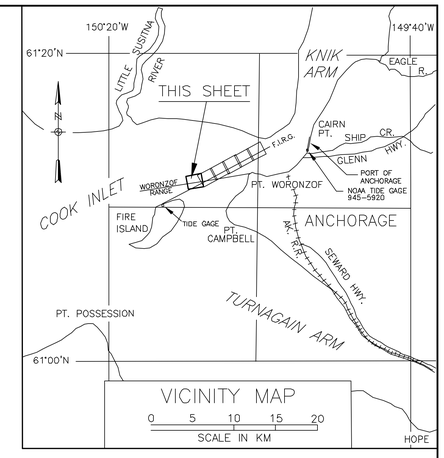
U. S. ARMY

SURVEY AREA LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714
DISPOSAL SITE AREA LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000

NAVIGATION CHANNEL COORDINATES				
COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)



NOTES:

1. HORIZONTAL DATUM IS THE ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4, NAD83 IN METERS.
2. VERTICAL DATUM IS MEAN-LOWER-LOW-WATER (MLLW=0.00m) IN METERS, BASED ON NOAA/NOS TIDAL DATUM ON THE 1960-1978 TIDAL EPOCH AT TIDE STATION "9455920" LOCATED AT THE PORT OF ANCHORAGE (SEE NOTE 6 BELOW).
3. SOUNDINGS ARE IN METERS AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. NO HORIZONTAL OR VERTICAL CONTROL WAS SET OR ESTABLISHED DURING THIS SURVEY.
5. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED MAY 10-13, 2005 USING A RESON 8125 MULTI-BEAM DEPTH SOUNDER WITH A 455kHZ, 120 DEGREE SWATH-WIDTH TRANSDUCER (240-1/2 DEGREE BEAM FLAT ARRAY). POSITIONING, VESSEL ATTITUDE AND TIDES WERE PROVIDED IN REAL-TIME USING AN APPLANIX POS-MV INERTIAL NAVIGATION SYSTEM OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 4000SSI RTK BASE RECIEVER SET AT 3" AL-CAP "AWWU 1994". SOUND VELOCITY WAS MEASURED AND APPLIED USING AN AML SV-PLUS SOUND VELOCITY METER DEPLOYED DURING THE SURVEY. REAL-TIME-KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS TIDAL BENCH MARK "TIDAL 16 1966" LOCATED AT NOAA / NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE (SEE NOTE 6). SURVEY DATA WAS COLLECTED USING GPS QINSY (V7.4) INTEGRATED SOFTWARE AND WAS PROCESSED USING CARIS "HIPS" (V5.4) SOFTWARE.
6. THE ELEVATION SHOWN FOR ALUMINUM CAP "AWWU 1994" IS SPECIFIC TO THIS PROJECT AND SHOULD NOT BE USED AS A BASIS OF VERTICAL DATUM FOR AREAS OUTSIDE OF THE COOK INLET NAVIGATION CHANNEL. THE ELEVATION REPRESENTS MEAN-LOWER-LOW-WATER AT THE NAVIGATION CHANNEL AND WAS DERIVED THROUGH COMPARISONS OF ZONED TIDE DATA (BASED ON THE NOAA/NOS TIDE STATION "9455920", LOCATED AT THE PORT OF ANCHORAGE), AND FROM HISTORICAL REDUNDANT MEASUREMENTS OF CERTAIN CROSS-SECTION DATA COMPARED TO PREVIOUS USACE PROJECT CONDITION SURVEYS. THE ELEVATION OF "AWWU 1994" IS 21.458m MLLW FOR THIS PROJECT.
7. THIS DRAWING IS INDICATIVE OF CONDITIONS AT THE TIME OF SURVEY.

⚠ CONTROL COORDINATES ⚠				
STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798942.998	502541.130		NGS SBC
AWWU	801415.521	498604.321	*	3" ALCAP (* SEE NOTE 6)
S. END	805982.939	505886.164	12.304	USACE SBC
TIDAL 16	–	–	12.305	USCGS SBC
BM 13	798786.275	489247.050	8.553	USCGS SBC IN ROCK
BM 12	–	–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET	–	–	11.278	USCGS SBC IN PVMT

VOLUME COMPUTATIONS	
PROJECT DEPTH -11.5M MLLW- WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (-11.5m MLLW)	5080
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (-12.5' MLLW)	6522
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	11,602

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACTOR: TERRA SURVEYS, LLC
CONTRACT NO. W911KB-04-D-0006-0009
CITY: PALMER STATE: ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

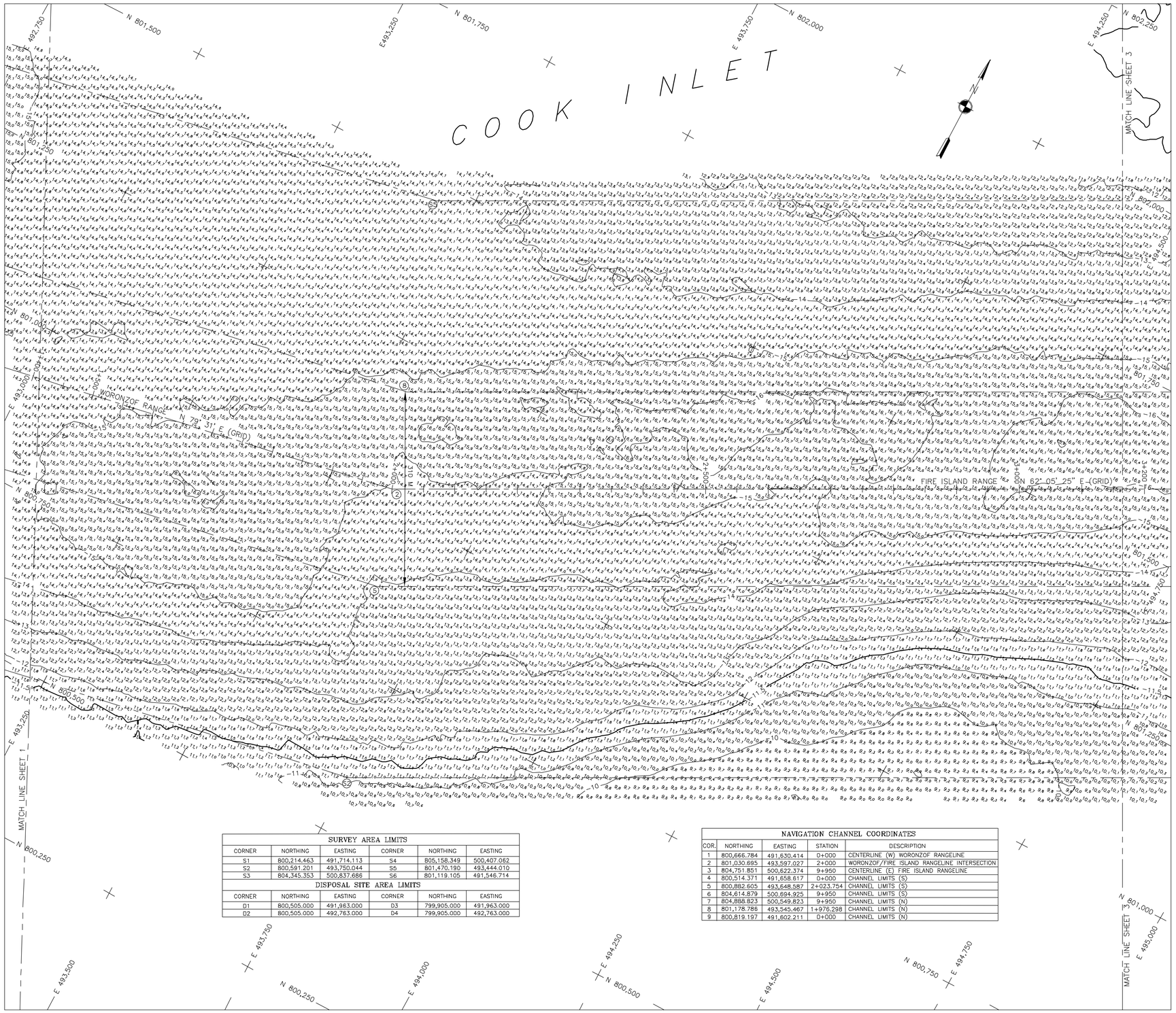
SURVEYED: AVK/SRC
DRAWN: LES/KML/KLW
CHECKED: KDW
SUBMITTED:

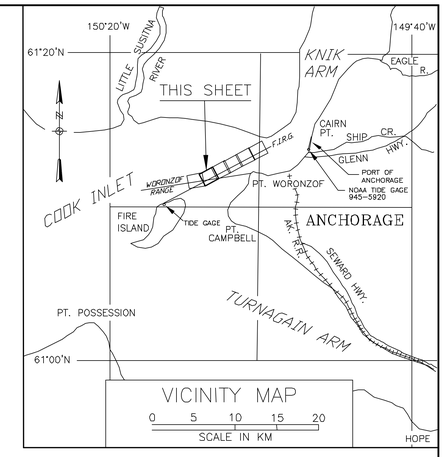
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
MAY 10-13, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 2227-05
SCALE: 1:2500
SHEET 1 OF 6

U. S. ARMY





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4. NO HORIZONTAL OR VERTICAL CONTROL WAS SET OR ESTABLISHED DURING THIS SURVEY.
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RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET	–	–	11.278	USCGS SBC IN PVMT

☆ NAVIGATION AIDS ☆

USCG No.	DESCRIPTION	NORTHING	EASTING
26410	FIRE ISLAND RANGE FRONT LIGHT	798726	489245
26415	FIRE ISLAND RANGE REAR LIGHT	798508	488833
26420	KNIK ARM SHOAL LIGHTED BUOY 5	802187	495179

VOLUME COMPUTATIONS

PROJECT DEPTH –11.5M MLLW – WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (–11.5m MLLW)	5080
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (–12.5' MLLW)	6522
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	11,602

SURVEY AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.082
S2	800,581.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714

DISPOSAL SITE AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
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NAVIGATION CHANNEL COORDINATES

COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
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8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACT NO. W911KB–04–D–0006–0009
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

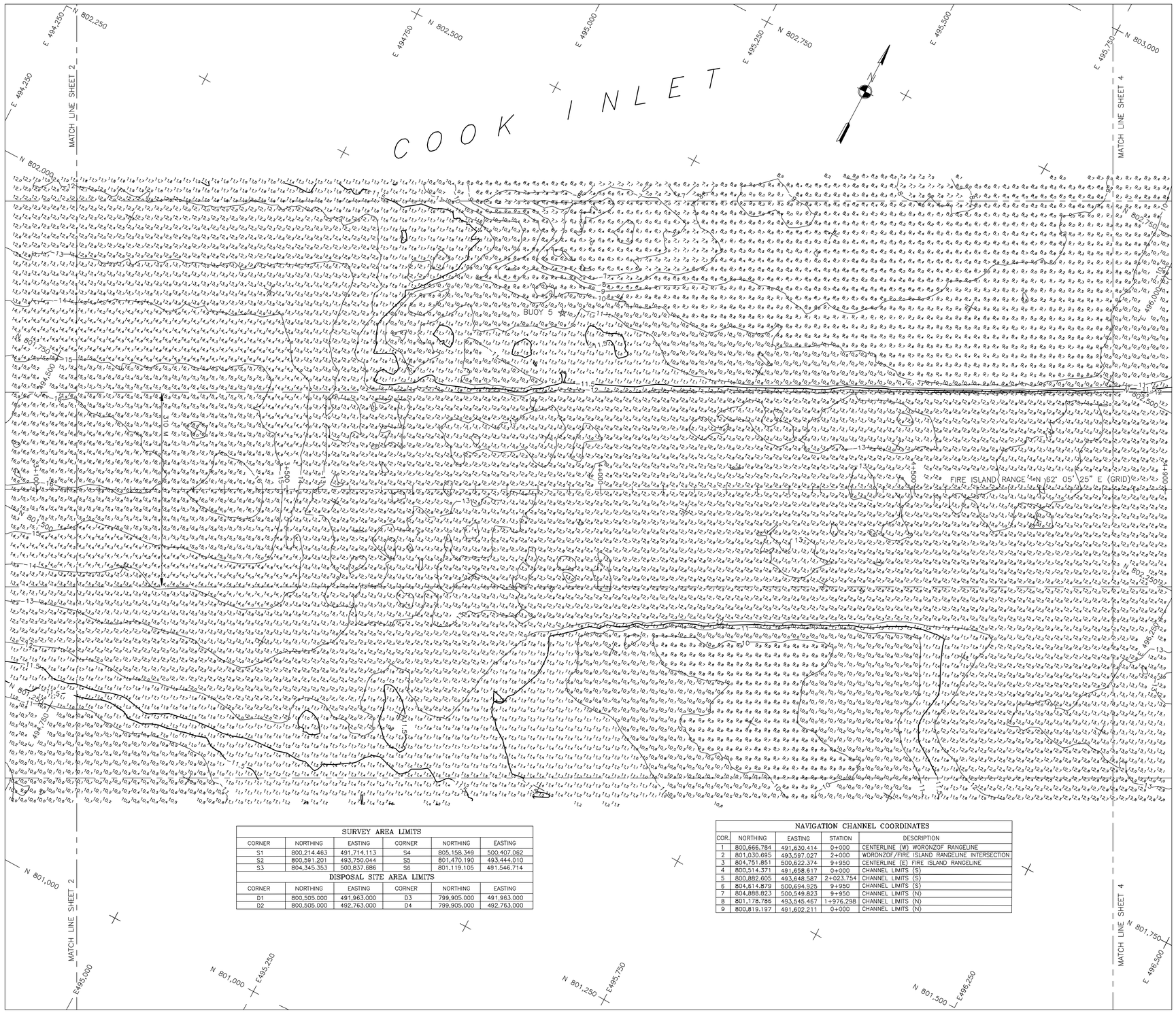
SURVEYED: AVK/SRC
DRAWN: LES/KML/KLW
CHECKED: KDW
SUBMITTED:

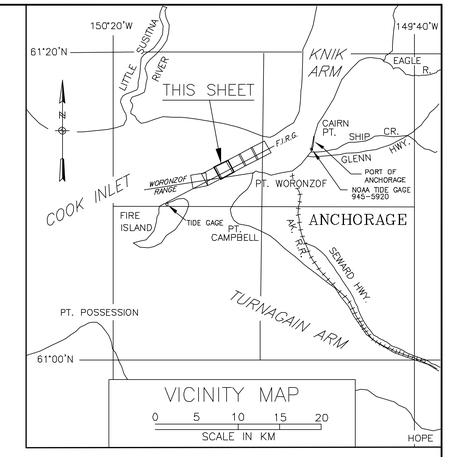
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
MAY 10–13, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–READINESS BRANCH
DATE:

SURVEY NO. 2227–05
SCALE: 1:2500
SHEET 2 OF 6

U. S. ARMY





NOTES:

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STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798942.998	502541.130		NGS SBC
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☆ NAVIGATION AIDS ☆

USCG No.	DESCRIPTION	NORTHING	EASTING
26410	FIRE ISLAND RANGE FRONT LIGHT	798726	489245
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26420	KNIK ARM SHOAL LIGHTED BUOY 5	802187	495179

VOLUME COMPUTATIONS

PROJECT DEPTH –11.5M MLLW – WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (–11.5m MLLW)	5080
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (–12.5' MLLW)	6522
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	11,602

SURVEY AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714

DISPOSAL SITE AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000

NAVIGATION CHANNEL COORDINATES

COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
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ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACT NO. W911KB–04–D–0006–0009
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

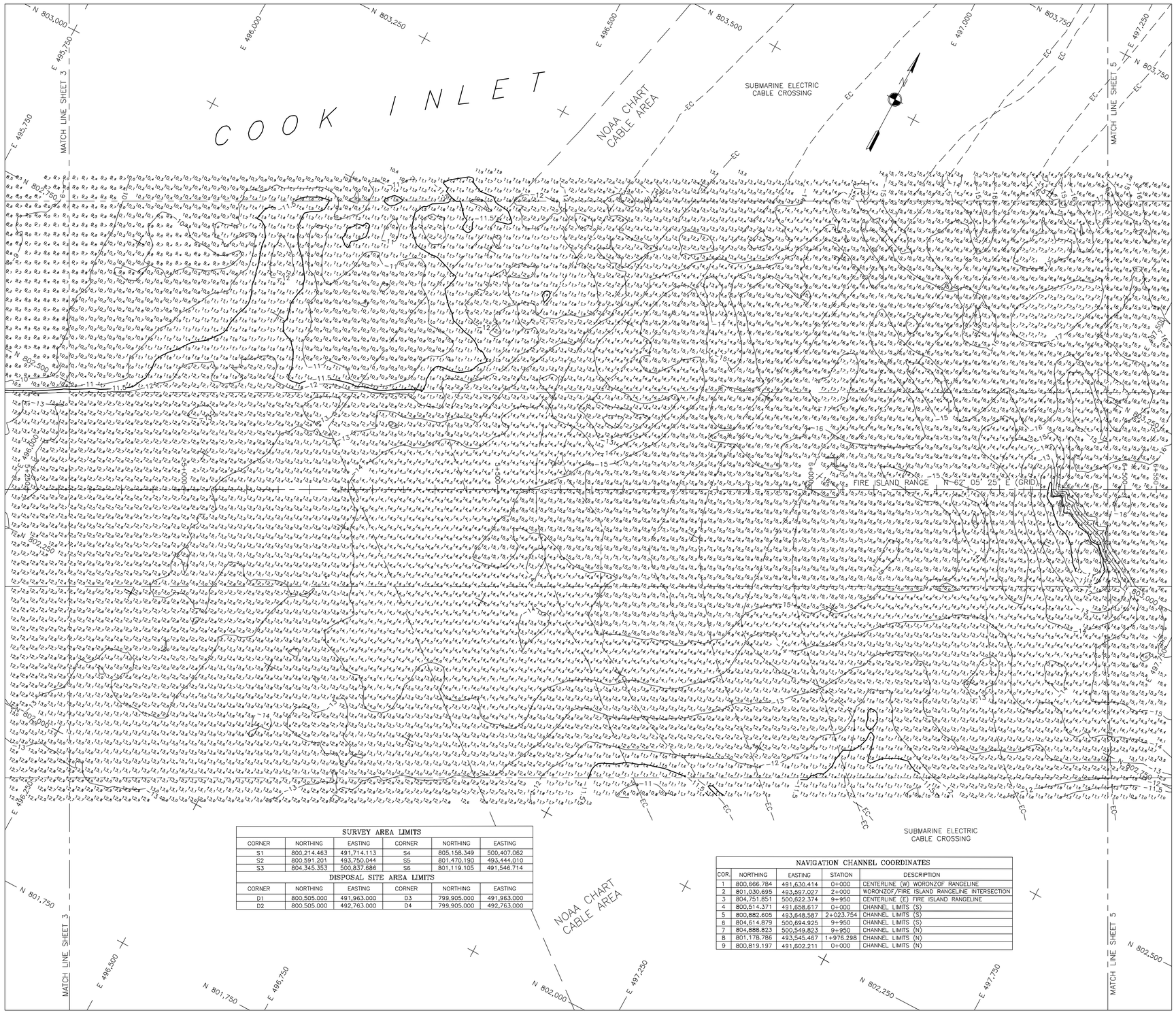
SURVEYED: AVK/SRC
DRAWN: LES/KML/KLW
CHECKED: KDW
SUBMITTED:

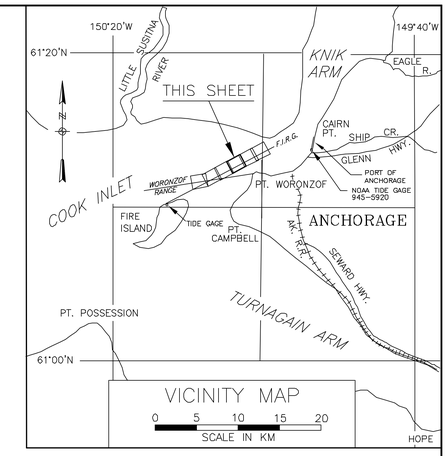
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
MAY 10–13, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–READINESS BRANCH
DATE:

SURVEY NO. 2227–05
SCALE: 1:2500
SHEET 3 OF 6

U. S. ARMY





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1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACTOR: TERRA SURVEYS, LLC
CONTRACT NO. W911KB–04–D–0006–0009
CITY: PALMER STATE: ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

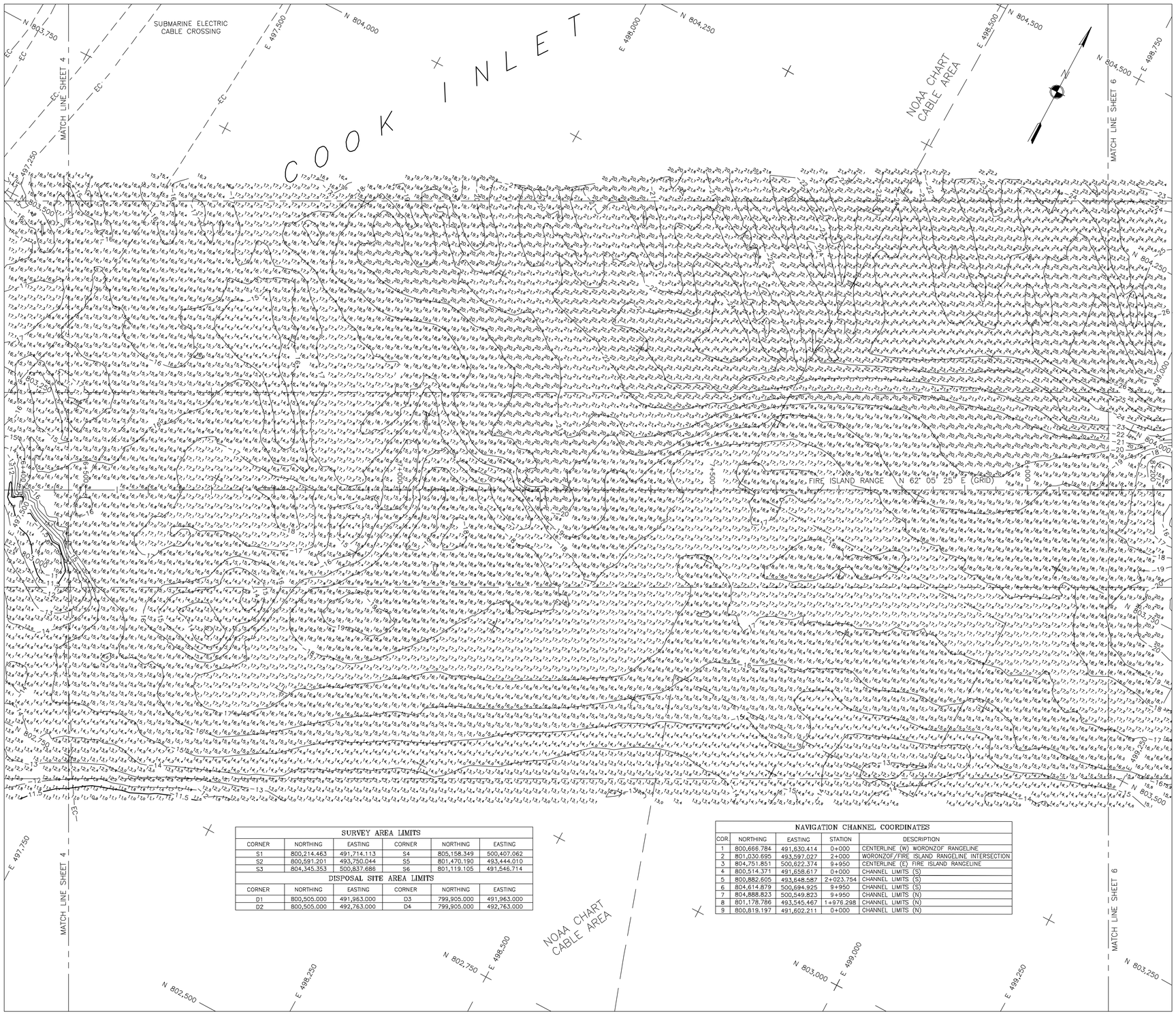
SURVEYED: AVK/SRC
DRAWN: LES/KML/KLW
CHECKED: KDW
SUBMITTED:

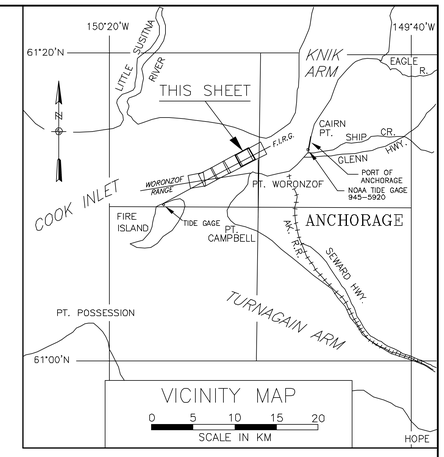
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
MAY 10–13, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–READINESS BRANCH
DATE:

SURVEY NO. 2227–05
SCALE: 1:2500
SHEET 4 OF 6

U. S. ARMY





NOTES:

1. HORIZONTAL DATUM IS THE ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4, NAD83 IN METERS.
2. VERTICAL DATUM IS MEAN-LOWER-LOW-WATER (MLLW=0.00m) IN METERS, BASED ON NOAA/NOS TIDAL DATUM ON THE 1960-1978 TIDAL EPOCH AT TIDE STATION "9455920" LOCATED AT THE PORT OF ANCHORAGE (SEE NOTE 6 BELOW).
3. SOUNDINGS ARE IN METERS AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. NO HORIZONTAL OR VERTICAL CONTROL WAS SET OR ESTABLISHED DURING THIS SURVEY.
5. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED MAY 10-13, 2005 USING A RESON 8125 MULTI-BEAM DEPTH SOUNDER WITH A 455kHZ, 120 DEGREE SWATH-WIDTH TRANSDUCER (240-1/2 DEGREE BEAM FLAT ARRAY). POSITIONING, VESSEL ATTITUDE AND TIDES WERE PROVIDED IN REAL-TIME USING AN APPLANIX POS-MV INERTIAL NAVIGATION SYSTEM OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 4000SSi RTK BASE RECIEVER SET AT 3" AL-CAP "AWWU 1994". SOUND VELOCITY WAS MEASURED AND APPLIED USING AN AML SV-PLUS SOUND VELOCITY METER DEPLOYED DURING THE SURVEY. REAL-TIME-KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS TIDAL BENCH MARK "TIDAL 16 1966" LOCATED AT NOAA / NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE (SEE NOTE 8). SURVEY DATA WAS COLLECTED USING QPS QINSY (V7.4) INTEGRATED SOFTWARE AND WAS PROCESSED USING CARIS "HIPS" (V5.4) SOFTWARE.
6. THE ELEVATION SHOWN FOR ALUMINUM CAP "AWWU 1994" IS SPECIFIC TO THIS PROJECT AND SHOULD NOT BE USED AS A BASIS OF VERTICAL DATUM FOR AREAS OUTSIDE OF THE COOK INLET NAVIGATION CHANNEL. THE ELEVATION REPRESENTS MEAN-LOWER-LOW-WATER AT THE NAVIGATION CHANNEL AND WAS DERIVED THROUGH COMPARISONS OF ZONED TIDE DATA (BASED ON THE NOAA/NOS TIDE STATION "9455920", LOCATED AT THE PORT OF ANCHORAGE), AND FROM HISTORICAL REDUNDANT MEASUREMENTS OF CERTAIN CROSS-SECTION DATA COMPARED TO PREVIOUS USACE PROJECT CONDITION SURVEYS. THE ELEVATION OF "AWWU 1994" IS 21.458m MLLW FOR THIS PROJECT.
7. THIS DRAWING IS INDICATIVE OF CONDITIONS AT THE TIME OF SURVEY.

△ CONTROL COORDINATES △

STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798942.998	502541.130		NGS SBC
AWWU	801415.521	498604.321	*	3" ALCAP (* SEE NOTE 6)
S. END	805982.939	505886.164	12.304	USACE SBC
TIDAL 16	–	–	12.305	USCGS SBC
BM 13	798786.275	489247.050	8.553	USCGS SBC IN ROCK
BM 12	–	–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET	–	–	11.278	USCGS SBC IN PVMT

☆ NAVIGATION AIDS ☆

USCG No.	DESCRIPTION	NORTHING	EASTING
26410	FIRE ISLAND RANGE FRONT LIGHT	798726	489245
26415	FIRE ISLAND RANGE REAR LIGHT	798508	488833
26420	KNIK ARM SHOAL LIGHTED BUOY 5	802187	495179

VOLUME COMPUTATIONS

PROJECT DEPTH -11.5M MLLW - WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (-11.5m MLLW)	5080
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (-12.5' MLLW)	6522
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	11,602

SURVEY AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714

DISPOSAL SITE AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000

NAVIGATION CHANNEL COORDINATES

COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACT NO. W911KB-04-D-0006-0009
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

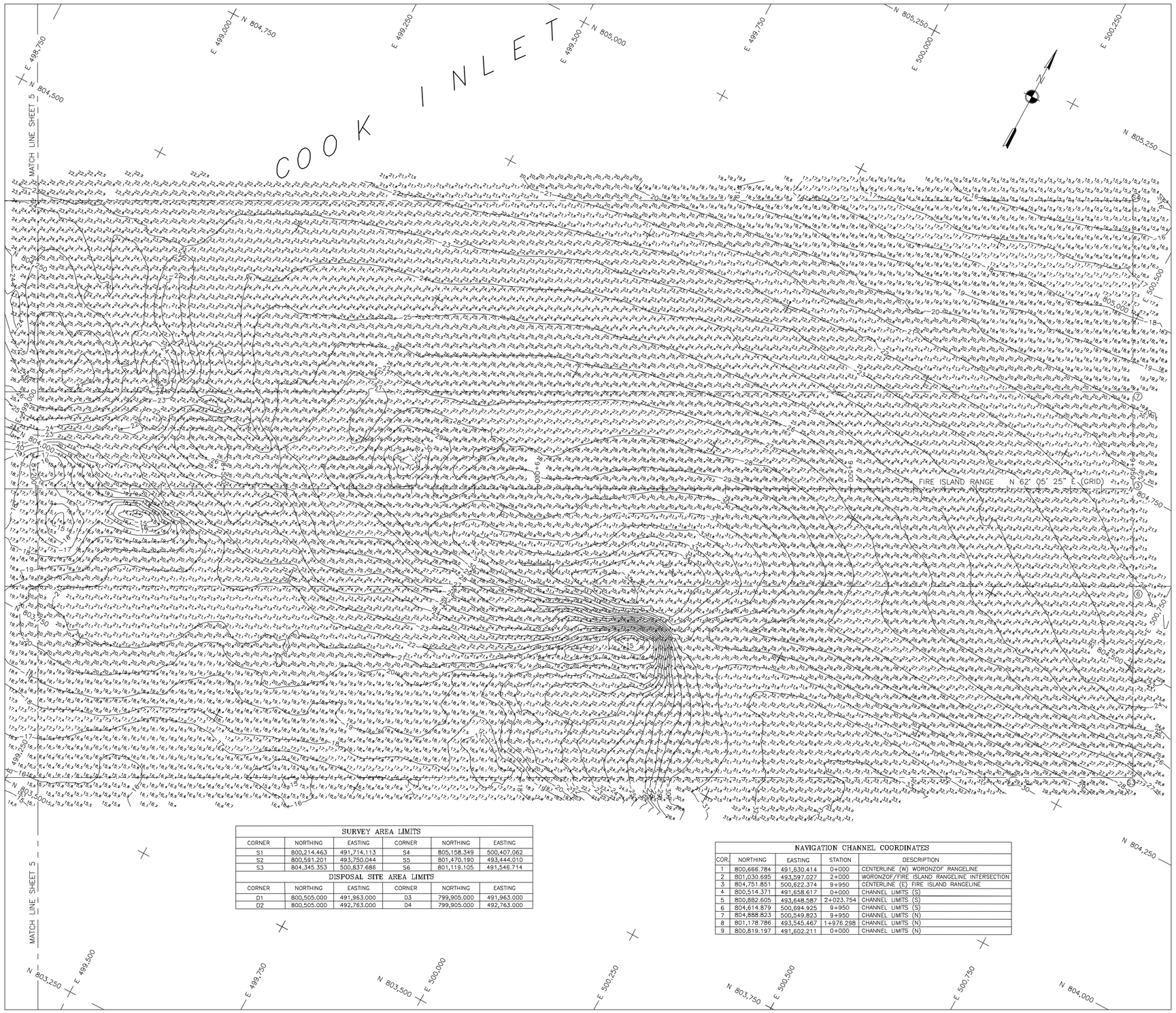
SURVEYED: AVK/SRC
DRAWN: LES/KML/KLW
CHECKED: KDW
SUBMITTED:

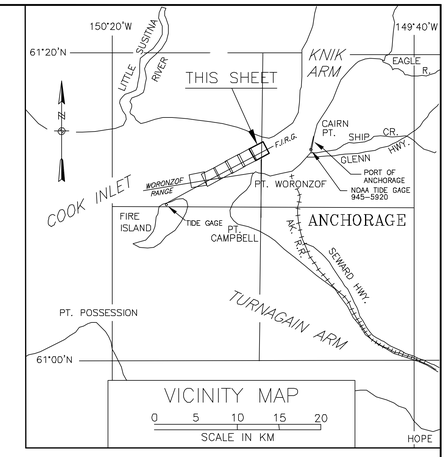
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
MAY 10-13, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 2227-05
SCALE: 1:2500
SHEET 5 OF 6

U. S. ARMY





NOTES:

1. HORIZONTAL DATUM IS THE ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4, NAD83 IN METERS.
2. VERTICAL DATUM IS MEAN-LOWER-LOW-WATER (MLLW=0.00m) IN METERS, BASED ON NOAA/NOS TIDAL DATUM ON THE 1960-1978 TIDAL EPOCH AT TIDE STATION "9455920" LOCATED AT THE PORT OF ANCHORAGE (SEE NOTE 6 BELOW).
3. SOUNDINGS ARE IN METERS AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. NO HORIZONTAL OR VERTICAL CONTROL WAS SET OR ESTABLISHED DURING THIS SURVEY.
5. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED MAY 10-13, 2005 USING A RESON 8125 MULTI-BEAM DEPTH SOUNDER WITH A 455kHZ, 120 DEGREE SWATH-WIDTH TRANSDUCER (240-1/2 DEGREE BEAM FLAT ARRAY). POSITIONING, VESSEL ATTITUDE AND TIDES WERE PROVIDED IN REAL-TIME USING AN APPLANIX POS-MV INERTIAL NAVIGATION SYSTEM OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 4000SSI RTK BASE RECIEVER SET AT 3" AL-CAP "AWWU 1994". SOUND VELOCITY WAS MEASURED AND APPLIED USING AN AML SV-PLUS SOUND VELOCITY METER DEPLOYED DURING THE SURVEY. REAL-TIME-KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS TIDAL BENCH MARK "TIDAL 16 1966" LOCATED AT NOAA / NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE (SEE NOTE 6). SURVEY DATA WAS COLLECTED USING QPS QINSY (V7.4) INTEGRATED SOFTWARE AND WAS PROCESSED USING CARIS "HIPS" (V5.4) SOFTWARE.
6. THE ELEVATION SHOWN FOR ALUMINUM CAP "AWWU 1994" IS SPECIFIC TO THIS PROJECT AND SHOULD NOT BE USED AS A BASIS OF VERTICAL DATUM FOR AREAS OUTSIDE OF THE COOK INLET NAVIGATION CHANNEL. THE ELEVATION REPRESENTS MEAN-LOWER-LOW-WATER AT THE NAVIGATION CHANNEL AND WAS DERIVED THROUGH COMPARISONS OF ZONED TIDE DATA (BASED ON THE NOAA/NOS TIDE STATION "9455920", LOCATED AT THE PORT OF ANCHORAGE), AND FROM HISTORICAL REDUNDANT MEASUREMENTS OF CERTAIN CROSS-SECTION DATA COMPARED TO PREVIOUS USACE PROJECT CONDITION SURVEYS. THE ELEVATION OF "AWWU 1994" IS 21.458m MLLW FOR THIS PROJECT.
7. THIS DRAWING IS INDICATIVE OF CONDITIONS AT THE TIME OF SURVEY.

CONTROL COORDINATES

STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798942.998	502541.130		NGS SBC
AWWU	801415.521	498604.321	*	3" ALCAP (* SEE NOTE 6)
S. END	805982.939	505886.164	12.304	USACE SBC
TIDAL 16	–	–	12.305	USCGS SBC
BM 13	798786.275	489247.050	8.553	USCGS SBC IN ROCK
BM 12	–	–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET	–	–	11.278	USCGS SBC IN PVMT

NAVIGATION AIDS

USCG No.	DESCRIPTION	NORTHING	EASTING
26410	FIRE ISLAND RANGE FRONT LIGHT	798726	489245
26415	FIRE ISLAND RANGE REAR LIGHT	798508	488833
26420	KNIK ARM SHOAL LIGHTED BUOY 5	802187	495179

VOLUME COMPUTATIONS

PROJECT DEPTH -11.5M MLLW - WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (-11.5m MLLW)	5080
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (-12.5' MLLW)	6522
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	11,602

SURVEY AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714

DISPOSAL SITE AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000

NAVIGATION CHANNEL COORDINATES

COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACTOR: TERRA SURVEYS, LLC
CONTRACT NO. W911KB-04-D-0006-0009
CITY: PALMER STATE: ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

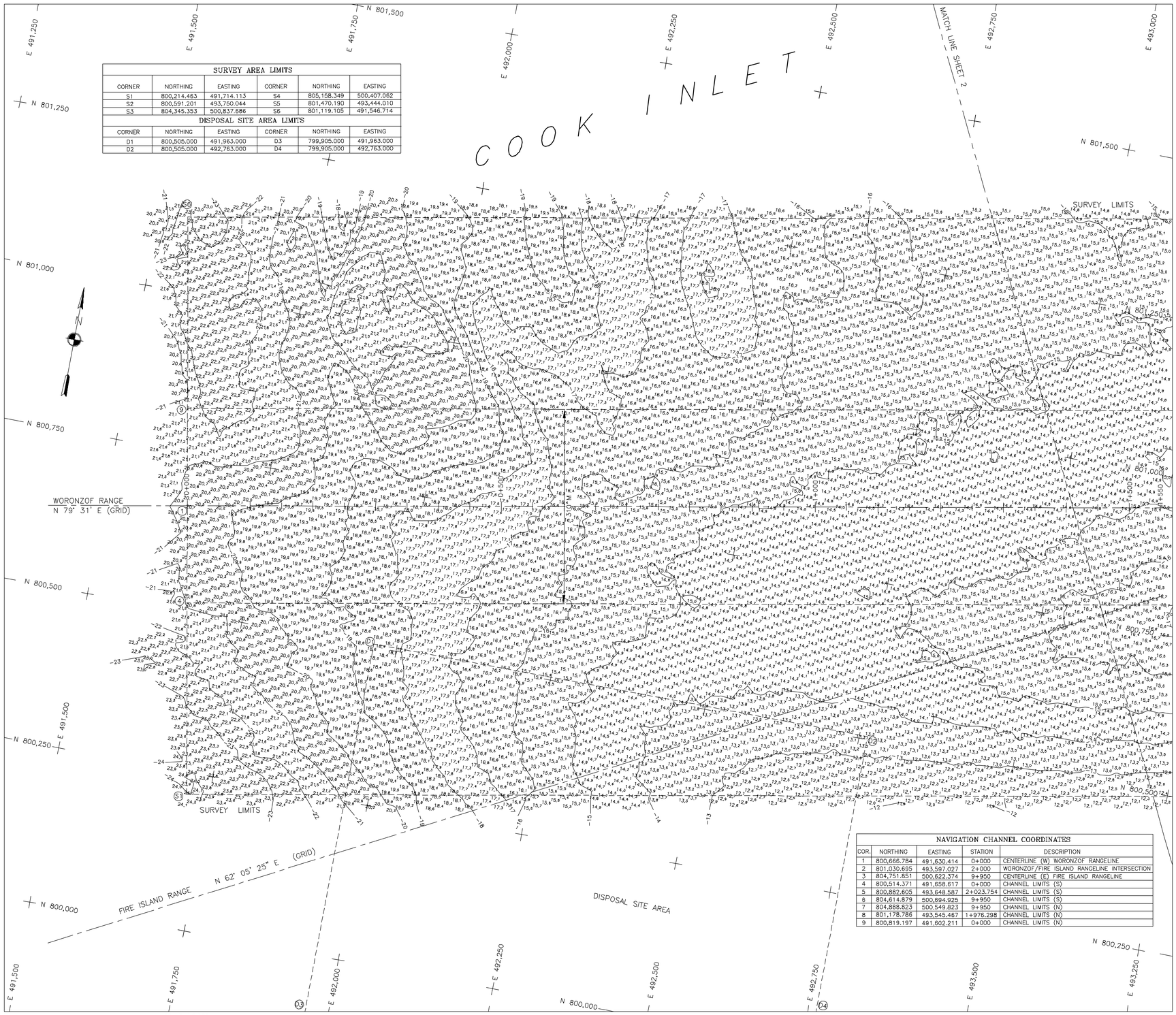
SURVEYED: AVK/SRC
DRAWN: LES/KML/KLW
CHECKED: KDW
SUBMITTED:

ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
MAY 10-13, 2005

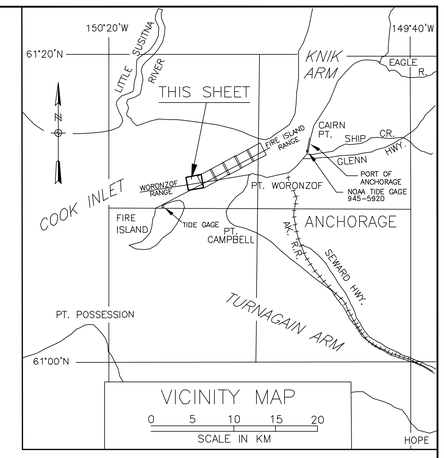
RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 2227-05
SCALE: 1:2500
SHEET 6 OF 6

U. S. ARMY



SURVEY AREA LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714
DISPOSAL SITE AREA LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000



VICINITY MAP

0 5 10 15 20

SCALE IN KM

NOTES:

1. HORIZONTAL DATUM IS THE ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4, NAD83 IN METERS, HOLDING USACE SBC "N. END 1978" AS N 806,701.201, E 506,146.537 AND USACE SBC "S. END 1978" AS N 805,983.719, E 505,885.335.
2. VERTICAL DATUM IS MEAN–LOWER–LOW–WATER (MLLW=0.00m) IN METERS, BASED ON NOAA/NOS TIDAL DATUM ON THE 1960–1978 TIDAL EPOCH AT TIDE STATION "9455920" LOCATED AT THE PORT OF ANCHORAGE (SEE NOTE 6 BELOW).
3. SOUNDINGS ARE IN METERS AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. NO HORIZONTAL OR VERTICAL CONTROL WAS SET OR ESTABLISHED DURING THIS SURVEY.
5. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED SEPTEMBER 20–28, 2005 USING AN ODOM ECHOSCAN MULTI–BEAM DEPTH SOUNDER WITH A 200kHZ, 90 DEGREE SWATH–WIDTH TRANSDUCER (30 – 3 DEGREE BEAM ARRAY). POSITIONING, VESSEL ATTITUDE AND TIDES WERE PROVIDED IN REAL–TIME USING A CODA OCTOPUS F–180–1 INERTIAL ATTITUDE AND POSITIONING SYSTEM OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 4000SSI RTK GPS BASE RECEIVER SET AT "TERRA–9 2005". SOUND VELOCITY WAS MEASURED AND APPLIED USING AN AML SV–PLUS SOUND VELOCITY METER DEPLOYED DURING THE SURVEY. REAL–TIME–KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS TIDAL BENCH MARK "TIDAL 16 1966" LOCATED AT NOAA / NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE (SEE NOTE 6). SURVEY DATA WAS COLLECTED USING QPS QINSY (V7.4) INTEGRATED SOFTWARE AND WAS PROCESSED USING CARIS "HIPS" (V5.4) SOFTWARE.
6. THE ELEVATION SHOWN FOR ALUMINUM CAP "AWWU 1994" IS SPECIFIC TO THIS PROJECT AND SHOULD NOT BE USED AS A BASIS OF VERTICAL DATUM FOR AREAS OUTSIDE OF THE COOK INLET NAVIGATION CHANNEL. THE ELEVATION REPRESENTS MEAN–LOWER–LOW–WATER AT THE NAVIGATION CHANNEL AND WAS DERIVED THROUGH COMPARISONS OF ZONED TIDE DATA (BASED ON THE NOAA/NOS TIDE STATION "9455920", LOCATED AT THE PORT OF ANCHORAGE), AND FROM HISTORICAL REDUNDANT MEASUREMENTS OF CERTAIN CROSS–SECTION DATA COMPARED TO PREVIOUS USACE PROJECT CONDITION SURVEYS. THE ELEVATION OF "AWWU 1994" IS 21.458m MLLW FOR THIS PROJECT.
7. THIS DRAWING IS INDICATIVE OF CONDITIONS AT THE TIME OF SURVEY.

SURVEYOR'S CERTIFICATE

STATE OF ALASKA 49TH KARL D. WOODS No.10950 REGISTERED PROFESSIONAL LAND SURVEYOR

I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA AND THAT THIS PLAT REPRESENTS A HYDROGRAPHIC SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION. THE ELEVATIONS SHOWN HEREON DEPICT THE DEPTHS AS SURVEYED SEPTEMBER 20–28, 2005 TO THE BEST OF MY KNOWLEDGE AND BELIEF.

KARL D. WOODS, P.L.S. DATE
REGISTRATION NO. LS 10950

NAVIGATION CHANNEL COORDINATES				
COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

△ CONTROL COORDINATES △				
STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798,942.998	502,541.130		NGS SBC
AWWU 1994	801,415.521	498,604.321	*	3" ALCAP (* SEE NOTE 6)
S. END 1978	805,983.719	505,885.335	12.335	USACE SBC
N. END 1978	806,701.201	506,146.537	12.616	USCGS SBC
TERRA–9 2005	806,195.329	506,019.017	24.500	USCGS SBC
TIDAL 16 1966	–	–	12.355	USCGS SBC
BM 13	798,786.275	489,247.050	8.553	USCGS SBC IN ROCK
BM 12	–	–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET 1966	–	–	11.320	USCGS SBC IN PVMT

VOLUME COMPUTATIONS	
PROJECT DEPTH –11.5M MLLW– WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (–11.5m MLLW)	1,439
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (–12.5m MLLW)	2,285
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	3,724

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACT NO. W911KB–04–D–0006–0009
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

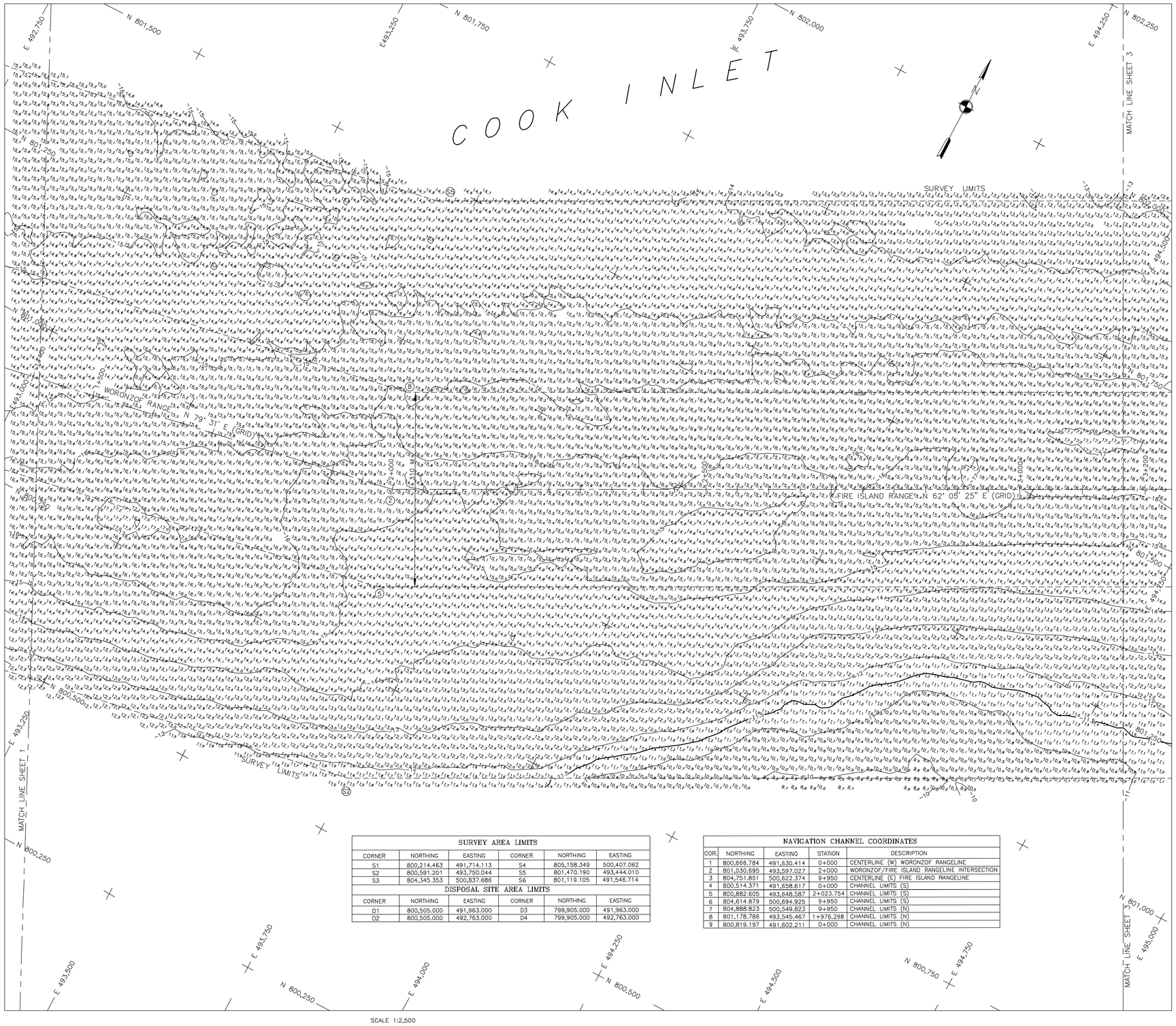
SURVEYED: GCY/AMC
DRAWN: LES/AMC
CHECKED: KDW
SUBMITTED:

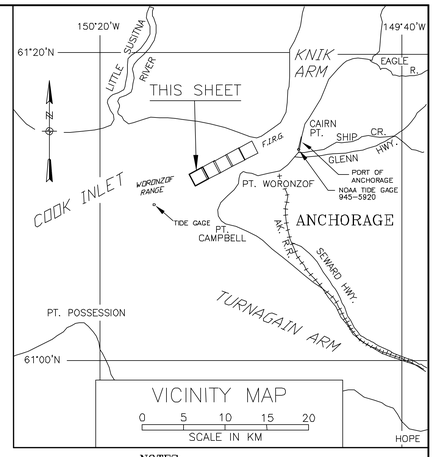
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
SEPTEMBER 20–28, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–READINESS BRANCH
DATE:

SURVEY NO. 2285–05
SCALE: 1:2500
SHEET 1 OF 6

U. S. ARMY





NOTES:

1. HORIZONTAL DATUM IS THE ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4, NAD83 IN METERS, HOLDING USACE SBC "N. END 1978" AS N 806,701.201, E 506,146.537 AND USACE SBC "S. END 1978" AS N 805,983.719, E 505,885.335.
2. VERTICAL DATUM IS MEAN–LOWER–LOW–WATER (MLLW=0.00m) IN METERS, BASED ON NOAA/NOS TIDAL DATUM ON THE 1960–1978 TIDAL EPOCH AT TIDE STATION "9455920" LOCATED AT THE PORT OF ANCHORAGE (SEE NOTE 6 BELOW).
3. SOUNDINGS ARE IN METERS AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. NO HORIZONTAL OR VERTICAL CONTROL WAS SET OR ESTABLISHED DURING THIS SURVEY.
5. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED SEPTEMBER 20–28, 2005 USING AN ODDM ECHOSCAN MULTI–BEAM DEPTH SOUNDER WITH A 200kHZ, 90 DEGREE SWATH–WIDTH TRANSDUCER (30 – 3 DEGREE BEAM ARRAY). POSITIONING, VESSEL ATTITUDE AND TIDES WERE PROVIDED IN REAL–TIME USING A CODA OCTOPUS F–180–1 INERTIAL ATTITUDE AND POSITIONING SYSTEM OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 4000SSI RTK GPS BASE RECEIVER SET AT "TERRA–9 2005". SOUND VELOCITY WAS MEASURED AND APPLIED USING AN AML SV–PLUS SOUND VELOCITY METER DEPLOYED DURING THE SURVEY. REAL–TIME–KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS TIDAL BENCH MARK "TIDAL 16 1966" LOCATED AT NOAA / NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE (SEE NOTE 6). SURVEY DATA WAS COLLECTED USING QPS QINSY (V7.4) INTEGRATED SOFTWARE AND WAS PROCESSED USING CARIS "HIPS" (V5.4) SOFTWARE.
6. THE ELEVATION SHOWN FOR ALUMINUM CAP "AWWU 1994" IS SPECIFIC TO THIS PROJECT AND SHOULD NOT BE USED AS A BASIS OF VERTICAL DATUM FOR AREAS OUTSIDE OF THE COOK INLET NAVIGATION CHANNEL. THE ELEVATION REPRESENTS MEAN–LOWER–LOW–WATER AT THE NAVIGATION CHANNEL AND WAS DERIVED THROUGH COMPARISONS OF ZONED TIDE DATA (BASED ON THE NOAA/NOS TIDE STATION "9455920", LOCATED AT THE PORT OF ANCHORAGE), AND FROM HISTORICAL REDUNDANT MEASUREMENTS OF CERTAIN CROSS–SECTION DATA COMPARED TO PREVIOUS USACE PROJECT CONDITION SURVEYS. THE ELEVATION OF "AWWU 1994" IS 21.458m MLLW FOR THIS PROJECT.
7. THIS DRAWING IS INDICATIVE OF CONDITIONS AT THE TIME OF SURVEY.

CONTROL COORDINATES

STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798,942.998	502,541.130		NGS SBC
AWWU 1994	801,415.521	498,604.321	*	3" ALCAP (* SEE NOTE 6)
S. END 1978	805,983.719	505,885.335	12.335	USACE SBC
N. END 1978	806,701.201	506,146.537	12.616	USCGS SBC
TERRA–9 2005	806,195.329	506,019.017	24.500	USCGS SBC
TIDAL 16 1966	–	–	12.355	USCGS SBC
BM 13	798,786.275	489,247.050	8.553	USCGS SBC IN ROCK
BM 12	–	–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET 1966	–	–	11.320	USCGS SBC IN PVMT

VOLUME COMPUTATIONS

PROJECT DEPTH –11.5M MLLW– WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (–11.5m MLLW)	1,439
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (–12.5m MLLW)	2,285
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	3,724

NAVIGATION AIDS

USCG No.	DESCRIPTION	NORTHING	EASTING
26410	FIRE ISLAND RANGE FRONT LIGHT	798726	489245
26415	FIRE ISLAND RANGE REAR LIGHT	798508	488833
26420	KNIK ARM SHOAL LIGHTED BUOY 5	802187	495179

SURVEY AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714

DISPOSAL SITE AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000

NAVIGATION CHANNEL COORDINATES

COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACT NO. W911KB–04–D–0006–0009
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

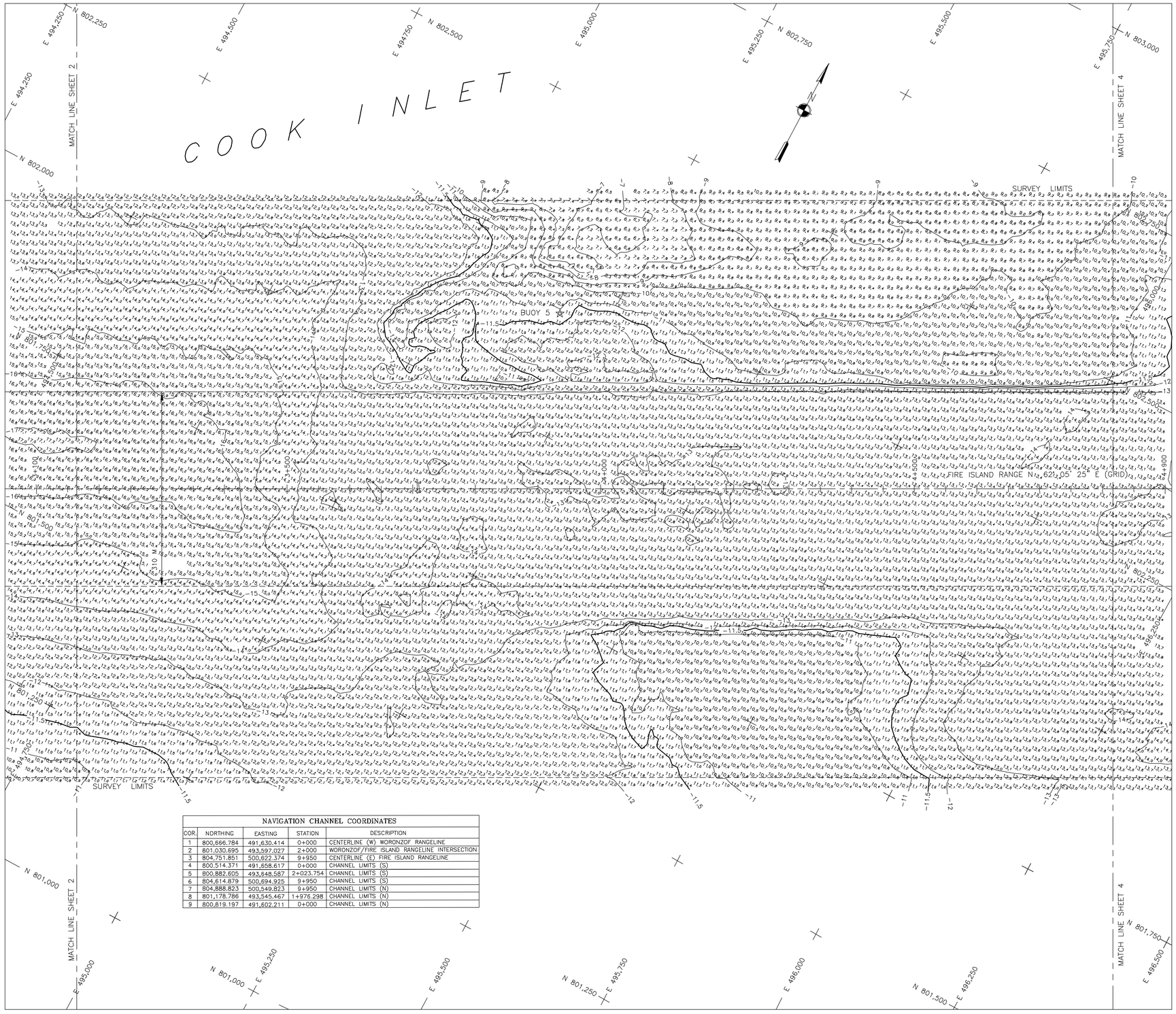
ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: GCY/AMC
DRAWN: LES/AMC
CHECKED: KDW
SUBMITTED:

ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
SEPTEMBER 20–28, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–READINESS BRANCH
DATE:

SURVEY NO. 2285–05
SCALE: 1:2500
SHEET 2 OF 6



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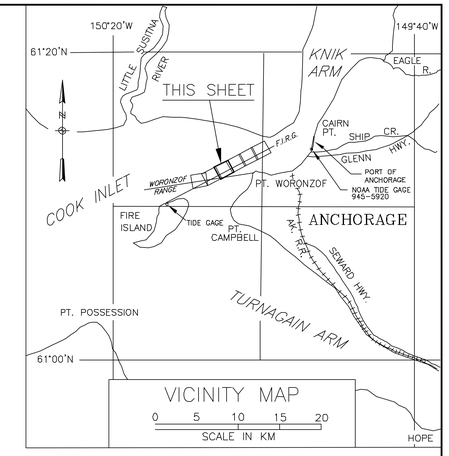
ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS



NOTES:

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3. SOUNDINGS ARE IN METERS AND ARE MINUS UNLESS OTHERWISE INDICATED.
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5. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED SEPTEMBER 20-28, 2005 USING AN ODOM ECHOSCAN MULTI-BEAM DEPTH SOUNDER WITH A 200kHZ, 90 DEGREE SWATH-WIDTH TRANSDUCER (30 - 3 DEGREE BEAM ARRAY). POSITIONING, VESSEL ATTITUDE AND TIDES WERE PROVIDED IN REAL-TIME USING A CODA OCTOPUS F-180-1 INERTIAL ATTITUDE AND POSITIONING SYSTEM OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 4000SSI RTK GPS BASE RECEIVER SET AT "TERRA-9 2005". SOUND VELOCITY WAS MEASURED AND APPLIED USING AN AML SV-PLUS SOUND VELOCITY METER DEPLOYED DURING THE SURVEY. REAL-TIME-KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS TIDAL BENCH MARK "TIDAL 16 1966" LOCATED AT NOAA / NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE (SEE NOTE 6). SURVEY DATA WAS COLLECTED USING QPS QINSY (V7.4) INTEGRATED SOFTWARE AND WAS PROCESSED USING CARIS "HIPS" (V5.4) SOFTWARE.
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SURVEY AREA LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
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DISPOSAL SITE AREA LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
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BM 12	–	–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
ND 15 RESET 1966	–	–	11.320	USCGS SBC IN PVMT

VOLUME COMPUTATIONS	
PROJECT DEPTH -11.5M MLLW- WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (-11.5m MLLW)	1,439
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (-12.5m MLLW)	2,285
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	3,724

CONTRACT NO. W911KB-04-D-0006-0009
CONTRACTOR TERRA SURVEYS, LLC
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

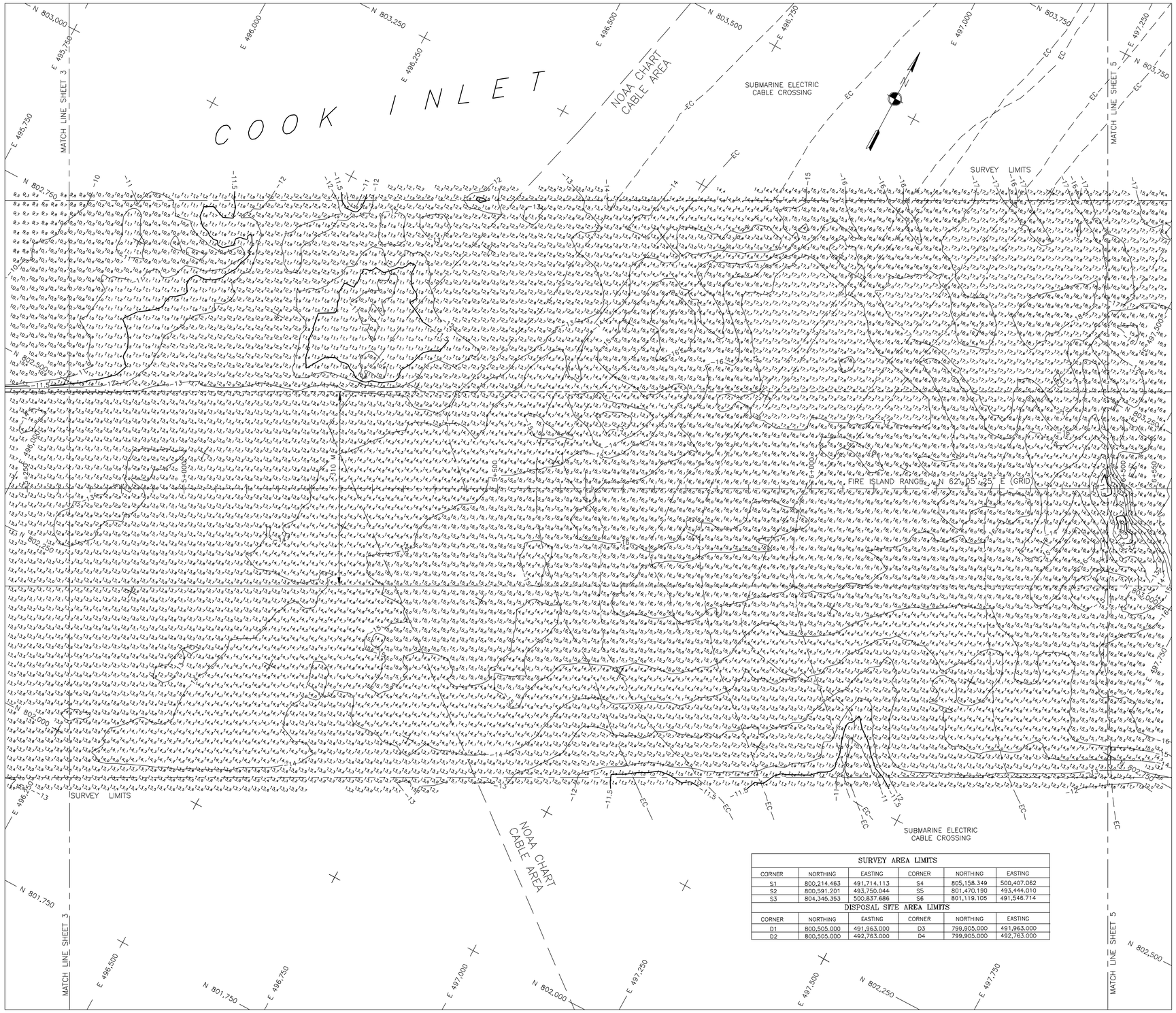
SURVEYED: GCY/AMC
DRAWN: LES
CHECKED: KDW
SUBMITTED:

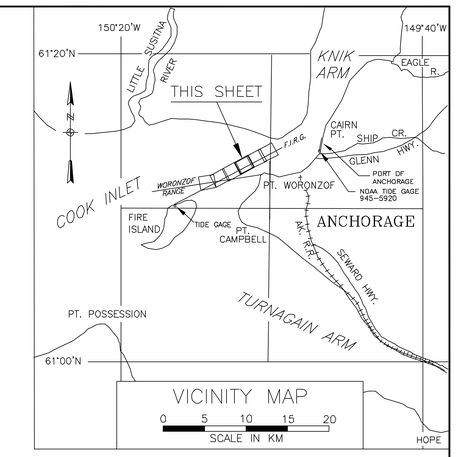
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
SEPTEMBER 20-28, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 2285-05
SCALE: 1:2500
SHEET 3 OF 6

U. S. ARMY





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7. THIS DRAWING IS INDICATIVE OF CONDITIONS AT THE TIME OF SURVEY.

NAVIGATION CHANNEL COORDINATES

COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,866.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
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9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

△ CONTROL COORDINATES △

STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798,942.998	502,541.130		NGS SBC
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TIDAL 16 1966	–	–	12.355	USCGS SBC
BM 13	798,786.275	489,247.050	8.553	USCGS SBC IN ROCK
BM 12	–	–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET 1966	–	–	11.320	USCGS SBC IN PVMT

VOLUME COMPUTATIONS

PROJECT DEPTH –11.5M MLLW– WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (–11.5m MLLW)	1,439
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (–12.5m MLLW)	2,285
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	3,724

SURVEY AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.180	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714

DISPOSAL SITE AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000

SCALE 1:2,500

0 25 50 75 100 150 200 250 375 METERS

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACT NO. W911KB–04–D–0006–0009

CONTRACTOR TERRA SURVEYS, LLC

CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: GCY/AMC
DRAWN: LES/AMC
CHECKED: KDW
SUBMITTED:

ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
SEPTEMBER 20–28, 2005

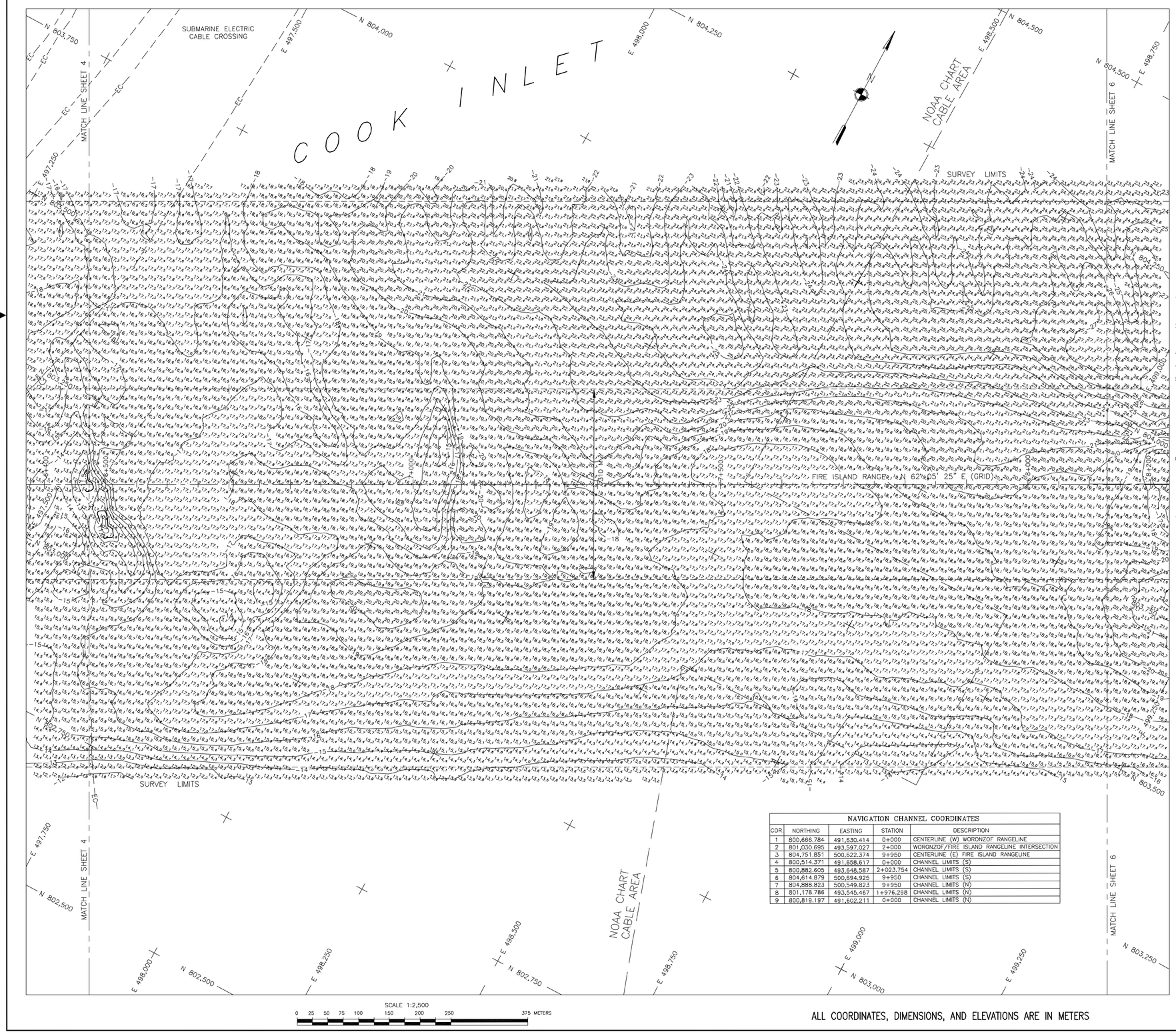
RECOMMENDED: PROJECT MANAGER | APPROVED: CHIEF OPERATIONS–READINESS BRANCH | DATE:

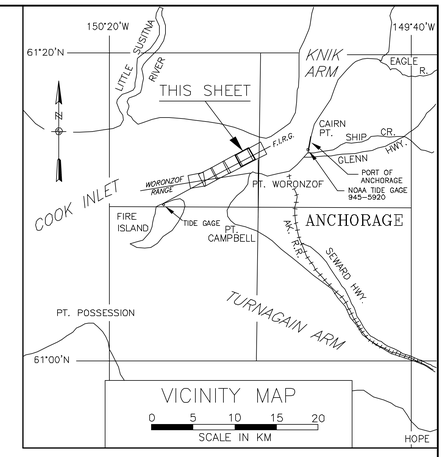
SURVEY NO. 2285–05

SCALE: 1:2500

SHEET 4 OF 6

U. S. ARMY





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COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
3	804,751.851	500,622.374	9+950	CENTERLINE (E) FIRE ISLAND RANGELINE
4	800,514.371	491,658.617	0+000	CHANNEL LIMITS (S)
5	800,882.605	493,648.587	2+023.754	CHANNEL LIMITS (S)
6	804,614.879	500,694.925	9+950	CHANNEL LIMITS (S)
7	804,888.823	500,549.823	9+950	CHANNEL LIMITS (N)
8	801,178.786	493,545.467	1+976.298	CHANNEL LIMITS (N)
9	800,819.197	491,602.211	0+000	CHANNEL LIMITS (N)

ALL COORDINATES, DIMENSIONS, AND ELEVATIONS ARE IN METERS

CONTRACTOR: TERRA SURVEYS, LLC
CITY: PALMER STATE: ALASKA
CONTRACT NO. W911KB–04–D–0006–0009

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

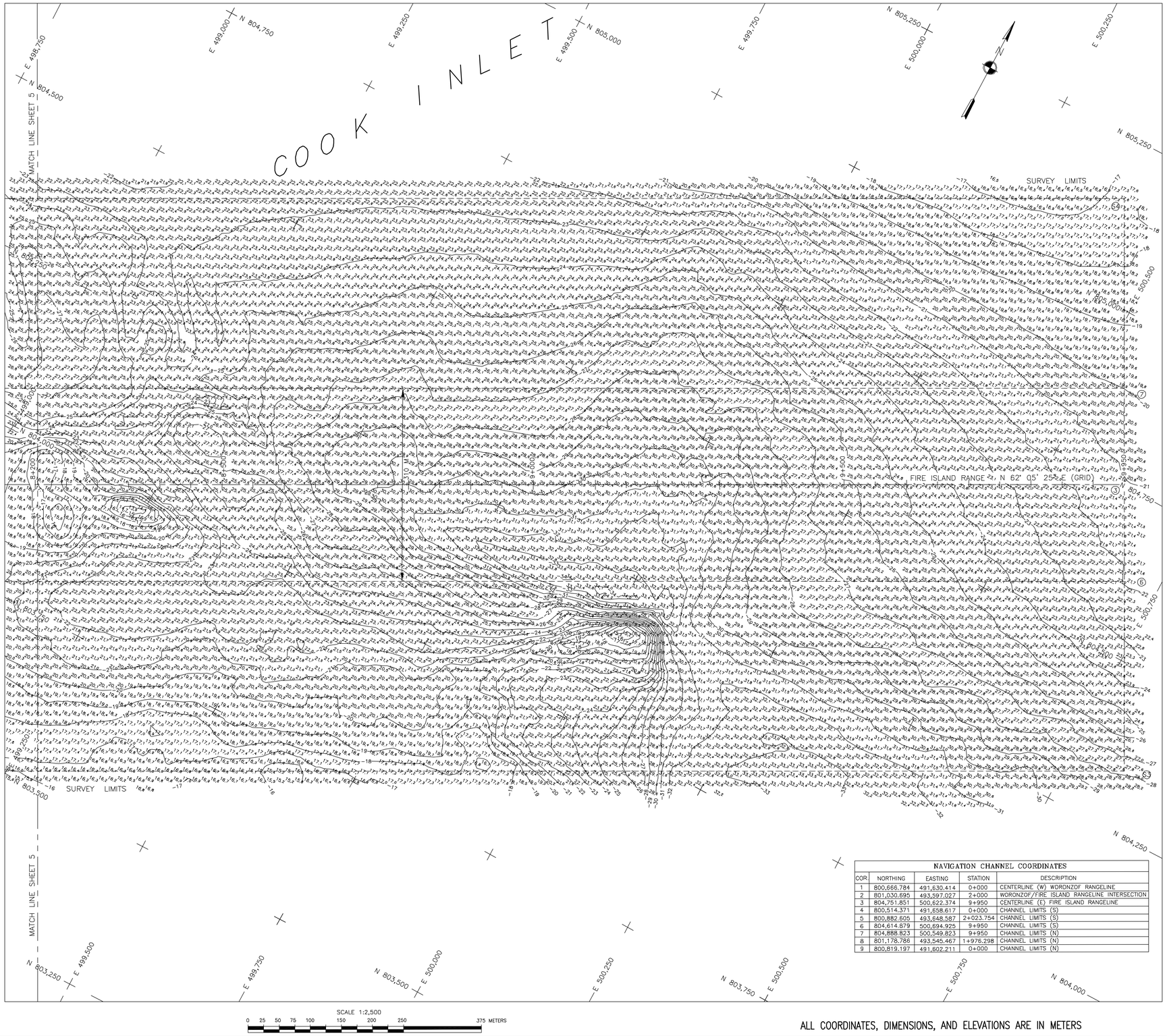
SURVEYED: GCY/AMC
DRAWN: LES/AMC
CHECKED: KDW
SUBMITTED:

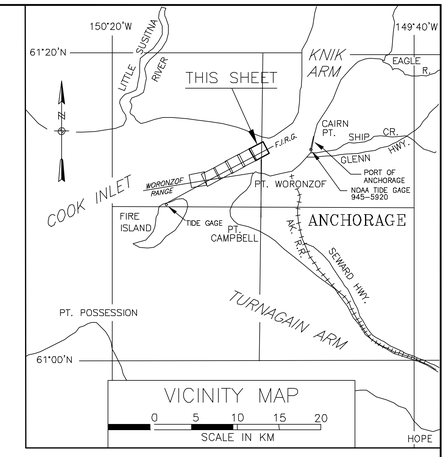
ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
SEPTEMBER 20–28, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS–REGIONAL BRANCH
DATE:

SURVEY NO. 2285–05
SCALE: 1:2500
SHEET 5 OF 6

U. S. ARMY





NOTES:

1. HORIZONTAL DATUM IS THE ALASKA STATE PLANE COORDINATE SYSTEM, ZONE 4, NAD83 IN METERS, HOLDING USACE SBC "N. END 1978" AS N 806,701.201, E 506,146.537 AND USACE SBC "S. END 1978" AS N 805,983.719, E 505,885.335.
2. VERTICAL DATUM IS MEAN-LOWER-LOW-WATER (MLLW=0.00m) IN METERS, BASED ON NOAA/NOS TIDAL DATUM ON THE 1960-1978 TIDAL EPOCH AT TIDE STATION "9455920" LOCATED AT THE PORT OF ANCHORAGE (SEE NOTE 6 BELOW).
3. SOUNDINGS ARE IN METERS AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. NO HORIZONTAL OR VERTICAL CONTROL WAS SET OR ESTABLISHED DURING THIS SURVEY.
5. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED SEPTEMBER 20-28, 2005 USING AN ODOM ECHOSCAN MULTI-BEAM DEPTH SOUNDER WITH A 200kHZ, 90 DEGREE SWATH-WIDTH TRANSDUCER (30 - 3 DEGREE BEAM ARRAY). POSITIONING, VESSEL ATTITUDE AND TIDES WERE PROVIDED IN REAL-TIME USING A CODA OCTOPUS F-180-1 INERTIAL ATTITUDE AND POSITIONING SYSTEM OPERATING ON KINEMATIC GPS CORRECTIONS BROADCAST FROM A TRIMBLE 4000SSI RTK GPS BASE RECEIVER SET AT "TERRA-9 2005". SOUND VELOCITY WAS MEASURED AND APPLIED USING AN AML SV-PLUS SOUND VELOCITY METER DEPLOYED DURING THE SURVEY. REAL-TIME-KINEMATIC HEIGHT VALUES WERE CALIBRATED TO DIRECT MANUAL TIDE OBSERVATIONS HOLDING USCGS TIDAL BENCH MARK "TIDAL 16 1966" LOCATED AT NOAA / NOS TIDE STATION "9455920" AT THE PORT OF ANCHORAGE (SEE NOTE 6). SURVEY DATA WAS COLLECTED USING QPS QINSY (V7.4) INTEGRATED SOFTWARE AND WAS PROCESSED USING CARIS "HIPS" (V5.4) SOFTWARE.
6. THE ELEVATION SHOWN FOR ALUMINUM CAP "AWWU 1994" IS SPECIFIC TO THIS PROJECT AND SHOULD NOT BE USED AS A BASIS OF VERTICAL DATUM FOR AREAS OUTSIDE OF THE COOK INLET NAVIGATION CHANNEL. THE ELEVATION REPRESENTS MEAN-LOWER-LOW-WATER AT THE NAVIGATION CHANNEL AND WAS DERIVED THROUGH COMPARISONS OF ZONED TIDE DATA (BASED ON THE NOAA/NOS TIDE STATION "9455920", LOCATED AT THE PORT OF ANCHORAGE), AND FROM HISTORICAL REDUNDANT MEASUREMENTS OF CERTAIN CROSS-SECTION DATA COMPARED TO PREVIOUS USACE PROJECT CONDITION SURVEYS. THE ELEVATION OF "AWWU 1994" IS 21.458m MLLW FOR THIS PROJECT.
7. THIS DRAWING IS INDICATIVE OF CONDITIONS AT THE TIME OF SURVEY.

SURVEY AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
S1	800,214.463	491,714.113	S4	805,158.349	500,407.062
S2	800,591.201	493,750.044	S5	801,470.190	493,444.010
S3	804,345.353	500,837.686	S6	801,119.105	491,546.714

DISPOSAL SITE AREA LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
D1	800,505.000	491,963.000	D3	799,905.000	491,963.000
D2	800,505.000	492,763.000	D4	799,905.000	492,763.000

CONTROL COORDINATES

STA.	NORTHING	EASTING	ELEVATION	DESCRIPTION
VAN DUSEN	798,942.998	502,541.130		NGS SBC
AWWU 1994	801,415.521	498,604.321	*	3" ALCAP (* SEE NOTE 6)
S. END 1978	805,983.719	505,885.335	12.335	USACE SBC
N. END 1978	806,701.201	506,146.537	12.616	USCGS SBC
TERRA-9 2005	806,195.329	506,019.017	24.500	USCGS SBC
TIDAL 16 1966	–	–	12.355	USCGS SBC
BM 13	798,786.275	489,247.050	8.553	USCGS SBC IN ROCK
BM 12		–	8.525	USCGS SBC IN ROCK
RIFE	–	–	9.000	USCGS SBC IN ROCK
NO 15 RESET 1966	–	–	11.320	USCGS SBC IN PVMT

VOLUME COMPUTATIONS

PROJECT DEPTH -11.5M MLLW- WORONZOF AND COMBINED FIRE ISLAND RANGE	CUBIC METERS
MINIMUM PAY LINE (-11.5m MLLW)	1,439
BETWEEN MINIMUM PAY LINE AND MAXIMUM PAY LINE (-12.5m MLLW)	2,285
VOLUME AVAILABLE ALONG SIDESLOPES (3:1, H:V)	0
TOTAL	3,724

NAVIGATION CHANNEL COORDINATES

COR.	NORTHING	EASTING	STATION	DESCRIPTION
1	800,666.784	491,630.414	0+000	CENTERLINE (W) WORONZOF RANGELINE
2	801,030.695	493,597.027	2+000	WORONZOF/FIRE ISLAND RANGELINE INTERSECTION
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CONTRACTOR TERRA SURVEYS, LLC CONTRACT NO. W911KB-04-D-0006-0009
CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: GCY/AMC
DRAWN: LES/AMC
CHECKED: KDW
SUBMITTED:

ANCHORAGE, ALASKA
COOK INLET NAVIGATION CHANNEL
PROJECT CONDITION SURVEY
SEPTEMBER 20-28, 2005

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 2285-05
SCALE: 1:2500
SHEET 6 OF 6