File date: 5/23/2012 5:12 PM , Print date: 5/23/2012 5:14 PM by: Esau Blanco





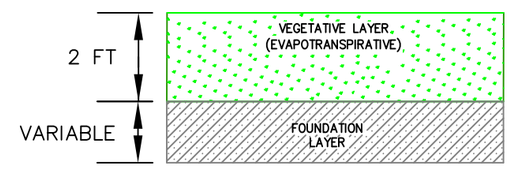
DETAIL A - TYPICAL RCRA CAP SECTION

NOT TO SCALE



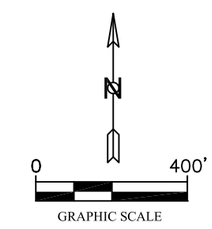
DETAIL B - LINED CAP FOR RETENTION BASIN

NOT TO SCALE



DETAIL C - TYPICAL ECO-CAP - SOIL CAP

NOT TO SCALE



LEGEND:

- LIMITS OF STUDY AREA (AREA 4)
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- RIP-RAP
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF
- RCRA CAP (POND 18) (SEE DETAIL A)
- LINED RETENTION BASIN (POND A-5, POND 13) (SEE DETAIL B)
- ECO-CAP (RCF POND, A-SERIES POND) (SEE DETAIL C)

NOTES:

1. THE BOTTOM OF THE RCF AND A-SERIES PONDS ARE LINED WITH AN ECO-CAP. THE LOW LYING AREAS OF THE A-SERIES AND RCF PONDS WILL BE FILLED TO AVOID ANY GROUNDWATER INTRUSION.
2. POND 18 WILL BE BACKFILLED USING DIKE MATERIAL AND OTHER BORROW SOIL TO ALLOW STORM WATER RUNOFF TO FLOW OFF THE FOOTPRINT TO THE NEW EVAPORATION POND.
3. POND A-5 WILL BE BACKFILLED WITH MATERIAL FROM THE EXCAVATION OF THE WCSA AND THEN LINED TO CREATE A NEW STORM WATER RETENTION BASIN.
4. POND 13 WILL BE BACKFILLED TO RAISE THE BOTTOM ABOVE THE WATER TABLE AND THEN LINED TO CREATE A RETENTION BASIN BEFORE THE STORMWATER FLOWS INTO THE WETLANDS.
5. STORMWATER FROM THE CAPPED LANDFILLS WILL BE TRANSPORTED THROUGH THE DRAINAGE CHANNEL RUNNING THROUGH THE RCF POND WHERE IT WILL COMMINGLE WITH OTHER STORMWATER FROM THE CAPPED RCRA CANYON AND THE ECO-CAPPED RCF AND FLOW TO POND 13 AND ON TO THE WETLANDS.
6. UNCAPPED AREAS OF FS AREA 3 SOUTH OF THE PSCT WILL INCORPORATE STORMWATER CONTROLS AND BEST MANAGEMENT PRACTICES (BMPs) TO MINIMIZE EROSION.

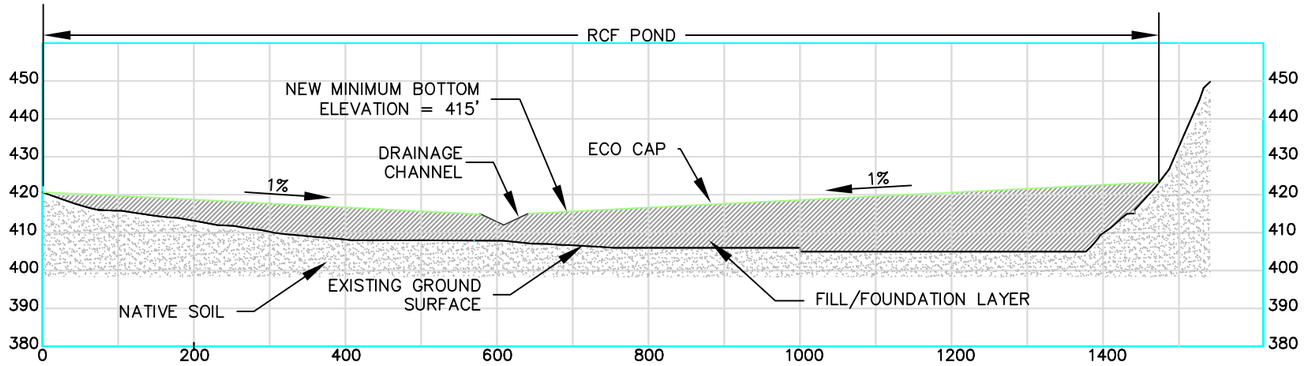
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 4 - ALTERNATIVE 6
ECO CAP (RCF POND, A-SERIES POND) + RCRA CAP (18) + LINED RETENTION BASIN (A-5, 13)

FIGURE 11-21A



SECTION A-A

1"=200' HORIZ; 1"=40' VERT

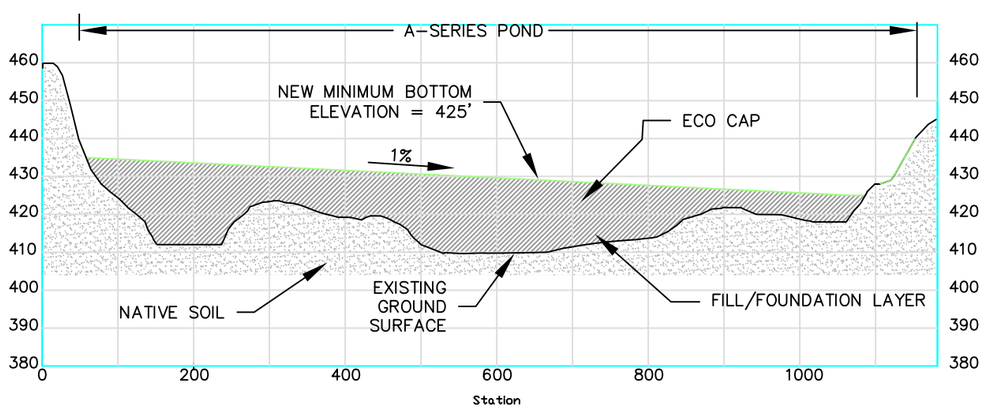
PRELIMINARY EARTHWORK SUMMARY

RCF POND AREA =496,300 SQ FT (11.39 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	95,000
NET CUT/FILL (95,000 – 0)	95,000 (IMPORT)
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	36,800

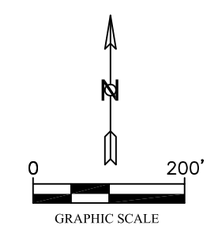
A–SERIES POND AREA =367,900 SQ FT (8.45 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	85,000
NET CUT/FILL (85,000 – 0)	85,000 (IMPORT)
CAP SECTION VOLUMES	
2 FT VEGETATIVE LAYER =	27,300



SECTION B-B

1"=200' HORIZ; 1"=40' VERT



REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

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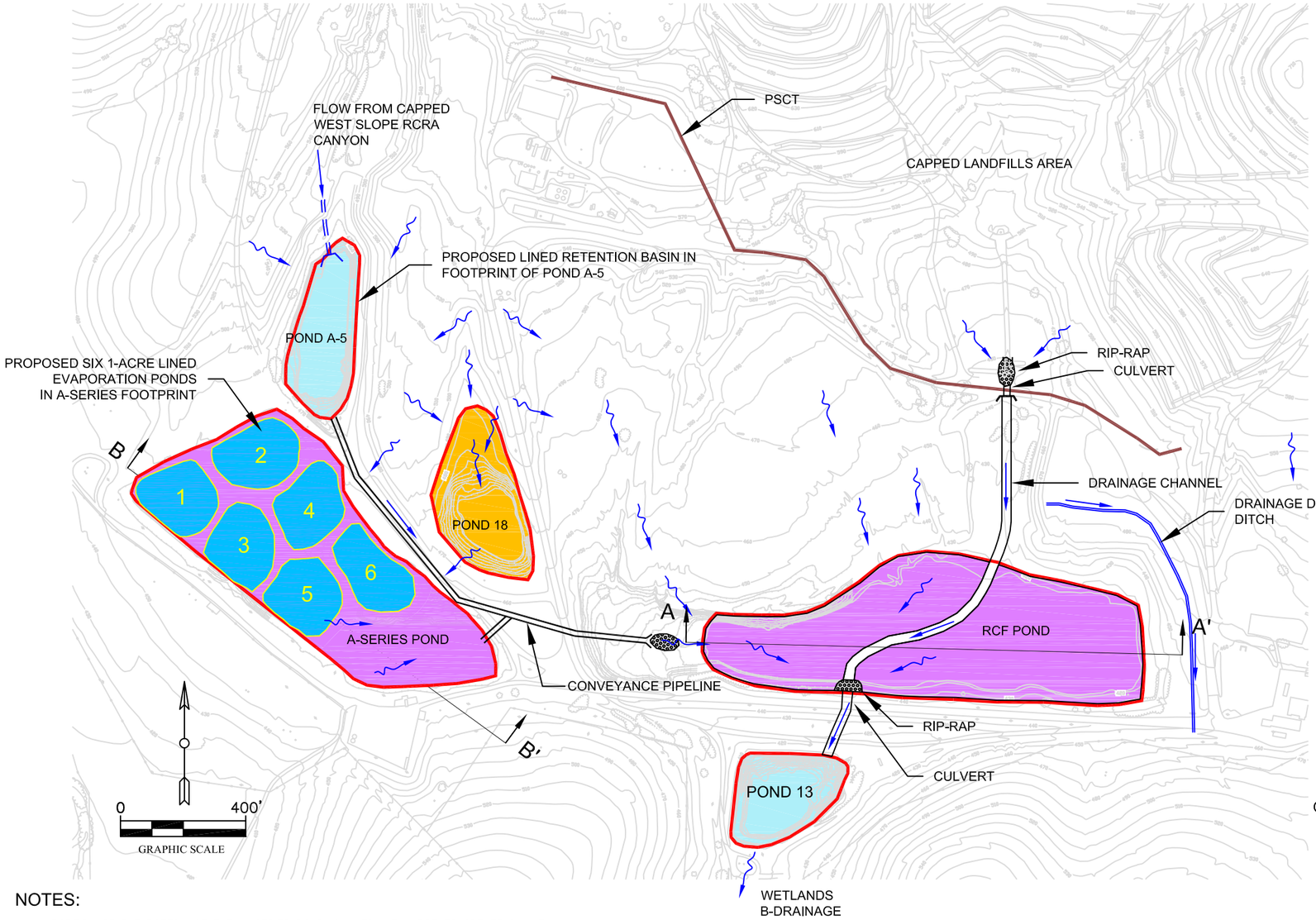
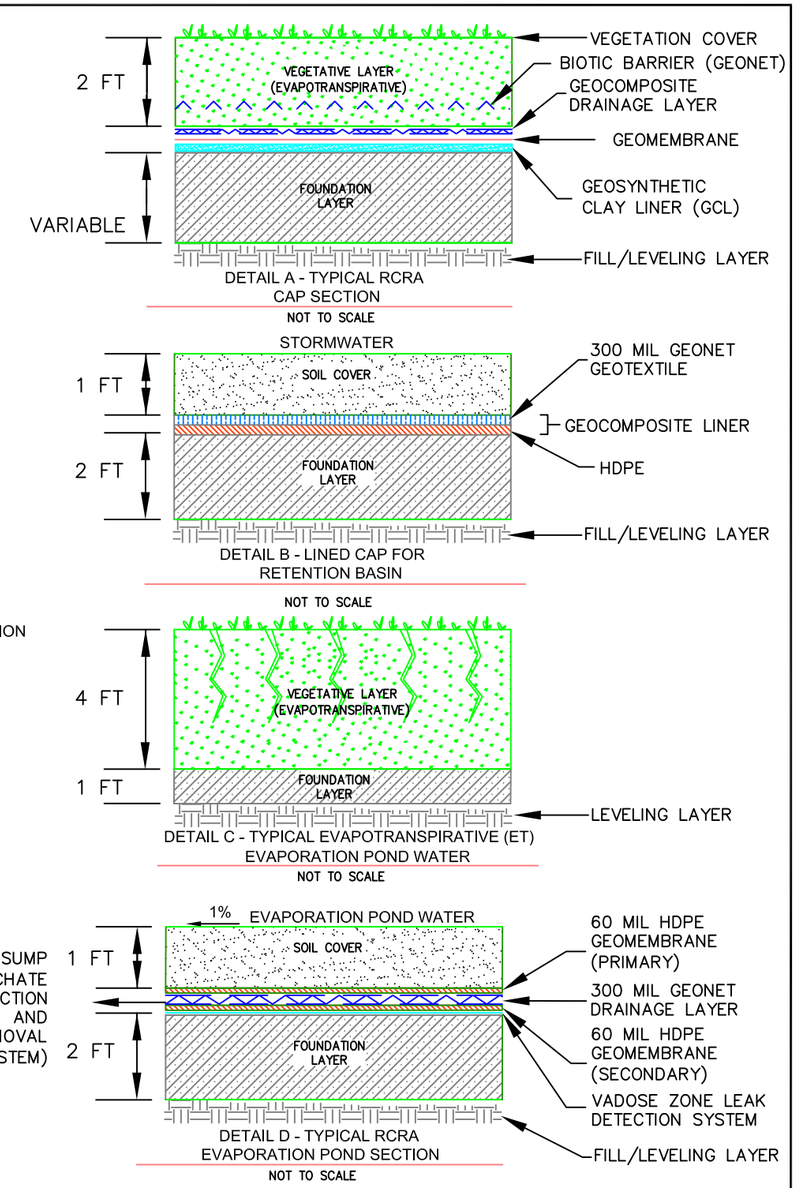
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 6
ECO CAP (A-SERIES POND, RCF POND)
CROSS SECTIONS

FIGURE 11-21B





NOTES:

1. A PORTION OF THE BOTTOM OF THE A–SERIES POND IS LINED WITH HDPE TO CREATE SIX NEW 1–ACRE EVAPORATION PONDS THAT HANDLE TREATED PSCT AND PCT GROUNDWATER. THE LOW LYING AREAS OF THE A–SERIES AND RCF PONDS WILL BE FILLED TO AVOID ANY GROUNDWATER INTRUSION.
2. THE BOTTOM OF THE RCF AND A PORTION OF THE A–SERIES POND ARE LINED WITH AN ECO–CAP. THE LOW LYING AREAS OF THE A–SERIES AND RCF PONDS WILL BE FILLED TO AVOID ANY GROUNDWATER INTRUSION.
3. POND 18 WILL BE BACKFILLED USING DIKE MATERIAL AND OTHER BORROW SOIL TO ALLOW STORM WATER RUNOFF TO FLOW OFF THE FOOTPRINT TO THE NEW EVAPORATION POND.
4. POND A–5 WILL BE BACKFILLED WITH MATERIAL FROM THE EXCAVATION OF THE WCSA AND THEN LINED TO CREATE A NEW STORM WATER RETENTION BASIN.
5. POND 13 WILL BE BACKFILLED TO RAISE THE BOTTOM ABOVE THE WATER TABLE AND THEN LINED TO CREATE A RETENTION BASIN BEFORE THE STORMWATER FLOWS INTO THE WETLANDS.
6. STORMWATER FROM THE CAPPED LANDFILLS WILL BE TRANSPORTED THROUGH THE DRAINAGE CHANNEL RUNNING THROUGH THE RCF POND WHERE IT WILL COMMINGLE WITH OTHER STORMWATER FROM THE CAPPED RCRA CANYON AND THE ECO–CAPPED RCF AND FLOW TO POND 13 AND ON TO THE WETLANDS.
7. UNCAPPED AREAS OF FS AREA 3 SOUTH OF THE PSCT WILL INCORPORATE STORMWATER CONTROLS AND BEST MANAGEMENT PRACTICES (BMPs) TO MINIMIZE EROSION.
8. THE EVAPORATION POND INCLUDES A LEACHATE COLLECTION AND RECOVERY SYSTEM (LCRS) COMPOSED OF A 300 MIL GEONET DRAINAGE LAYER THAT DRAINS TO A SUMP. THE POND BOTTOM IS SLOPED AT 1% TO COLLECT ANY LEACHATE THAT PENETRATES THE PRIMARY LAYER.

LEGEND:

- LIMITS OF STUDY AREA (AREA 4)
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- RIP–RAP
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF
- RCRA CAP (POND 18) (SEE DETAIL A)
- LINED EVAPORATION POND (PORTION OF A–SERIES POND) (SEE DETAIL B)
- LINED RETENTION BASIN (POND A–5, POND 13) (SEE DETAIL B)
- ET CAP (RCF POND, PORTION OF A–SERIES POND) (SEE DETAIL C)

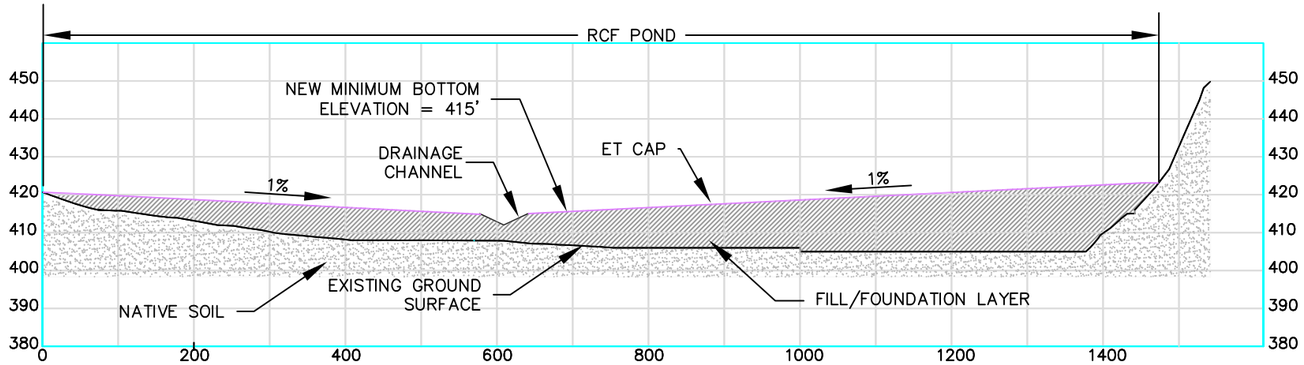
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 7
ET CAP (RCF POND, PORTION OF A-SERIES POND) + RCRA CAP (18) + SIX LINED 1-ACRE EVAPORATION PONDS (PORTION OF A-SERIES POND) + LINED RETENTION BASIN (A-5, 13)

FIGURE 11-22A



SECTION A-A

1"=200' HORIZ; 1"=40' VERT

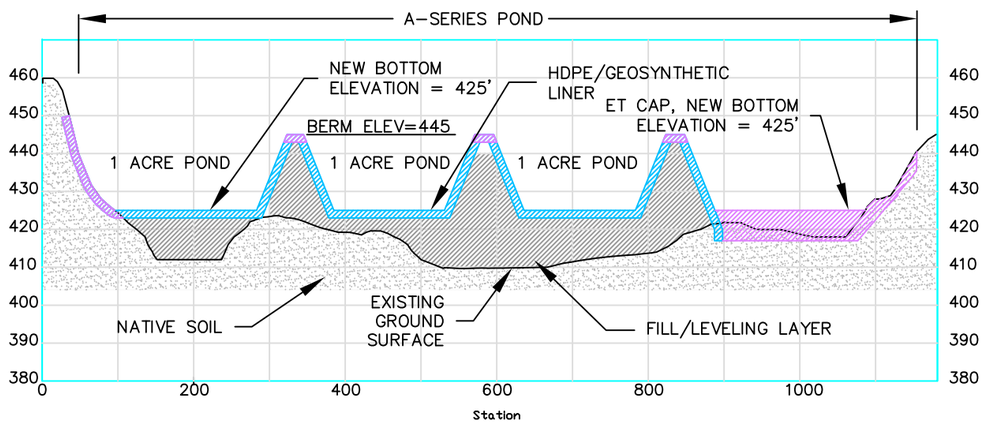
PRELIMINARY EARTHWORK SUMMARY

RCF POND AREA =496,300 SQ FT (11.39 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	0
FILL TO LEVELING LAYER =	45,000
NET CUT/FILL (45,000 – 0)	45,000 (IMPORT)
CAP SECTION VOLUMES	
4 FT VEGETATIVE LAYER =	67,800

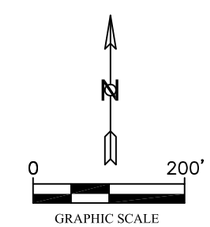
A–SERIES POND AREA =480,900 SQ FT (11.04 ACRES)

GRADING	VOLUMES (CY)
CUT TO LEVELING LAYER =	48,000
FILL TO LEVELING LAYER =	82,000
NET CUT/FILL (82,000 – 48,000)	34,000 (IMPORT)
LINED EVAPORATION POND VOLUMES	
1 FT SOIL COVER =	13,800
2 FT FOUNDATION LAYER =	27,600
ET–CAP VOLUMES	
4 FT VEGETATIVE LAYER =	28,600



SECTION B-B

1"=200' HORIZ; 1"=40' VERT



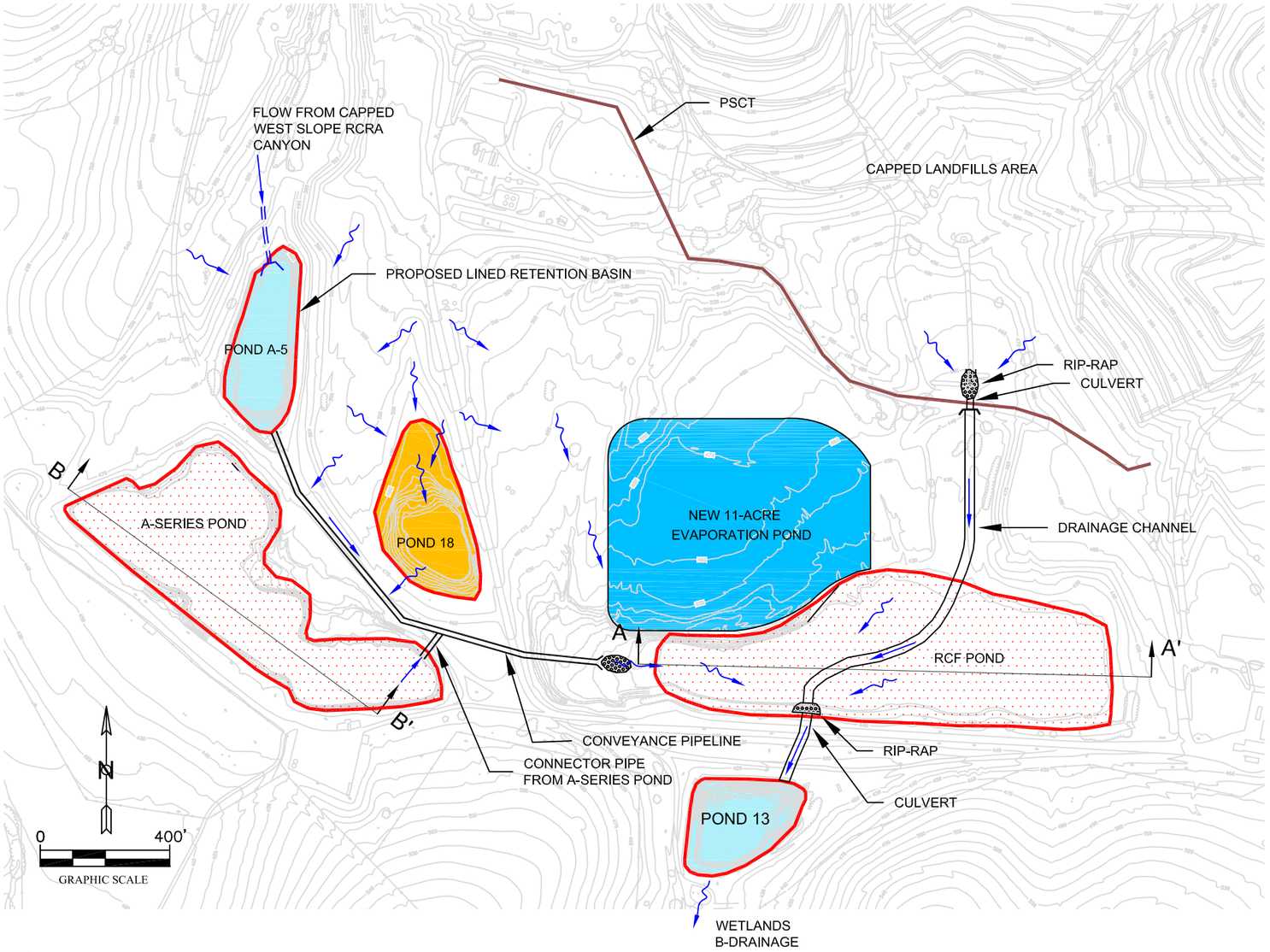
REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

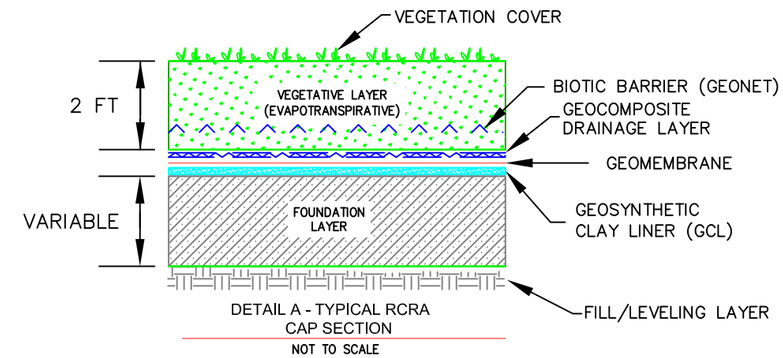
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 7
ET CAP (RCF POND) + SIX 1-ACRE EVAPORATION PONDS (PORTION OF A-SERIES POND) + ECO-CAP (PORTION OF A-SERIES POND)
CROSS SECTIONS

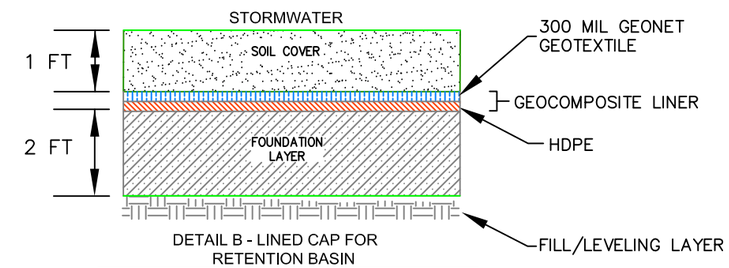
FIGURE 11-22B





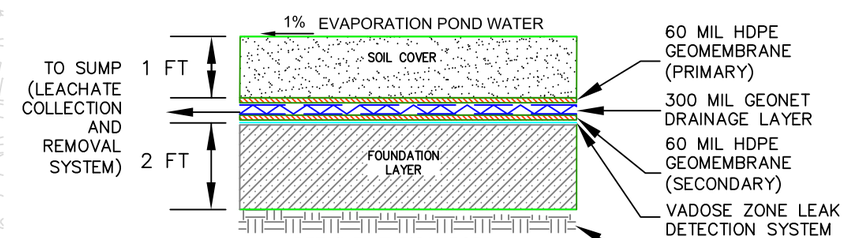
DETAIL A - TYPICAL RCRA CAP SECTION

NOT TO SCALE



DETAIL B - LINED CAP FOR RETENTION BASIN

NOT TO SCALE



DETAIL D - TYPICAL RCRA EVAPORATION POND SECTION

NOT TO SCALE

LEGEND:

- LIMITS OF STUDY AREA (AREA 4)
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- RIP–RAP
- NATURAL STORMWATER RUNOFF
- CHANNELED STORMWATER RUNOFF
- RCRA CAP (POND 18) (SEE DETAIL A)
- LINED EVAPORATION POND (NEW 11–ACRE POND) (SEE DETAIL B)
- LINED RETENTION BASIN (POND A–5, POND 13) (SEE DETAIL B)
- EXCAVATE AND CLEAN BACKFILL (5')

NOTES:

1. POND 18 WILL BE BACKFILLED USING DIKE MATERIAL AND OTHER BORROW SOIL TO ALLOW STORM WATER RUNOFF TO FLOW OFF THE FOOTPRINT TO THE NEW EVAPORATION POND.
2. POND A–5 WILL BE BACKFILLED WITH MATERIAL FROM THE EXCAVATION OF THE WCSA AND THEN LINED TO CREATE A NEW STORM WATER RETENTION BASIN.
3. POND 13 WILL BE BACKFILLED TO RAISE THE BOTTOM ABOVE THE WATER TABLE AND THEN LINED TO CREATE A RETENTION BASIN BEFORE THE STORMWATER FLOWS INTO THE WETLANDS.
4. THE EVAPORATION POND INCLUDES A LEACHATE COLLECTION AND RECOVERY SYSTEM (LCRS) COMPOSED OF A 300 MIL GEONET DRAINAGE LAYER THAT DRAINS TO A SUMP. THE POND BOTTOM IS SLOPED AT 1% TO COLLECT ANY LEACHATE THAT PENETRATES THE PRIMARY LAYER.

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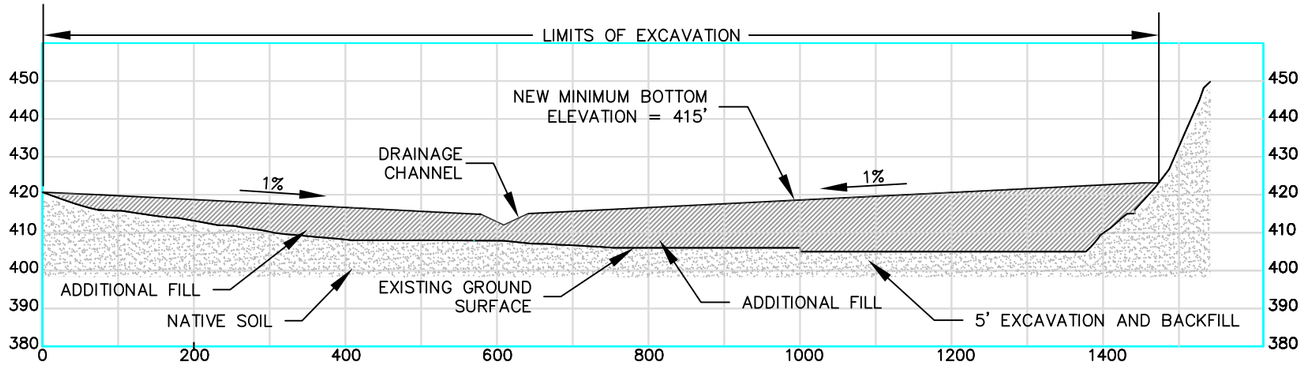
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 4 - ALTERNATIVE 8
EXCAVATE AND CLEAN BACKFILL 5' (RCF, A-SERIES POND) + RCRA CAP (18) + LINED RETENTION BASIN (A-5, 13) + NEW 11 ACRE EVAPORATION POND

FIGURE 11-23A



SECTION A-A

1"=200' HORIZ; 1"=40' VERT

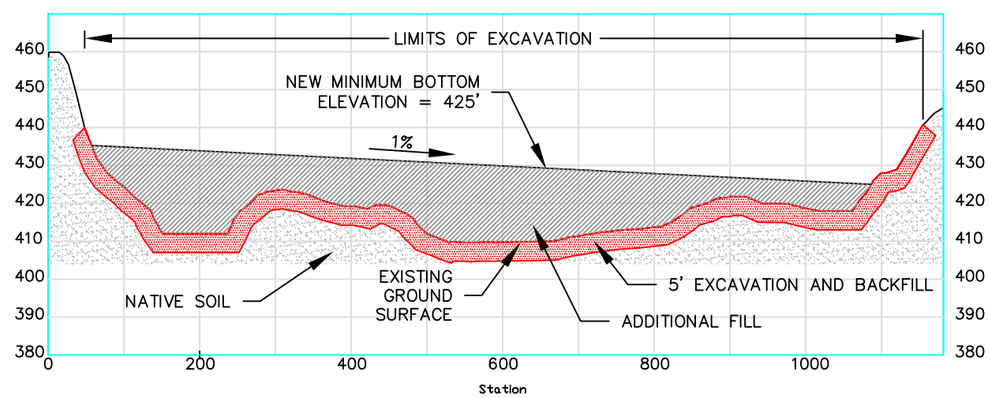
PRELIMINARY EARTHWORK SUMMARY

RCF POND AREA =496,300 SQ FT (11.39 ACRES)

GRADING	VOLUMES (CY)
EXCAVATE & REMOVE 5' =	92,000 (EXPORT)
FILL 5' CLEAN SOIL =	92,000 (IMPORT)
ADDITIONAL CLEAN FILL TO ELEV 415	150,000 (IMPORT)

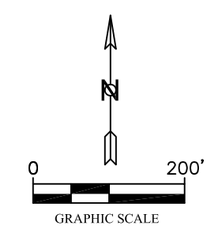
A-SERIES POND AREA =367,900 SQ FT (8.45 ACRES)

GRADING	VOLUMES (CY)
EXCAVATE & REMOVE 5'	68,000 (EXPORT)
FILL 5' CLEAN SOIL =	68,000 (IMPORT)
ADDITIONAL CLEAN FILL TO ELEV 425	90,000 (IMPORT)



SECTION B-B

1"=200' HORIZ; 1"=40' VERT



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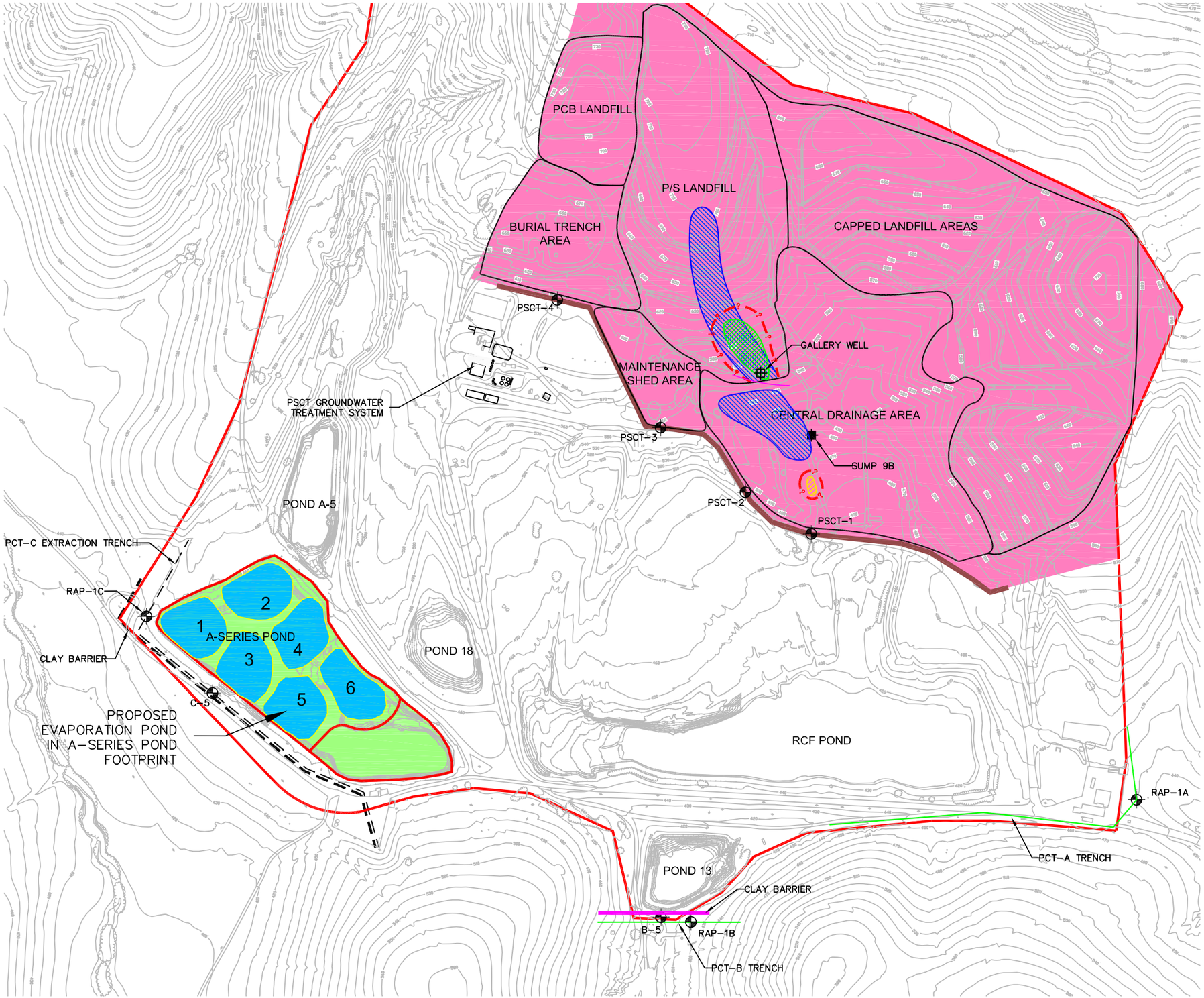
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

FS AREA 4 - ALTERNATIVE 8
EXCAVATE AND CLEAN BACKFILL (A-SERIES POND, RCF POND) (5') + GRADING PLAN

FIGURE 11-23B



LEGEND:

- SITE BOUNDARY
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- PCT-A & PCT-B TRENCHES
- CLAY BARRIER
- LINED EVAPORATION POND
- AREA 5 NORTH
- LNAPL IN UPPER HSU
- DNAPL IN UPPER HSU
- DNAPL IN LOWER HSU
- POTENTIAL EXTENT OF DNAPL IN LOWER HSU
- EXISTING EXTRACTION WELL
- TRENCH EXTRACTION WELL
- SUMP

NOTES:

1. TREATED PSCT GROUNDWATER IS SENT TO THE PROPOSED LINED EVAPORATION POND IN THE FOOTPRINT OF THE A-SERIES POND. NAPL AND LIQUIDS FROM THE GALLERY WELL ARE SENT TO AN OFFSITE TSDF FOR DISPOSAL SIMILAR TO HOW THEY ARE CURRENTLY MANAGED.
2. FS AREA 1 INCLUDING CENTRAL DRAINAGE AREA, BURIAL TRENCH AREA AND PCB LANDFILL AND A PORTION OF FS AREA 3 INCLUDING MAINTENANCE SHED AREA WILL BE CAPPED TO PREVENT INFILTRATION AS PART OF THE SOIL REMEDY.

N

0 400'

GRAPHIC SCALE

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URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

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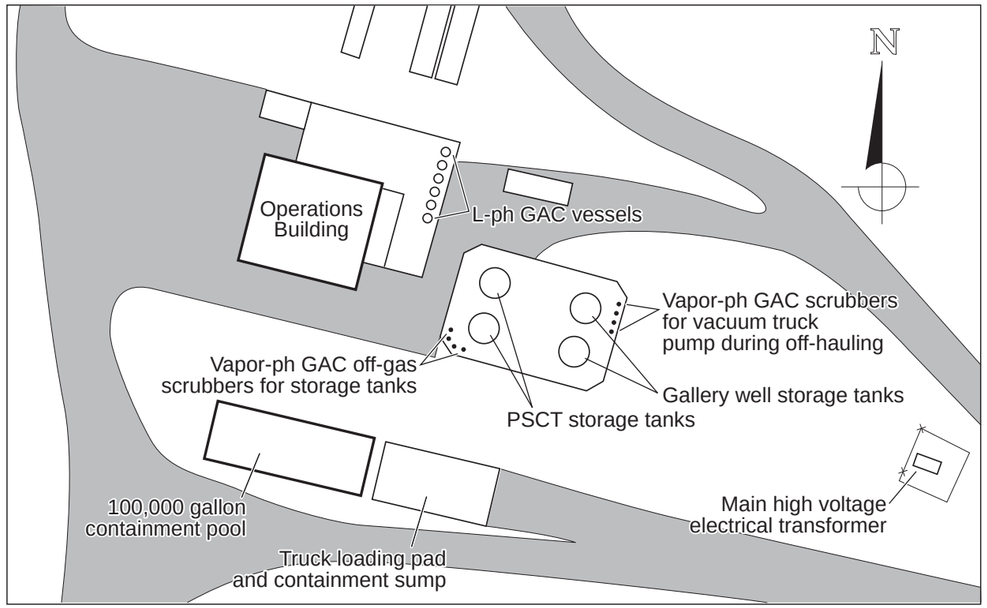
FEASIBILITY STUDY

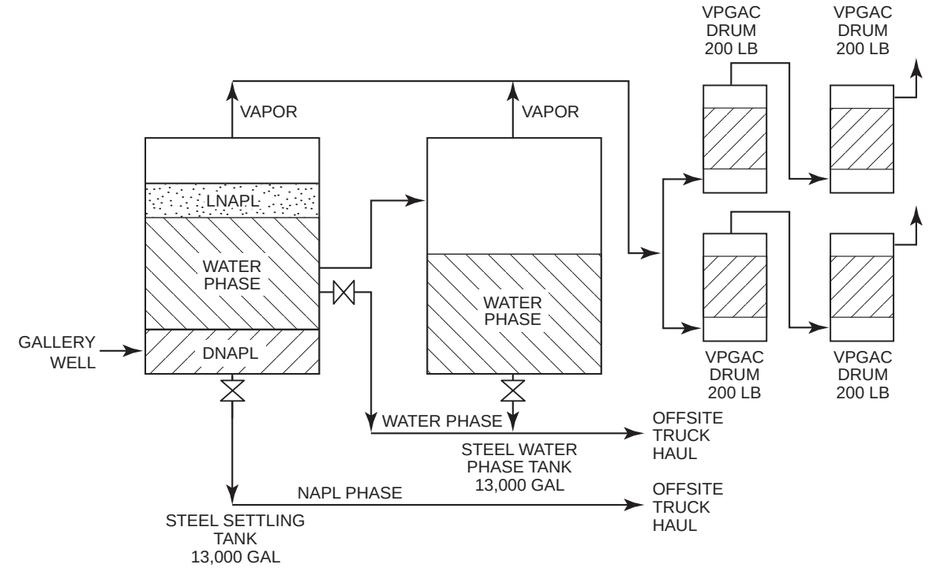
AREA 5 NORTH GROUNDWATER -
ALTERNATIVE 2
EXTRACTION (PSCT, GALLERY WELL) + DISCHARGE ONSITE

FIGURE 11-24A

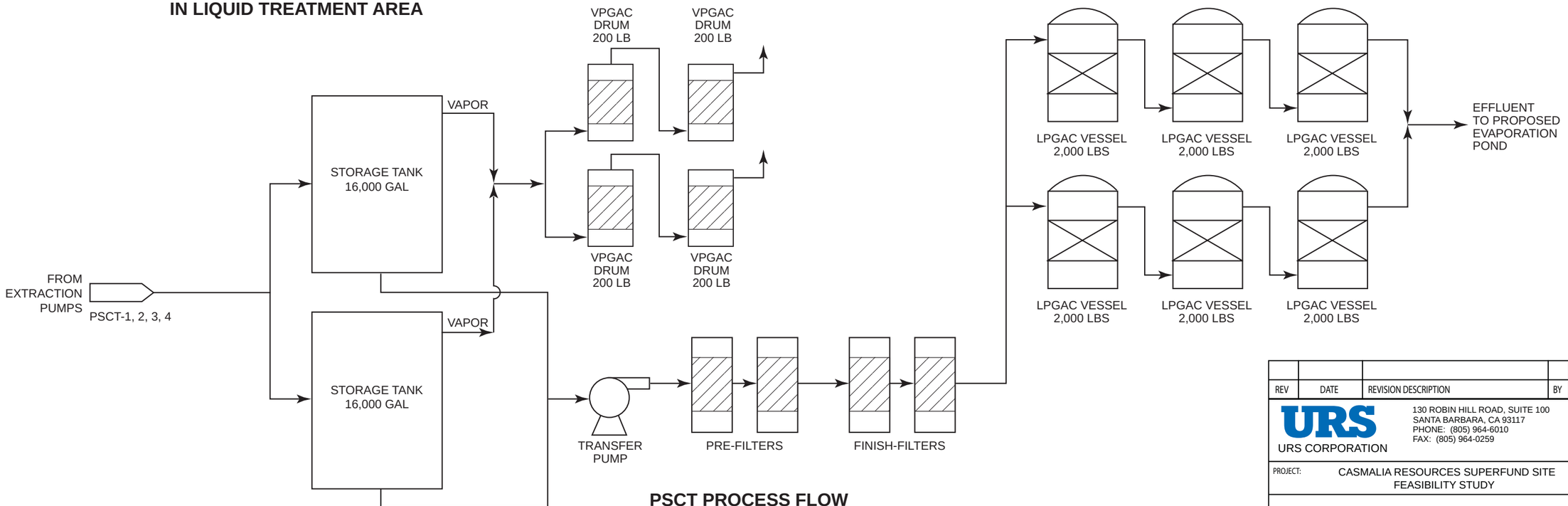
T/Ladd/Casmalia/811-295C



TREATMENT SYSTEM LAYOUT IN LIQUID TREATMENT AREA



GALLERY WELL PROCESS FLOW



PSCT PROCESS FLOW

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

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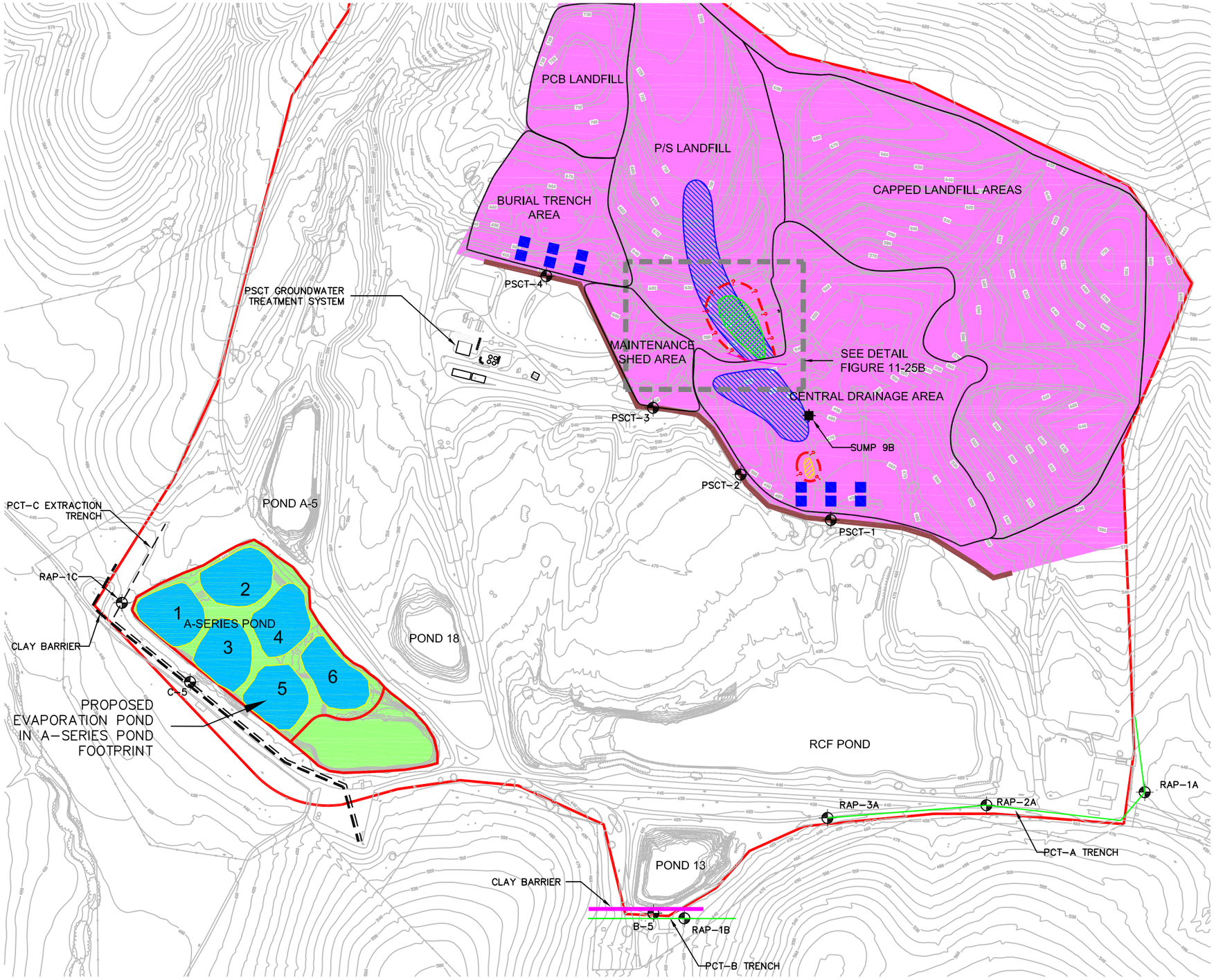
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 5 NORTH - ALTERNATIVE 2
PROCESS FLOW DIAGRAM
AND TREATMENT SYSTEM LAYOUT

FIGURE 11-24B



LEGEND:

- SITE BOUNDARY
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- PCT-A & PCT-B TRENCHES
- CLAY BARRIER
- LINED EVAPORATION POND
- AREA 5 NORTH
- LNAPL IN UPPER HSU
- DNAPL IN UPPER HSU
- DNAPL IN LOWER HSU
- POTENTIAL EXTENT OF DNAPL IN LOWER HSU
- TRENCH EXTRACTION WELL
- LHSU MONITORING WELL
- SUMP

NOTES:

1. TREATED PSCT GROUNDWATER IS SENT TO THE PROPOSED LINED EVAPORATION POND IN THE FOOTPRINT OF THE A-SERIES POND. EXTRACTED NAPL AND LEACHATE ARE SENT OFFSITE TO A PERMITTED FACILITY FOR DISPOSAL.
2. SIXTEEN NAPL-ONLY EXTRACTION WELLS ARE INCLUDED IN THE UPPER HSU UNDER THE P/S LANDFILL.
3. A TOTAL OF TWELVE WELLS WILL MONITOR ANY POTENTIAL VOC MIGRATION UNDER THE PSCT IN THE LHSU. THE LHSU MONITORING WELLS ARE CONSTRUCTED AS TWO WELL CLUSTERS WITH ONE SCREENED IN THE UPPER AND THE OTHER IN THE LOWER PORTIONS OF THE LHSU, JUST NORTH OF PSCT-1 AND PSCT-4.
4. FS AREA 1 INCLUDING CENTRAL DRAINAGE AREA, BURIAL TRENCH AREA AND PCB LANDFILL AND A PORTION OF FS AREA 3 INCLUDING MAINTENANCE SHED AREA WILL BE CAPPED TO PREVENT INFILTRATION AS PART OF THE SOIL REMEDY.

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SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

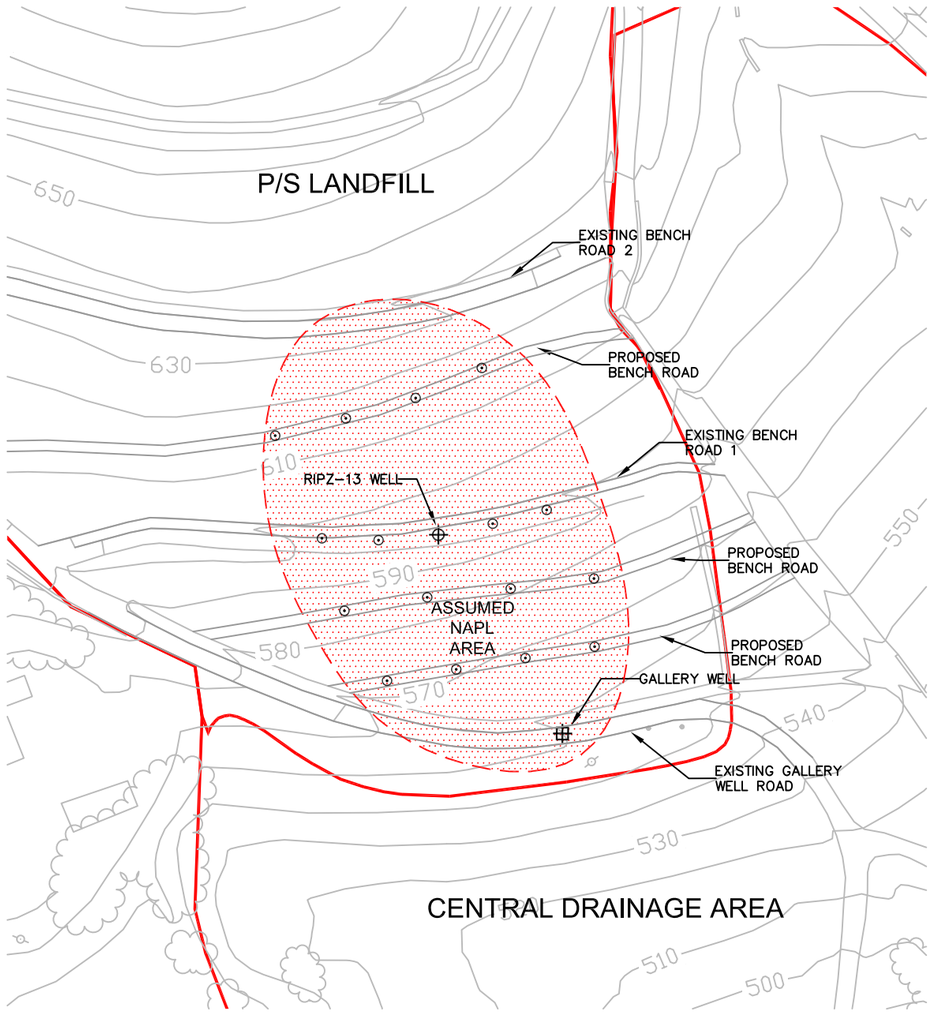
PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

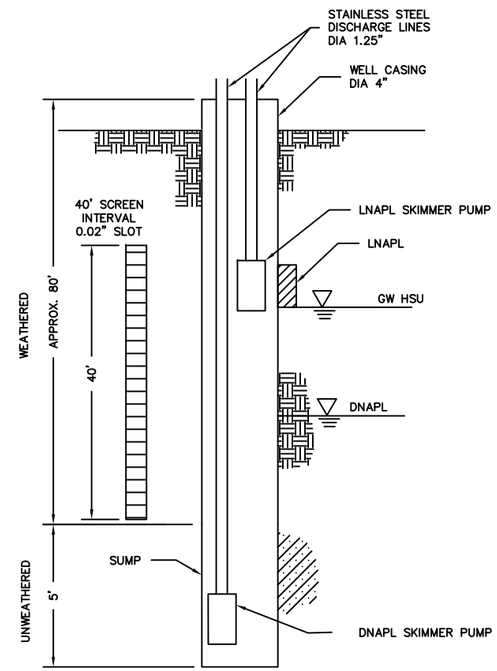
FS AREA 5 NORTH GROUNDWATER -
ALTERNATIVE 3
EXTRACTION (PSCT, GALLERY WELL) +
EXTRACTION (NPAL ONLY, P/S LANDFILL) +
MONITORING (12 NEW LHSU WELLS) + DISCHARGE ONSITE

FIGURE 11-25A

LEGEND:

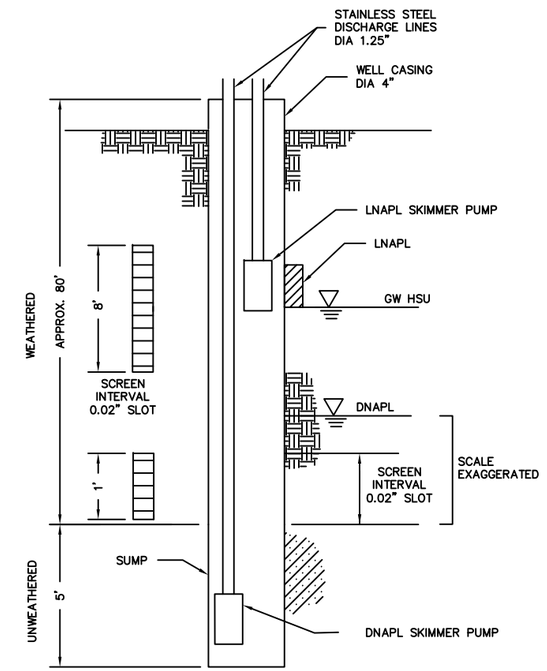
- NAPL EXTRACTION AREA
- EXISTING EXTRACTION WELL
- NAPL–ONLY EXTRACTION WELL (16 WELLS)
- BENCH ROAD





NAPL-ONLY EXTRACTION WELL
IN UPPER HSU - CONTINUOUS SCREEN

NOT TO SCALE



NAPL-ONLY EXTRACTION WELL
IN UPPER HSU - TWO DISCRETE SCREENS

NOT TO SCALE

SOUTHERN PORTION OF P/S LANDFILL

N

0 100'

GRAPHIC SCALE

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

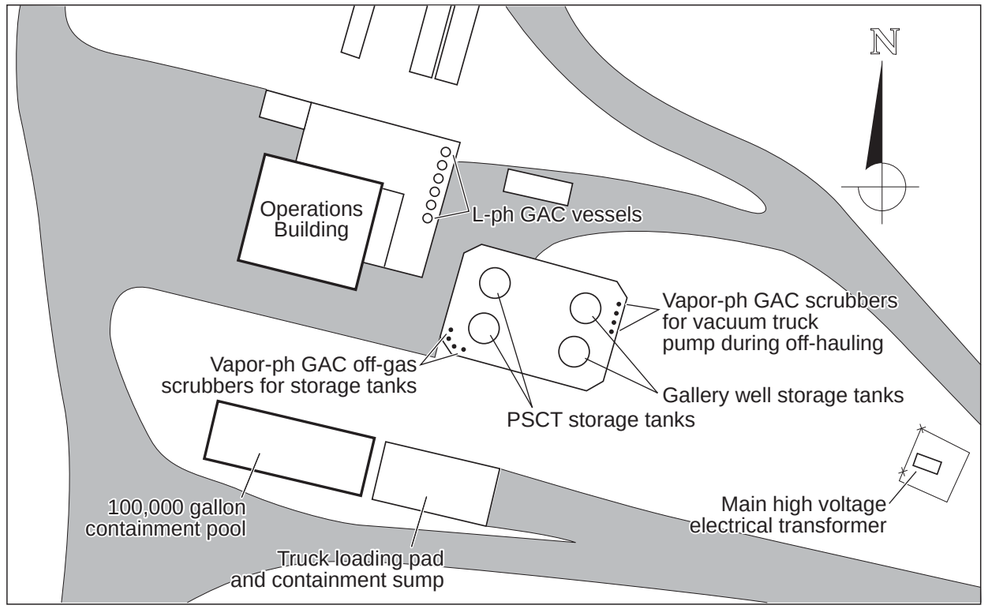
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

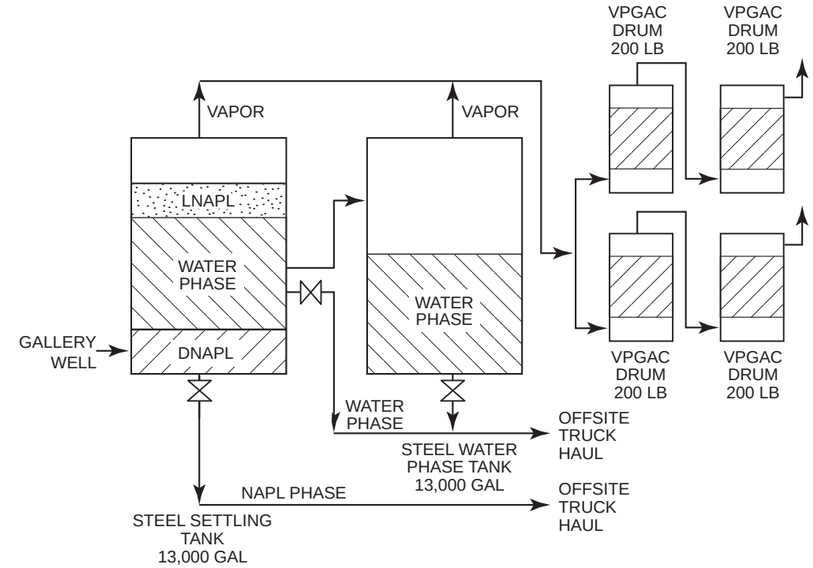
AREA 5 NORTH - ALTERNATIVE 3
EXTRACTION (PSCT, GALLERY WELL) + EXTRACTION
(NAPL-ONLY, P/S LANDFILL)

FIGURE 11-25B

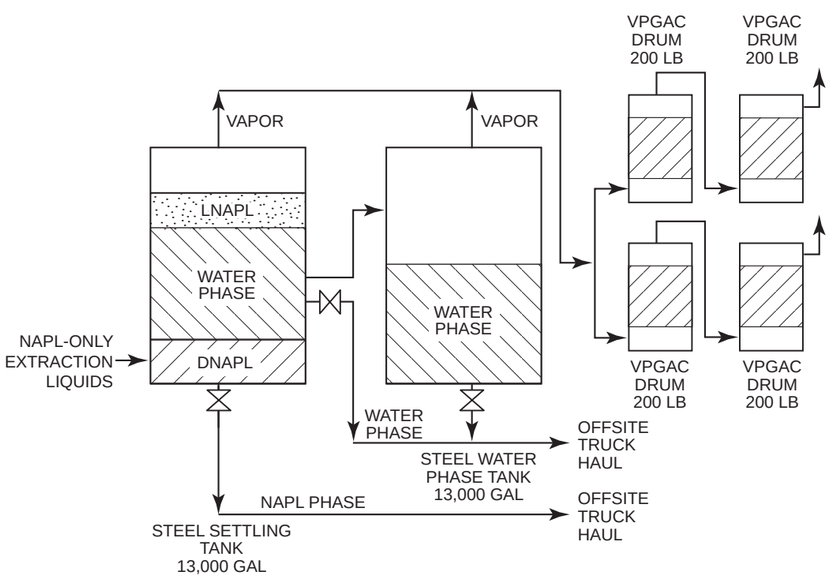
T/Ladd/Casmalia/811-295D



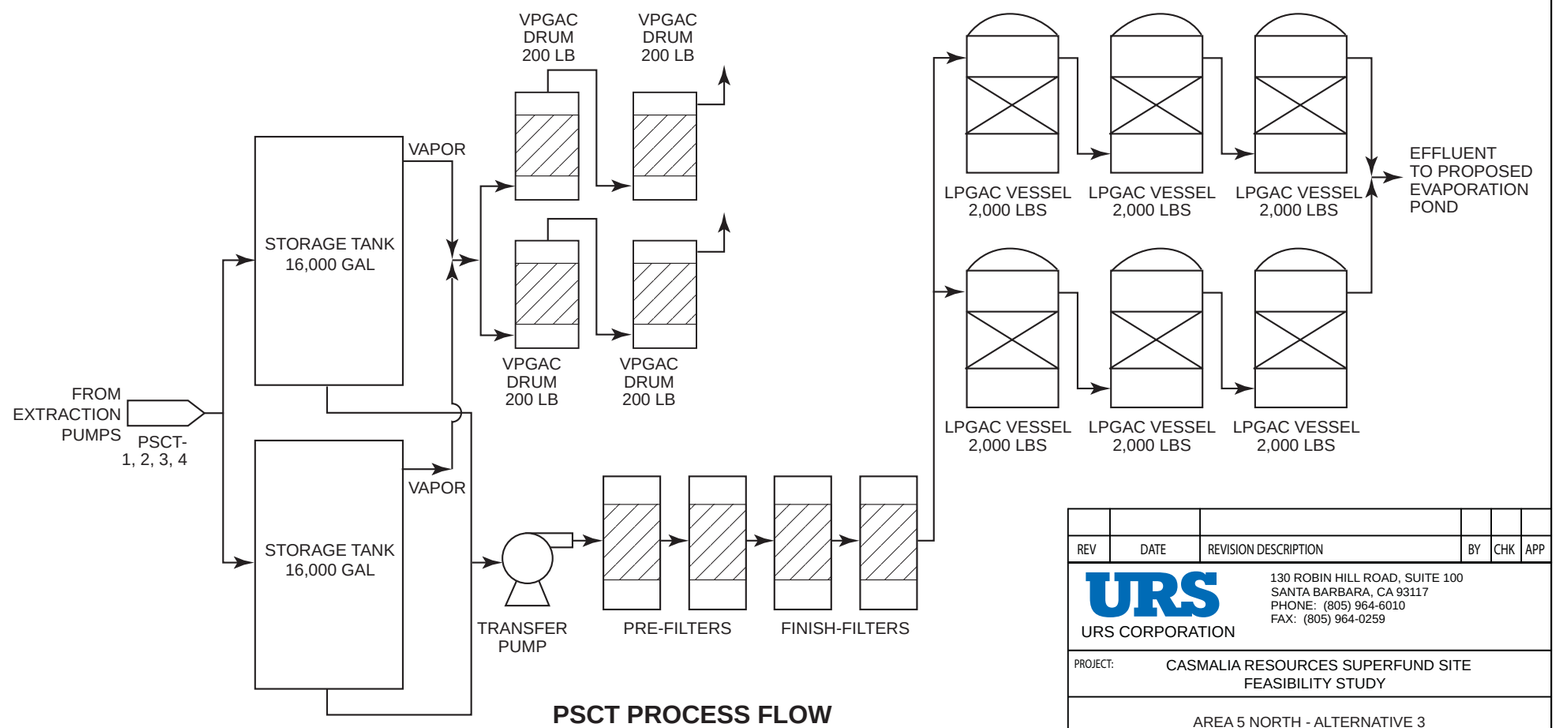
TREATMENT SYSTEM LAYOUT IN LIQUID TREATMENT AREA



GALLERY WELL PROCESS FLOW



NAPL-ONLY EXTRACTION PROCESS FLOW



PSCT PROCESS FLOW

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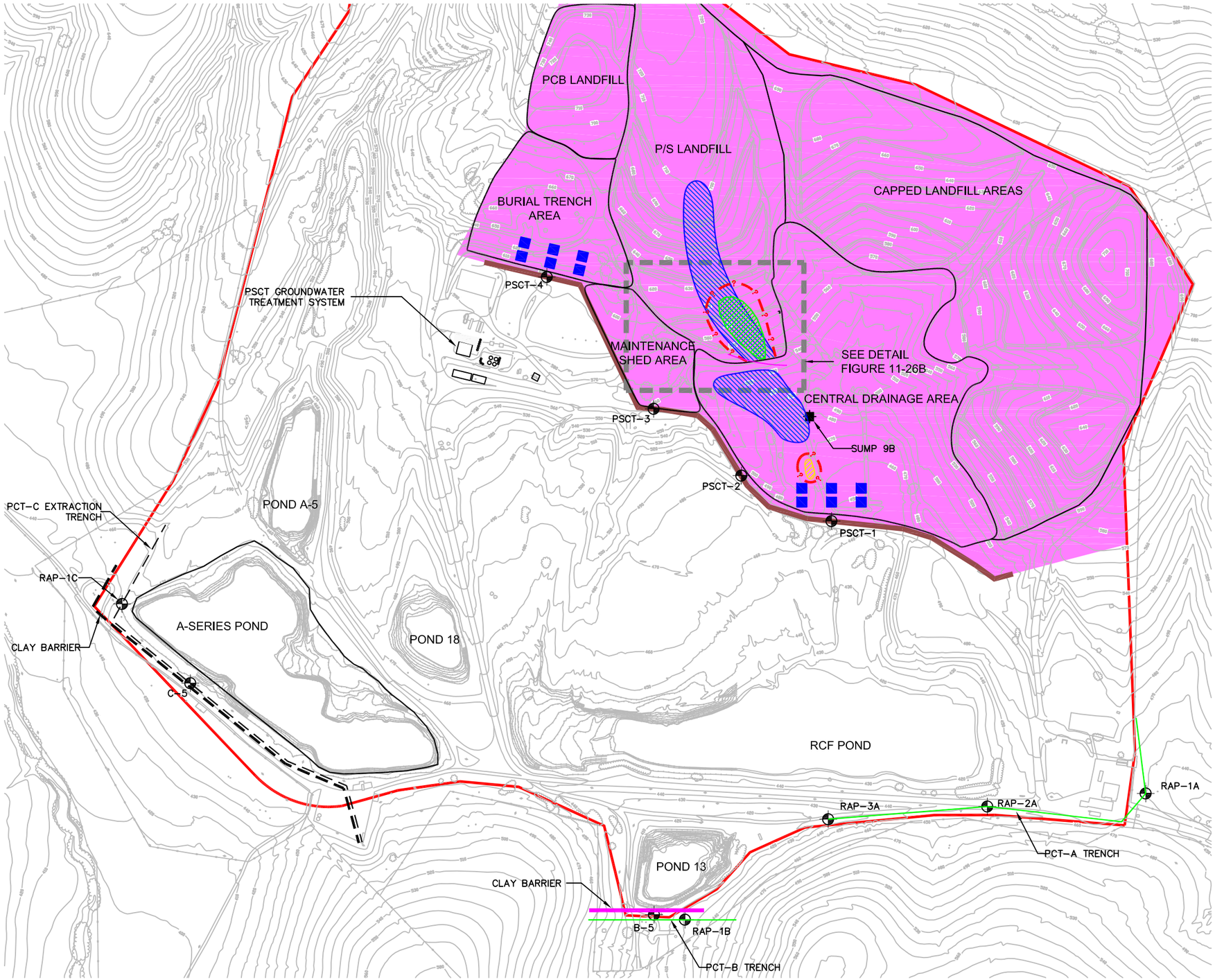
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 5 NORTH - ALTERNATIVE 3
PROCESS FLOW DIAGRAM
AND TREATMENT SYSTEM LAYOUT

FIGURE 11-25C



LEGEND:

- SITE BOUNDARY
- PERIMETER SOURCE CONTROL TRENCH (PSCT)
- PCT-A & PCT-B TRENCHES
- CLAY BARRIER
- AREA 5 NORTH
- LNAPL IN UPPER HSU
- DNAPL IN UPPER HSU
- DNAPL IN LOWER HSU
- POTENTIAL EXTENT OF DNAPL IN LOWER HSU
- TRENCH EXTRACTION WELL
- LHSU MONITORING WELL
- SUMP

NOTES:

1. TREATED PSCT GROUNDWATER IS DISCHARGED OFFSITE TO THE B-DRAINAGE IN ACCORDANCE WITH THE SITE-SPECIFIC NPDES PERMIT. EXTRACTED NAPL AND LEACHATE IS SENT OFFSITE TO A PERMITTED FACILITY FOR DISPOSAL.
2. SIXTEEN NAPL-ONLY EXTRACTION WELLS ARE INCLUDED IN THE UPPER HSU UNDER THE P/S LANDFILL. SEE DETAIL ON FIGURE 11-26B.
3. A TOTAL OF TWELVE WELLS WILL MONITOR ANY POTENTIAL VOC MIGRATION UNDER THE PSCT IN THE LHSU. THE LHSU MONITORING WELLS ARE CONSTRUCTED AS TWO WELL CLUSTERS WITH ONE SCREENED IN THE UPPER AND THE OTHER IN THE LOWER PORTIONS OF THE LHSU, JUST NORTH OF PSCT-1 AND PSCT-4.
4. FS AREA 1 INCLUDING CENTRAL DRAINAGE AREA, BURIAL TRENCH AREA AND PCB LANDFILL AND A PORTION OF FS AREA 3 INCLUDING MAINTENANCE SHED AREA WILL BE CAPPED TO PREVENT INFILTRATION AS PART OF THE SOIL REMEDY.

REV	DATE	REVISION DESCRIPTION	BY	CHK	APP

URS
URS CORPORATION
130 ROBIN HILL ROAD, SUITE 100
SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

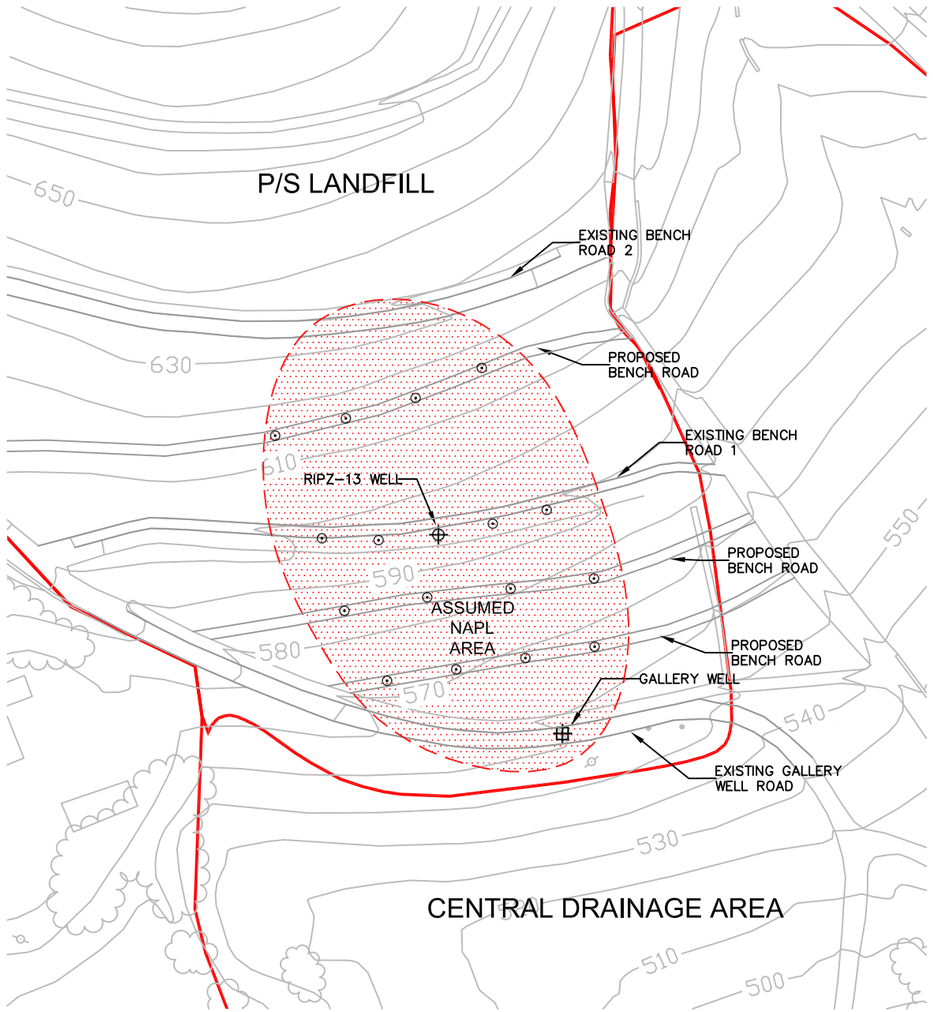
PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 5 NORTH GROUNDWATER - ALTERNATIVE 4
EXTRACTION (PSCT, GALLERY WELL) +
EXTRACTION (NAPL-ONLY,P/S LANDFILL) + MONITORING
(12 NEW LHSU WELLS) + DISCHARGE OFFSITE

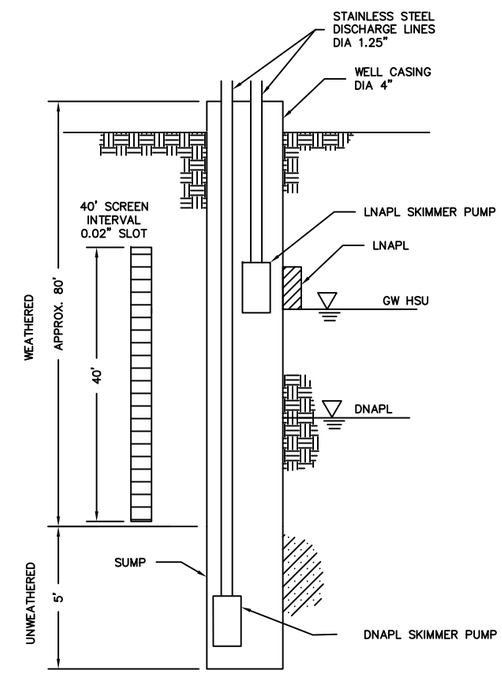
FIGURE 11-26A

LEGEND:

- NAPL EXTRACTION AREA
- EXISTING EXTRACTION WELL
- NAPL–ONLY EXTRACTION WELL (16 WELLS)
- BENCH ROAD

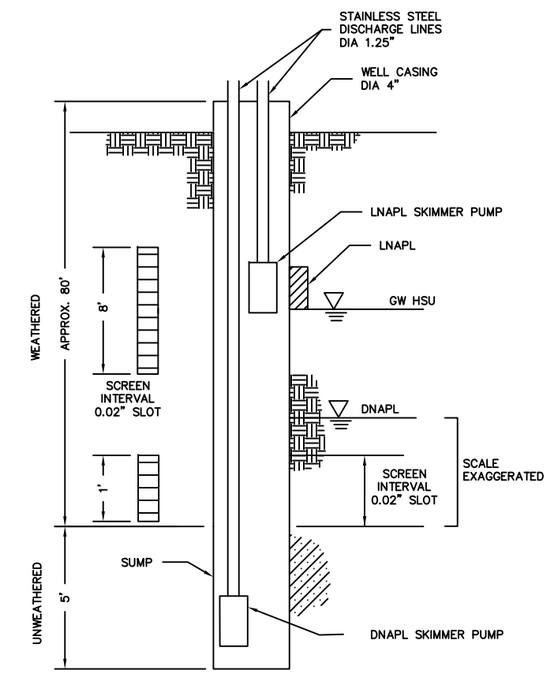


SOUTHERN PORTION OF P/S LANDFILL



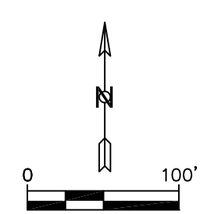
NAPL-ONLY EXTRACTION WELL
IN UPPER HSU - CONTINUOUS SCREEN

NOT TO SCALE



NAPL-ONLY EXTRACTION WELL
IN UPPER HSU - TWO DISCRETE SCREENS

NOT TO SCALE



GRAPHIC SCALE

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SANTA BARBARA, CA 93117
PHONE: (805) 964-6010
FAX: (805) 964-0259

PROJECT: CASMALIA RESOURCES SUPERFUND SITE
FEASIBILITY STUDY

AREA 5 NORTH - ALTERNATIVE 4
EXTRACTION (PSCT, GALLERY WELL) + EXTRACTION
(NAPL-ONLY, P/S LANDFILL)

FIGURE 11-26B