

SEPTEMBER 2026

EAST BAY PLAIN SUBBASIN GROUNDWATER SUSTAINABILITY PLAN APPENDIX 4

PREPARED FOR

East Bay Municipal Utility District GSA and
City of Hayward GSA



PREPARED BY

Luhdorff & Scalmanini Consulting Engineers
Geosyntec
Brown and Caldwell
Environmental Science Associates
Dr. Jean Moran
Farallon Geographics



APPENDIX 4. PROJECTS AND MANAGEMENT ACTIONS

Appendix 4.A. EBMUD GSA Project Supporting Information

Appendix 4.B. EBMUD GSA Management Actions Supporting Information

Appendix 4.C. Hayward GSA Projects Supporting Information

Appendix 4.D. Hayward GSA Management Actions Supporting Information

APPENDIX 4.A.

EBMUD GSA Project Supporting Information

DRAFT

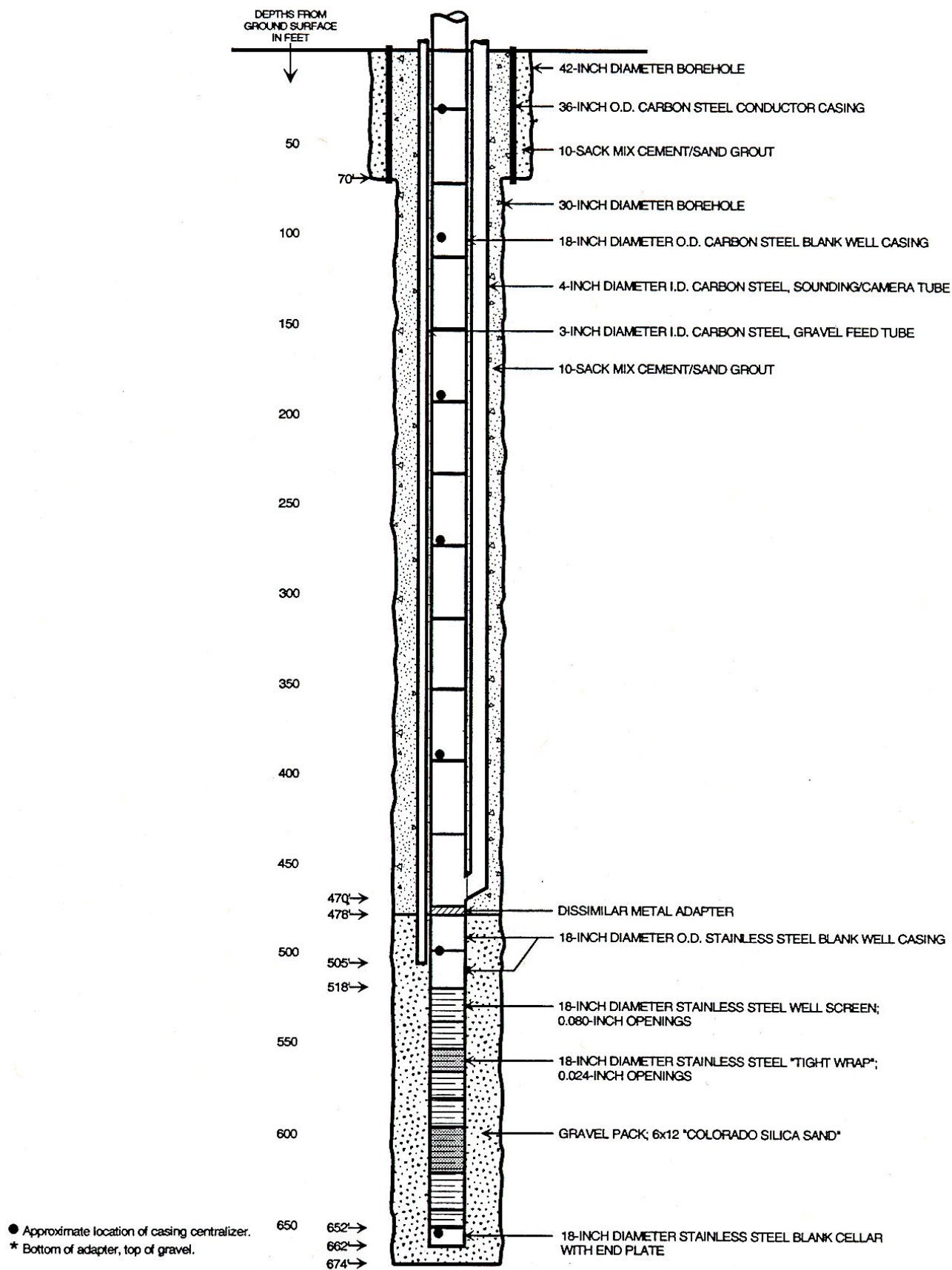


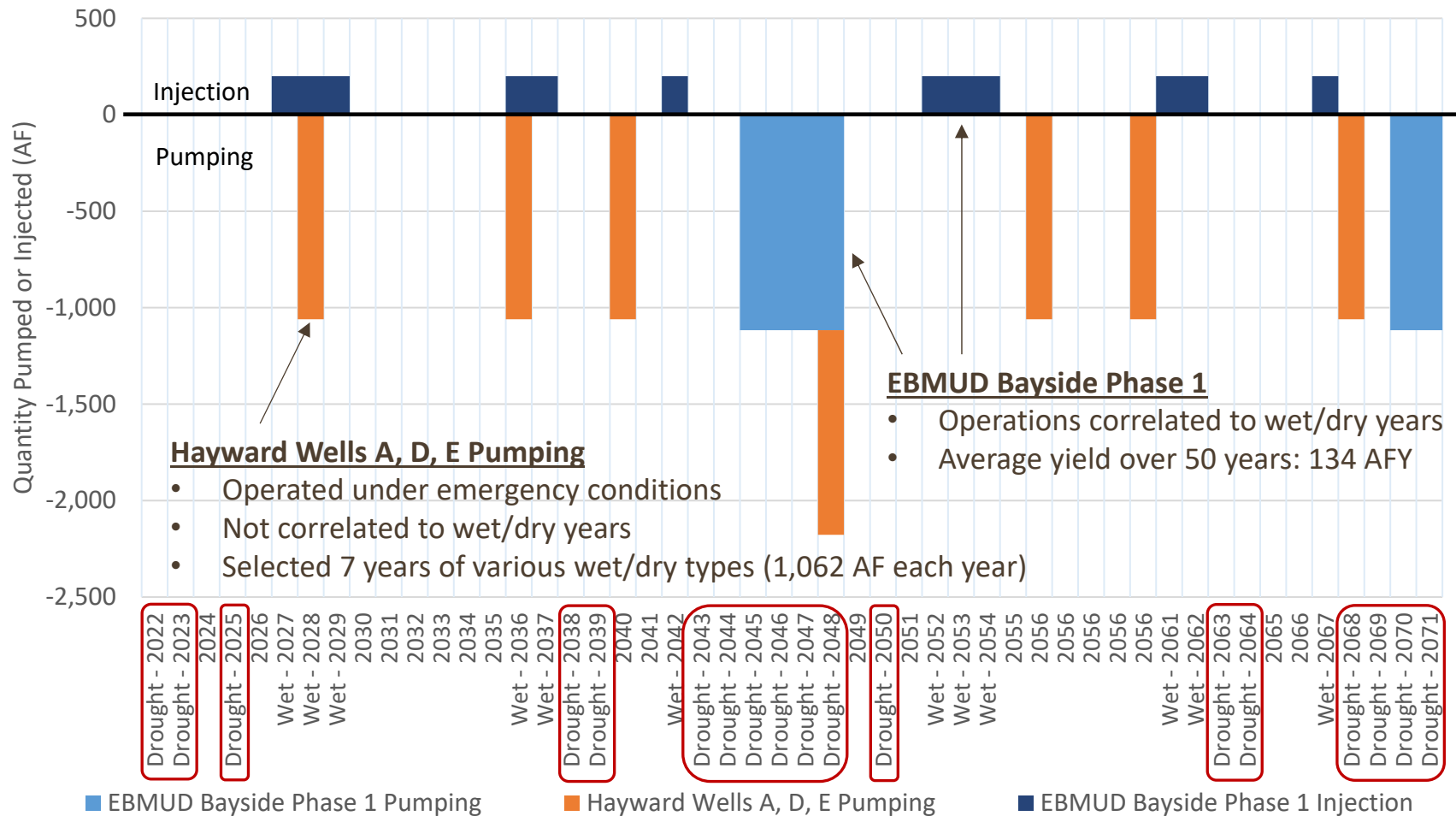
FIGURE 2-5
WELL DIAGRAM FOR BAYSIDE WELL NO. 1
 EAST BAY MUNICIPAL UTILITY DISTRICT
 BAYSIDE GROUNDWATER PROJECT
 DRAFT EIR

Source: Fugro 1998

Future Scenario

Pumping and Injection of Future Projects

Groundwater Pumping/Injection in Acre-Feet (AF)



APPENDIX 4.B.

EBMUD GSA Management Actions Supporting Information

DRAFT

Table 4B-1. EBMUD Management Action Implementation Costs

Work Item	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	10-Year Total	2027 to 2031 5 Year Total
Annual Reporting	\$48,750	\$32,500	\$32,500	\$32,500	\$32,500	\$25,400	\$25,400	\$25,400	\$25,400	\$25,400	\$305,750	\$127,000
Data Management System	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$17,000	\$17,000	\$17,000	\$17,000	\$17,000	\$110,000	\$85,000
Periodic Evaluations					\$162,500					\$228,000	\$390,500	\$228,000
RMS GW Level Monitoring	\$14,500	\$14,500	\$14,500	\$14,500	\$14,500	\$19,400	\$19,400	\$19,400	\$19,400	\$19,400	\$169,500	\$97,000
Monitoring Network (in addition to RMS Wells)	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$5,600	\$5,600	\$5,600	\$5,600	\$5,600	\$128,000	\$28,000
Baseline RMS WQ Sampling			\$44,000	\$44,000		\$50,000	\$50,000				\$188,000	\$100,000
RMS WQ Sampling (TDS, nitrate, arsenic, chloride)	\$22,000	\$22,000	\$22,000	\$22,000	\$22,000	\$22,000	\$22,000	\$22,000	\$22,000	\$22,000	\$220,000	\$110,000
Update WQ Plume Info		\$6,500		\$6,500		\$5,000		\$5,000		\$5,500	\$28,500	\$15,500
Fate & Transport Modeling										\$75,500	\$75,500	\$75,500
Extensometer Monitoring	\$15,500	\$15,500	\$15,500	\$15,500	\$15,500	\$18,000	\$18,000	\$18,000	\$18,000	\$18,000	\$167,500	\$90,000
Shallow Wells Near Creeks (10)							\$587,000				\$587,000	\$587,000
Shallow Well Level Monitoring							\$6,125	\$6,125	\$6,125	\$6,125	\$24,500	\$24,500
Shallow Well WQ Monitoring							\$13,125	\$13,125	\$13,125	\$13,125	\$52,500	\$52,500
Install New Nested Wells (3)			\$400,000								\$400,000	\$0
New Nested Wells GW Level Monitoring			\$7,000	\$7,000	\$7,000	\$4,200	\$4,200	\$4,200	\$4,200	\$4,200	\$42,000	\$21,000
New Nested Wells WQ Sampling			\$10,000	\$10,000	\$10,000	\$4,500	\$4,500	\$4,500	\$4,500	\$4,500	\$52,500	\$22,500
Install Stream Gages (2)							\$374,000				\$374,000	\$374,000
Stream Gauge Monitoring							\$25,000	\$25,000	\$25,000	\$25,000	\$100,000	\$100,000
Synoptic Stream Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Isotopic Sampling									\$116,000		\$116,000	\$116,000
Baseline Habitat Survey (1 Event)			\$150,000								\$150,000	\$0
Habitat Survey (Every 5 Years)				\$50,000					\$60,000		\$110,000	\$60,000
Total (including capital costs; every five year costs)	\$125,750	\$116,000	\$720,500	\$227,000	\$289,000	\$171,100	\$1,171,350	\$165,350	\$336,350	\$469,350	\$3,791,750	\$2,313,500
Total (ongoing annual costs only)	\$125,750	\$116,000	\$126,500	-\$241,000	\$76,500	\$121,100	\$160,350	\$165,350	\$160,350	\$105,850	\$916,750	\$713,000

Costs above don't include EBMUD/Hayward Staff time to meet with stakeholders, provide Board updates, DMS capital costs/maintenance, etc.

Capital or one-time costs

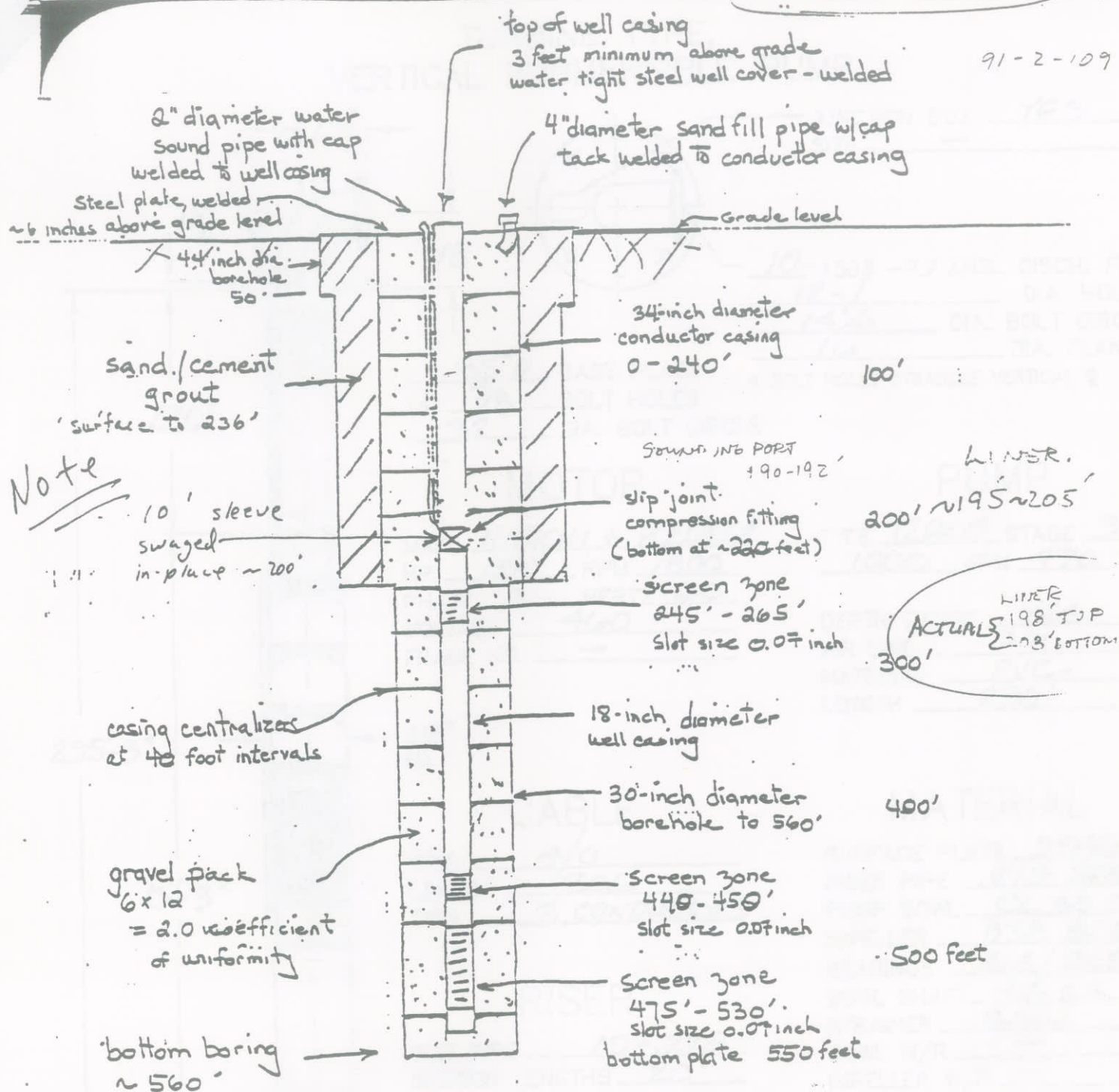
Every five year costs

APPENDIX 4.C.

Hayward GSA Projects Supporting Information

DRAFT

91-2-109

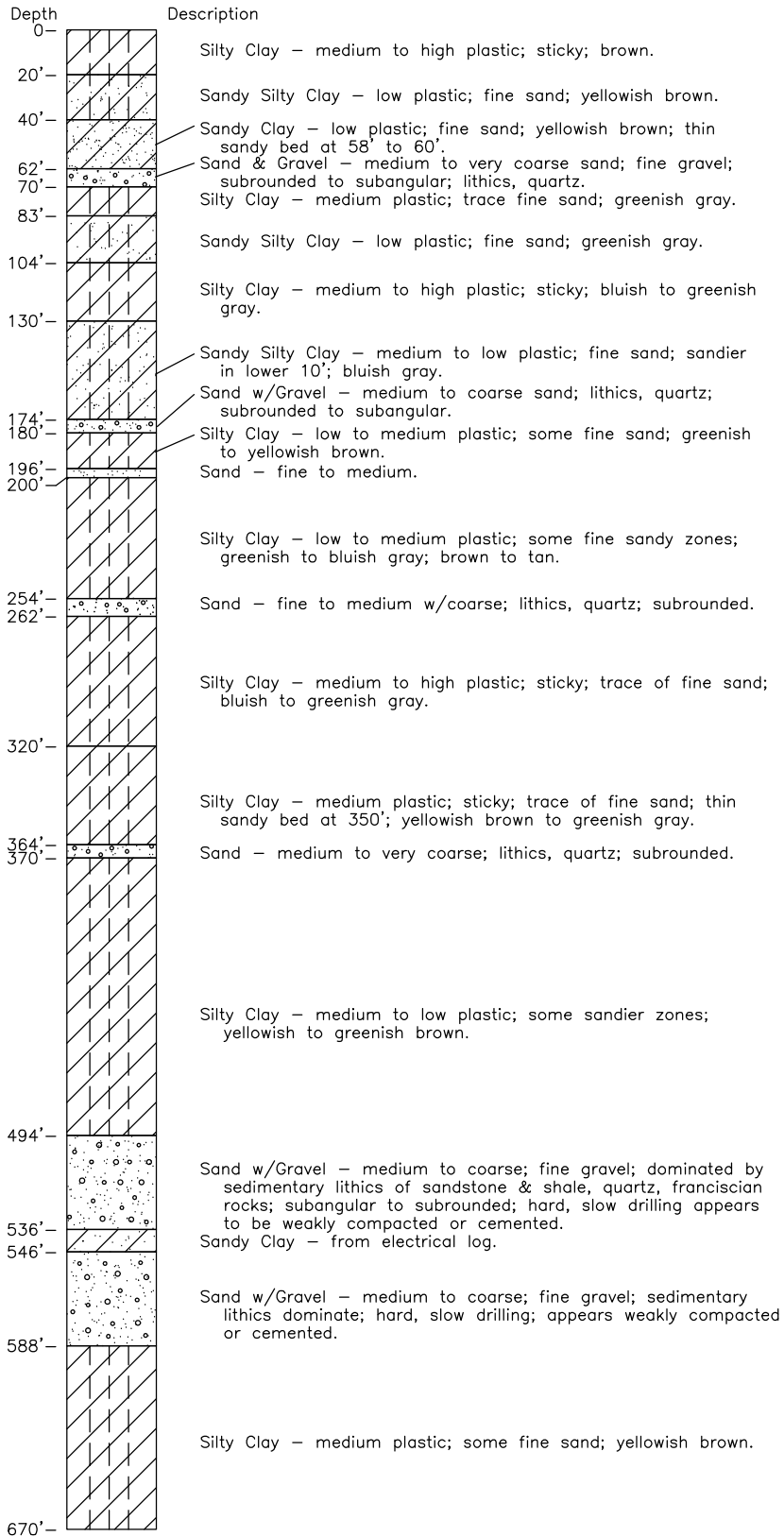


FINAL DESIGN OF EMERGENCY SUPPLY WELL No. 1

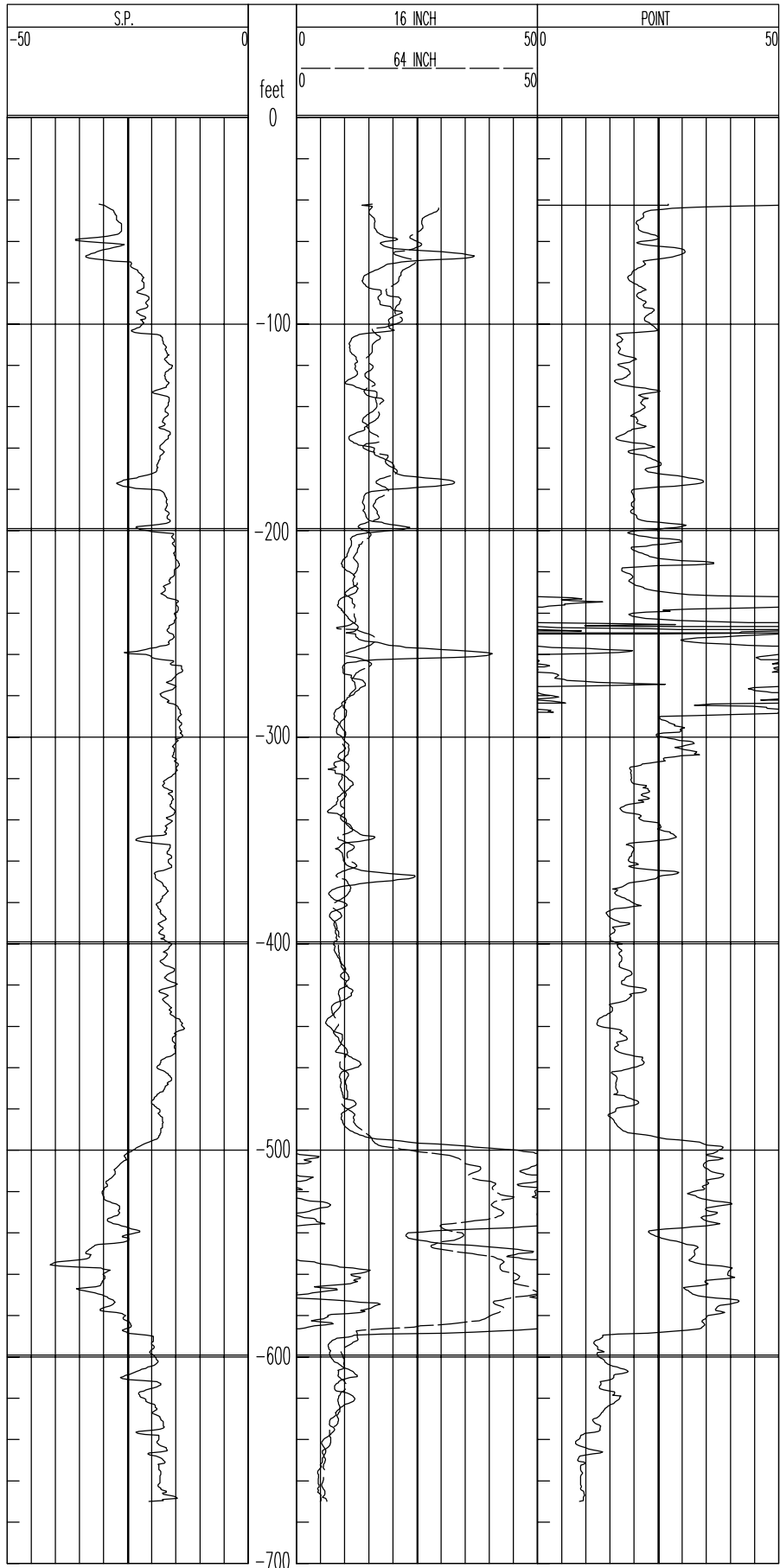
7/14/81

Prepared by
AQUIFER SCIENCES INC. /
ENTRIX INC.
Rebecca Sterbentz
Grace Haggerty

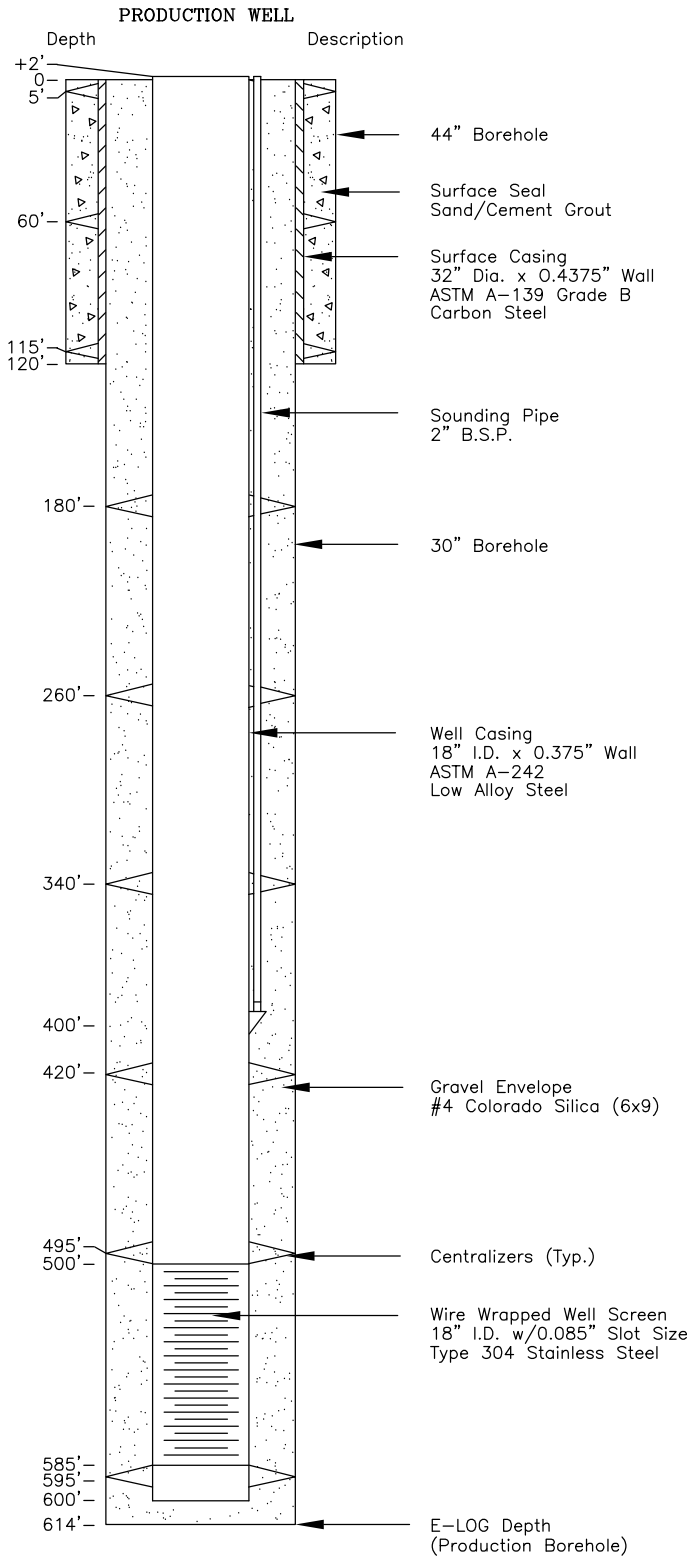
TEST HOLE
LITHOLOGY



TEST HOLE
GEOPHYSICAL SURVEY



WELL D-2
AS-BUILT



AS-BUILT

DESIGN ENGINEER'S STAMP



LUHDORFF & SCALMANINI
Consulting Engineers
Woodland, California 95695
92-2-085 TEHAP3

CITY OF HAYWARD
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

DESIGNED BY: TDE/LCS
CHECKED BY: LDC
APPROVED BY: LDC

DATE: JUNE 1993
PROJ. NO.: 7103

EMERGENCY WATER SUPPLY WELL D
PHASE I - DRILLING & CONSTRUCTION
HAYWARD AIRPORT SITE

WELL PROFILE

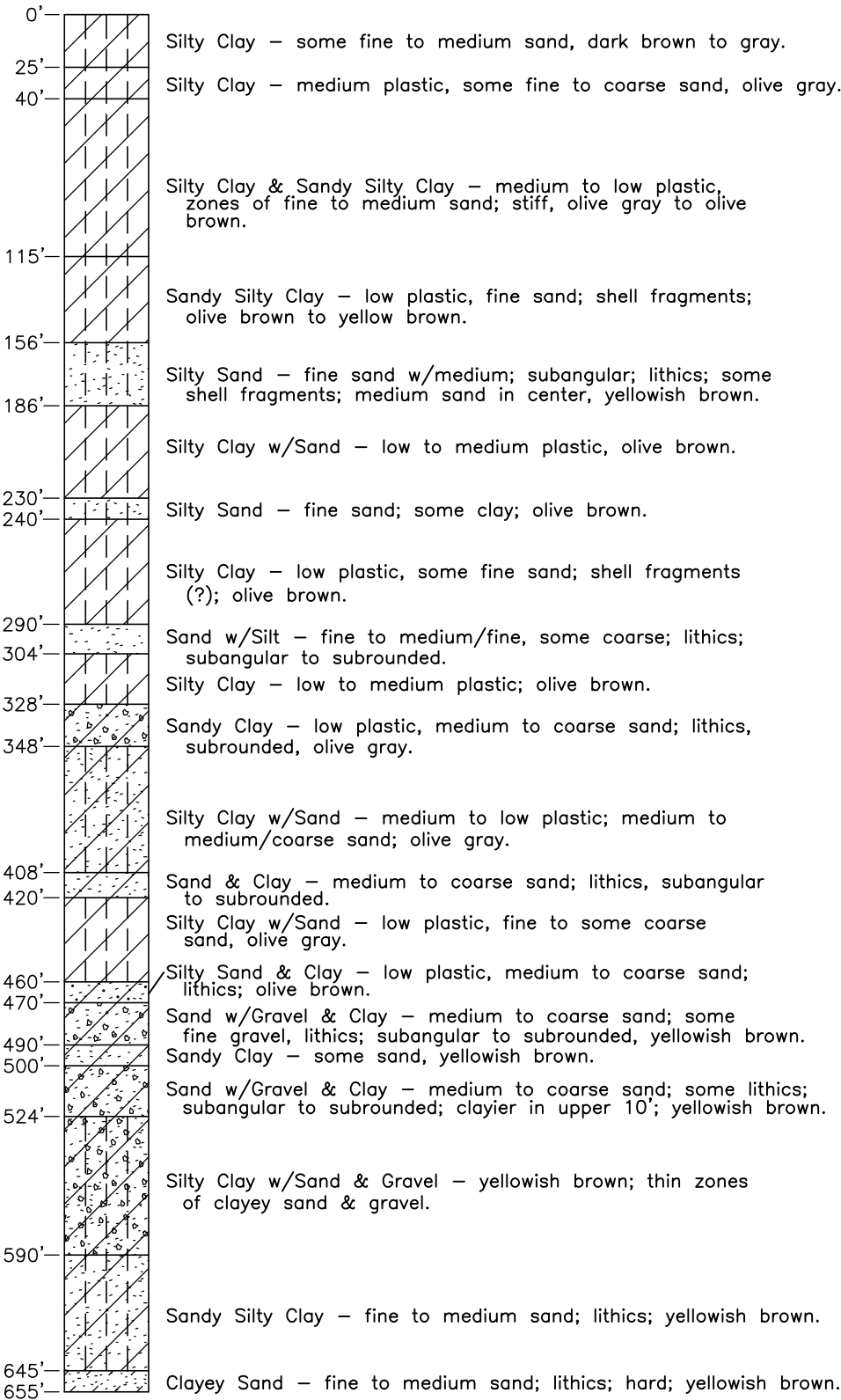
SCALE: 1" = 40'

TOTAL SHEETS: 5
FILE NO.: E-1300

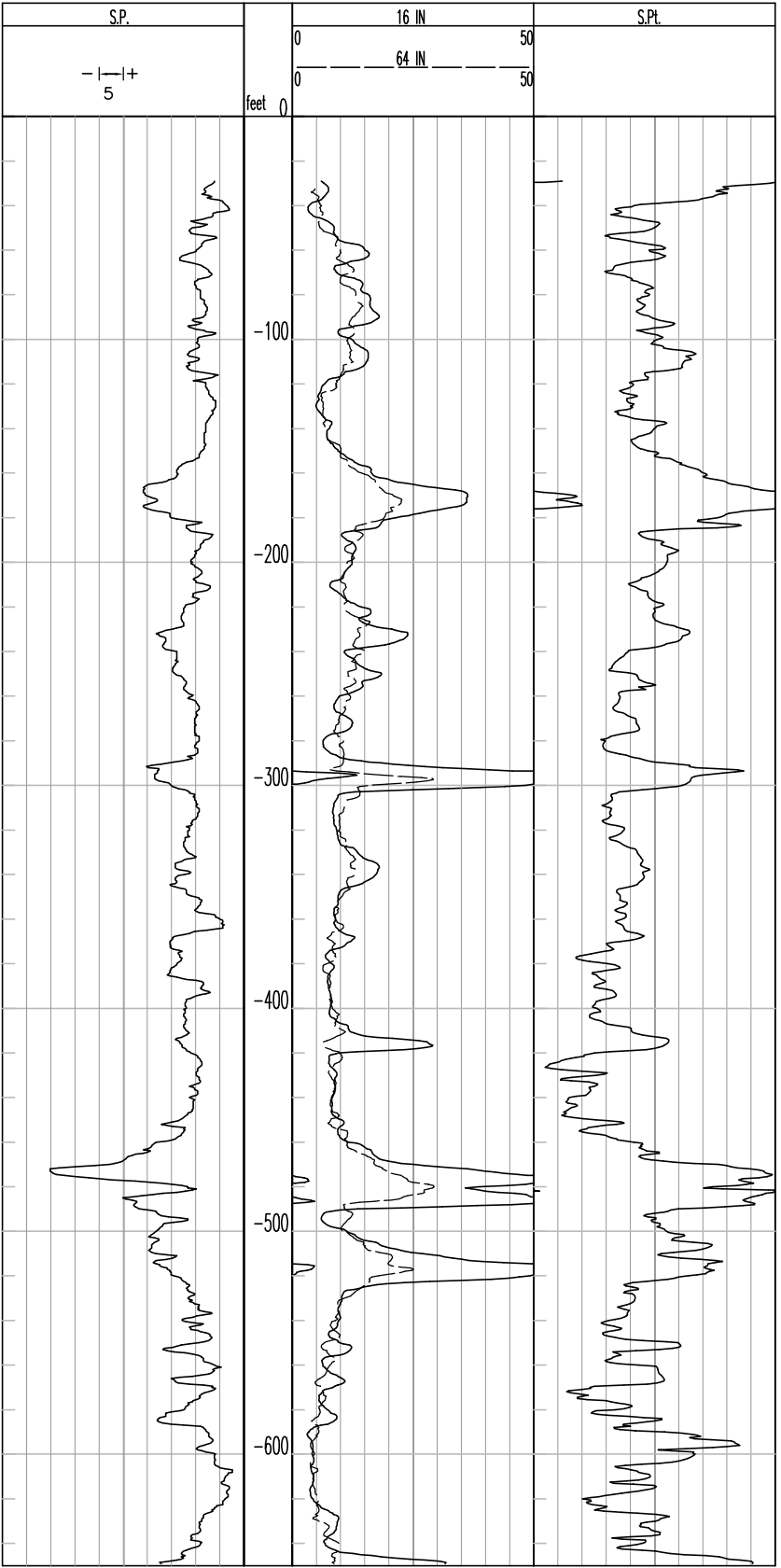
SHEET NO.: 3

CAD FILE: G:/Projects/City of Hayward/98-2-011/SH_4(ab).dwg CPG FILE: LSCE2500.PCP_MRG DATE: 03-17-10 1:49pm

Test Hole
Lithology

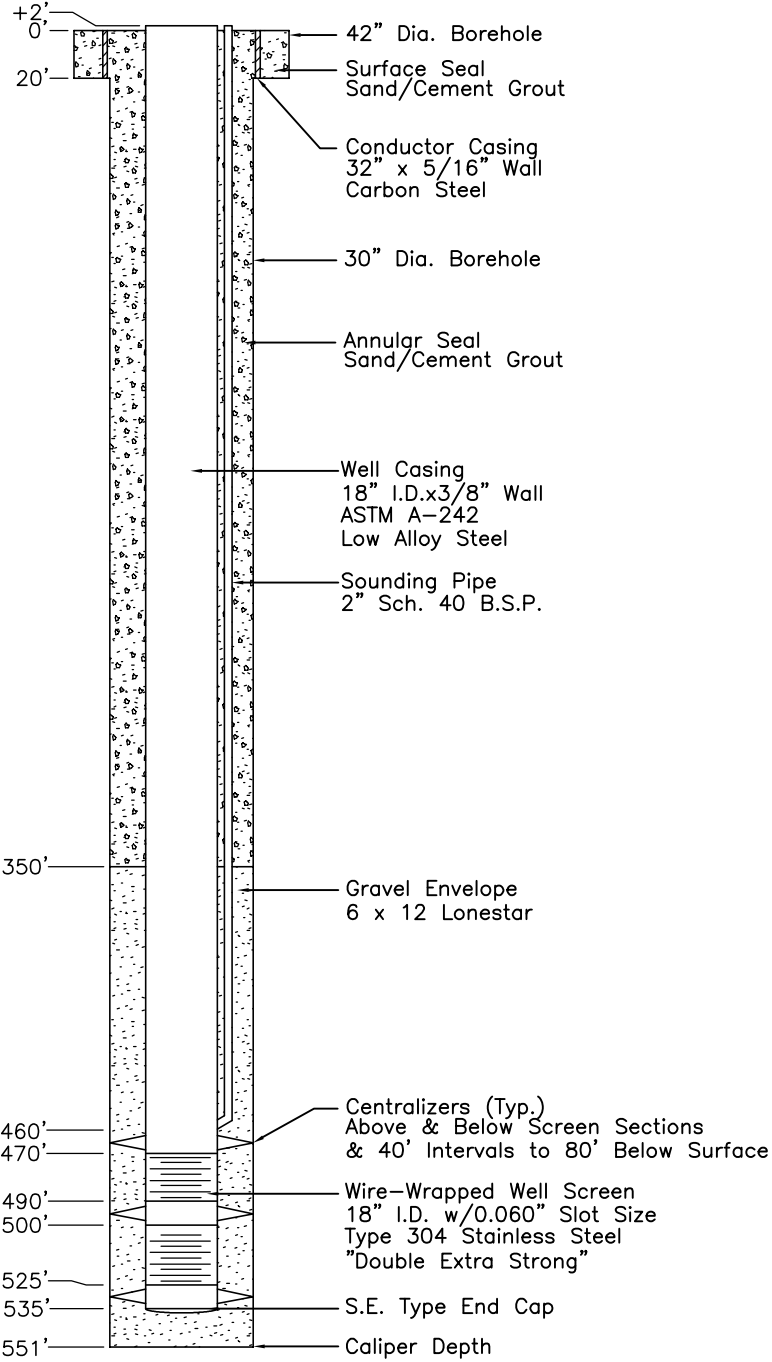


Test Hole
Electrical Log



E-Log by WELENCO 4/8/98

Water Supply Well E



AS-BUILT

DESIGN ENGINEER'S STAMP

LUHDORFF & SCALMANINI
Consulting Engineers
Woodland, California 95695
98-2-011 HW2.DWG

1

1/25/98

1st Review by City

DATE

2

1/25/98

1st Review by City

DATE

3

1/25/98

1st Review by City

DATE

4

1/25/98

1st Review by City

DATE

5

1/25/98

1st Review by City

DATE

6

1/25/98

1st Review by City

DATE

7

1/25/98

1st Review by City

DATE

8

1/25/98

1st Review by City

DATE

9

1/25/98

1st Review by City

DATE

10

1/25/98

1st Review by City

DATE

11

1/25/98

1st Review by City

DATE

12

1/25/98

1st Review by City

DATE

13

1/25/98

1st Review by City

DATE

14

1/25/98

1st Review by City

DATE

15

1/25/98

1st Review by City

DATE

16

1/25/98

1st Review by City

DATE

17

1/25/98

1st Review by City

DATE

18

1/25/98

1st Review by City

DATE

19

1/25/98

1st Review by City

DATE

20

1/25/98

1st Review by City

DATE

21

1/25/98

1st Review by City

DATE

22

1/25/98

1st Review by City

DATE

23

1/25/98

1st Review by City

DATE

24

1/25/98

1st Review by City

DATE

25

1/25/98

1st Review by City

DATE

26

1/25/98

1st Review by City

DATE

27

1/25/98

1st Review by City

DATE

28

1/25/98

1st Review by City

DATE

29

1/25/98

1st Review by City

DATE

30

1/25/98

1st Review by City

DATE

31

1/25/98

1st Review by City

DATE

32

1/25/98

1st Review by City

DATE

33

1/25/98

1st Review by City

DATE

34

1/25/98

1st Review by City

DATE

35

1/25/98

1st Review by City

DATE

36

1/25/98

1st Review by City

DATE

37

1/25/98

1st Review by City

DATE

38

1/25/98

1st Review by City

DATE

39

1/25/98

1st Review by City

DATE

40

1/25/98

1st Review by City

DATE

41

1/25/98

1st Review by City

DATE

42

1/25/98

1st Review by City

DATE

43

1/25/98

1st Review by City

DATE

44

1/25/98

1st Review by City

DATE

45

1/25/98

1st Review by City

DATE

46

1/25/98

1st Review by City

DATE

47

1/25/98

1st Review by City

DATE

48

1/25/98

1st Review by City

DATE

49

1/25/98

1st Review by City

DATE

50

1/25/98

1st Review by City

DATE

51

1/25/98

1st Review by City

DATE

52

1/25/98

1st Review by City

DATE

53

1/25/98

1st Review by City

DATE

54

1/25/98

1st Review by City

DATE

55

1/25/98

1st Review by City

DATE

56

1/25/98

1st Review by City

DATE

57

1/25/98

1st Review by City

DATE

58

1/25/98

1st Review by City

DATE

59

1/25/98

1st Review by City

DATE

60

1/25/98

1st Review by City

DATE

61

1/25/98

1st Review by City

DATE

62

1/25/98

1st Review by City

DATE

63

1/25/98

1st Review by City

DATE

64

1/25/98

1st Review by City

DATE

65

1/25/98

1st Review by City

DATE

66

1/25/98

1st Review by City

DATE

67

1/25/98

1st Review by City

DATE

68

1/25/98

1st Review by City

DATE

69

1/25/98

1st Review by City

DATE

70

1/25/98

1st Review by City

DATE

71

1/25/98

1st Review by City

DATE

72

1/25/98

1st Review by City

DATE

73

1/25/98

1st Review by City

DATE

74

1/25/98

1st Review by City

DATE

75

1/25/98

1st Review by City

DATE

76

1/25/98

1st Review by City

DATE

77

1/25/98

1st Review by City

DATE

78

1/25/98

1st Review by City

DATE

79

1/25/98

1st Review by City

DATE

80

1/25/98

1st Review by City

DATE

81

1/25/98

1st Review by City

DATE

82

1/25/98

1st Review by City

DATE

83

1/25/98

1st Review by City

DATE

84

1/25/98

1st Review by City

DATE

85

1/25/98

1st Review by City

DATE

86

1/25/98

1st Review by City

DATE

87

1/25/98

1st Review by City

DATE

88

1/25/98

1st Review by City

DATE

89

1/25/98

1st Review by City

DATE

90

1/25/98

1st Review by City

DATE

91

1/25/98

1st Review by City

DATE

92

1/25/98

1st Review by City

DATE

93

1/25/98

1st Review by City

DATE

94

1/25/98

1st Review by City

DATE

95

1/25/98

1st Review by City

DATE

96

1/25/98

1st Review by City

DATE

97

1/25/98

1st Review by City

DATE

98

1/25/98

1st Review by City

DATE

99

1/25/98

1st Review by City

DATE

100

1/25/98

1st Review by City

DATE

101

1/25/98

1st Review by City

DATE

102

1/25/98

1st Review by City

DATE

103

1/25/98

1st Review by City

DATE

104

1/25/98

1st Review by City

DATE

105

1/25/98

1st Review by City

DATE

106

1/25/98

1st Review by City

DATE

107

1/25/98

1st Review by City

DATE

108

1/25/98

1st Review by City

DATE

109

1/25/98

1st Review by City

DATE

110

1/25/98

1st Review by City

DATE

111

1/25/98

1st Review by City

DATE

112

1/25/98

1st Review by City

DATE

113

1/25/98

1st Review by City

DATE

114

1/25/98

1st Review by City

DATE

115

1/25/98

1st Review by City

DATE

116

1/25/98

1st Review by City

DATE

117

1/25/98

1st Review by City

DATE

118

1/25/98

1st Review by City

DATE

119

1/25/98

1st Review by City

DATE

120

1/25/98

1st Review by City

DATE

121

1/25/98

1st Review by City

DATE

122

1/25/98

1st Review by City

DATE

123

1/25/98

1st Review by City

DATE

124

1/25/98

1st Review by City

DATE

125

1/25/98

1st Review by City

DATE

126

1/25/98

1st Review by City

DATE

127

1/25/98

1st Review by City

DATE

128

1/25/98

1st Review by City

DATE

129

1/25/98

1st Review by City

DATE

130

1/25/98

1st Review by City

DATE

131

1/25/98

1st Review by City

DATE

132

1/25/98

1st Review by City

DATE

133

1/25/98

1st Review by City

DATE

134

1/25/98

1st Review by City

DATE

135

1/25/98

1st Review by City

DATE

136

1/25/98

1st Review by City

DATE

137

1/25/98

1st Review by City

DATE

138

1/25/98

1st Review by City

DATE

139

1/25/98

1st Review by City

DATE

140

1/25/98

1st Review by City

DATE

141

1/25/98

1st Review by City

DATE

142

1/25/98

1st Review by City

DATE

143

1/25/98

1st Review by City

DATE

144

1/25/98

1st Review by City

DATE

145

1/25/98

1st Review by City

DATE

146

1/25/98

1st Review by City

DATE

147

1/25/98

1st Review by City

DATE

148

1/25/98

1st Review by City

DATE

149

1/25/98

1st Review by City

DATE

150

1/25/98

1st Review by City

DATE

151

1/25/98

1st Review by City

DATE

152

1/25/98

1st Review by City

DATE

153

1/25/98

1st Review by City

DATE

154

1/25/98

1st Review by City

DATE

155

1/25/98

1st Review by City

DATE

156

1/25/98

1st Review by City

DATE

157

1/25/98

1st Review by City

DATE

158

1/25/98

1st Review by City

DATE

159

1/25/98

1st Review by City

DATE

160

1/25/98

1st Review by City

DATE

161

1/25/98

1st Review by City

DATE

162

1/25/98

1st Review by City

DATE

163

1/25/98

1st Review by City

DATE

164

1/25/98

1st Review by City

DATE

165

1/25/98

1st Review by City

DATE

166

1/25/98

1st Review by City

DATE

167

1/25/98

1st Review by City

DATE

168

1/25/98

1st Review by City

DATE

169

1/25/98

1st Review by City

DATE

170

1/25/98

1st Review by City

DATE

171

1/25/98

1st Review by City

DATE

172

1/25/98

1st Review by City

DATE

173

1/25/98

1st Review by City

DATE

174

1/25/98

1st Review by City

DATE

175

1/25/98

1st Review by City

DATE

176

1/25/98

1st Review by City

DATE

177

1/25/98

1st Review by City

DATE

178

1/25/98

1st Review by City

DATE

179

1/25/98

1st Review by City

DATE

180

1/25/98

1st Review by City

DATE

181

1/25/98

1st Review by City

DATE

182

1/25/98

1st Review by City

DATE

183

1/25/98

1st Review by City

DATE

184

1/25/98

1st Review by City

DATE

185

1/25/98

1st Review by City

DATE

186

1/25/98

1st Review by City

DATE

187

1/25/98

1st Review by City

DATE

188

1/25/98

1st Review by City

DATE

189

1/25/98

1st Review by City

DATE

190

1/25/98

1st Review by City

DATE

191

1/25/98

1st Review by City

DATE

192

1/25/98

1st Review by City

DATE

193

1/25/98

1st Review by City

DATE

194

1/25/98

1st Review by City

DATE

195

1/25/98

1st Review by City

DATE

196

1/25/98

1st Review by City

DATE

197

1/25/98

1st Review by City

DATE

198

1/25/98

1st Review by City

DATE

199

1/25/98

1st Review by City

DATE

200

1/25/98

1st Review by City

DATE

201

1/25/98

1st Review by City

DATE

202

1/25/98

1st Review by City

DATE

203

1/25/98

1st Review by City

DATE

204

1/25/98

1st Review by City

DATE

205

1/25/98

1st Review by City

DATE

206

1/25/98

1st Review by City

DATE

207

1/25/98

1st Review by City

DATE

208

1/25/98

1st Review by City

DATE

209

1/25/98

1st Review by City

DATE

210

1/25/98

1st Review by City

DATE

211

1/25/98

1st Review by City

DATE

212

1/25/98

1st Review by City

DATE

213

1/25/98

1st Review by City

DATE

214

1/25/98

1st Review by City

DATE

215

1/25/98

1st Review by City

DATE

216

1/25/98

1st Review by City

DATE

217

1/25/98

1st Review by City

DATE

218

1/25/98

1st Review by City

DATE

219

1/25/98

1st Review by City

DATE

220

1/25/98

1st Review by City

DATE

221

1/25/98

1st Review by City

DATE

222

1/25/98

1st Review by City

DATE

223

1/25/98

1st Review by City

DATE

224

1/25/98

1st Review by City

DATE

225

1/25/98

1st Review by City

DATE

226

1/25/98

1st Review by City

DATE

227

1/25/98

1st Review by City

DATE

228

1/25/98

1st Review by City

DATE

229

1/25/98

1st Review by City

DATE

230

1/25/98

1st Review by City

DATE

231

1/25/98

1st Review by City

DATE

232

1/25/98

1st Review by City

DATE

233

1/25/98

1st Review by City

DATE

234

1/25/98

1st Review by City

DATE

235

1/25/98

1st Review by City

DATE

236

1/25/98

1st Review by City

DATE

237

1/25/98

1st Review by City

DATE

238

1/25/98

1st Review by City

DATE

239

1/25/98

1st Review by City

DATE

240

1/25/98

1st Review by City

DATE

241

1/25/98

1st Review by City

DATE

242

1/25/98

1st Review by City

DATE

243

1/25/98

1st Review by City

DATE

244

1/25/98

1st Review by City

DATE

245

1/25/98

1st Review by City

DATE

246

1/25/98

1st Review by City

DATE

247

1/25/98

1st Review by City

DATE

248

1/25/98

1st Review by City

DATE

249

1/25/98

1st Review by City

DATE

250

1/25/98

1st Review by City

DATE

251

1/25/98

1st Review by City

DATE

252

1/25/98

1st Review by City

DATE

253

1/25/98

1st Review by City

DATE

254

1/25/98

1st Review by City

DATE

255

1/25/98

1st Review by City

DATE

256

1/25/98

1st Review by City

DATE

257

1/25/98

1st Review by City

DATE

258

1/25/98

1st Review by City

DATE

259

1/25/98

1st Review by City

DATE

260

1/25/98

1st Review by City

DATE

261

1/25/98

1st Review by City

DATE

262

1/25/98

1st Review by City

DATE

263

1/25/98

1st Review by City

DATE

264

1/25/98

1st Review by City

DATE

265

1/25/98

1st Review by City

DATE

266

1/25/98

1st Review by City

DATE

267

1/25/98

1st Review by City

DATE

268

1/25/98

1st Review by City

DATE

269

1/25/98

1st Review by City

DATE

270

1/25/98

1st Review by City

DATE

271

1/25/98

1st Review by City

DATE

272

1/25/98

1st Review by City

DATE

273

1/25/98

1st Review by City

DATE

274

1/25/98

1st Review by City

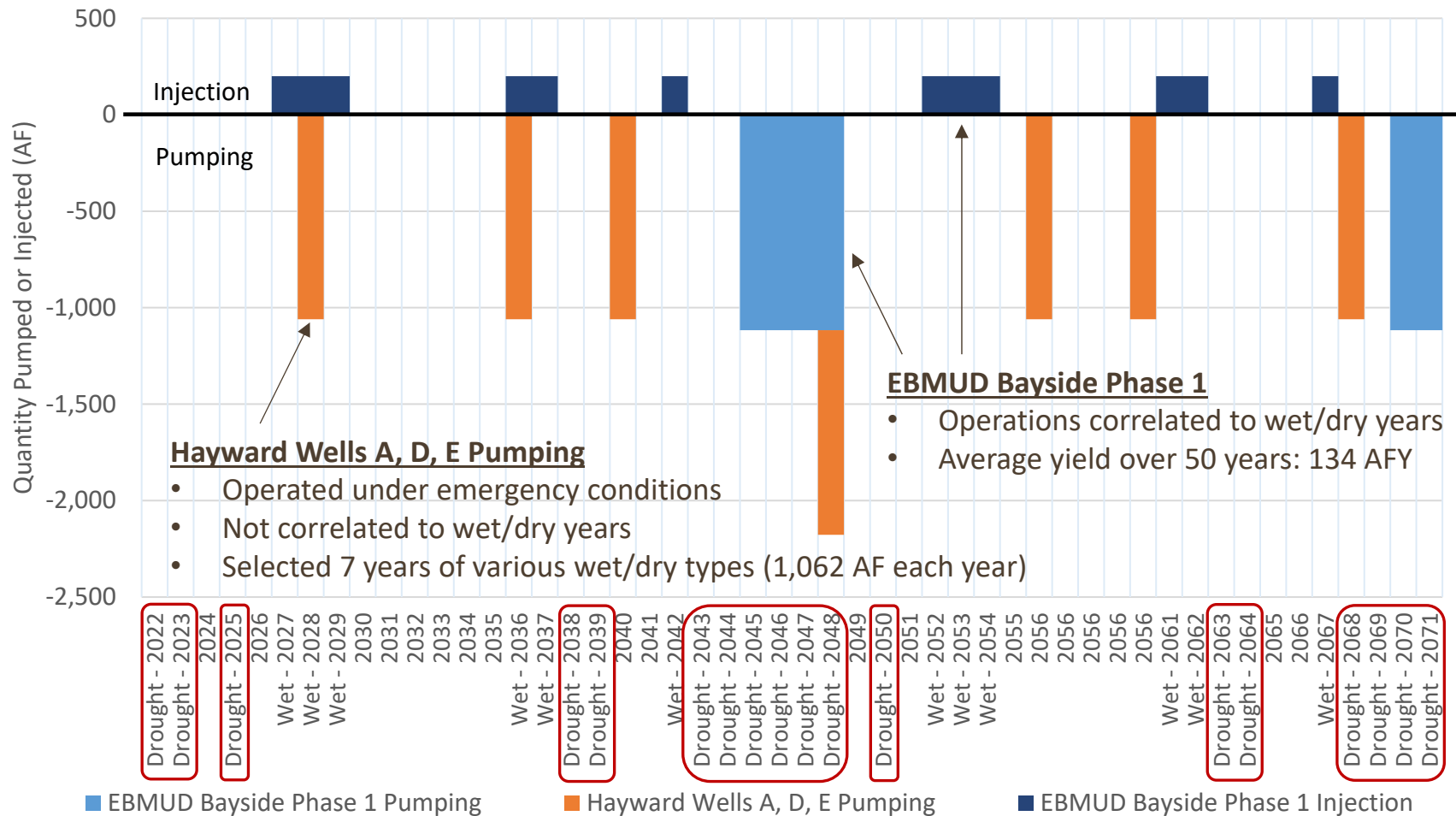
DATE

275</

Future Scenario

Pumping and Injection of Future Projects

Groundwater Pumping/Injection in Acre-Feet (AF)



APPENDIX 4.D.

Hayward GSA Management Actions Supporting Information

DRAFT

Table 4D-1. Hayward Management Action Implementation Costs

Work Item	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	10-Year Total	2027 to 2031 5 Year Total
Annual Reporting	\$26,250	\$17,500	\$17,500	\$17,500	\$17,500	\$13,600	\$13,600	\$13,600	\$13,600	\$13,600	\$164,250	\$68,000
Data Management System	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$17,000	\$17,000	\$17,000	\$17,000	\$17,000	\$110,000	\$85,000
Periodic Evaluations					\$87,500					\$122,000	\$209,500	\$122,000
RMS GW Level Monitoring	\$5,500	\$5,500	\$5,500	\$5,500	\$5,500	\$6,400	\$6,400	\$6,400	\$6,400	\$6,400	\$59,500	\$32,000
Monitoring Network (in addition to RMS Wells)	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,800	\$5,800	\$5,800	\$5,800	\$5,800	\$54,000	\$29,000
Baseline RMS WQ Sampling			\$16,000	\$16,000		\$18,500	\$18,500				\$69,000	\$37,000
RMS WQ Sampling (TDS, nitrate, arsenic, chloride)	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$9,300	\$9,300	\$9,300	\$9,300	\$9,300	\$86,500	\$46,500
Update WQ Plume Info		\$3,500		\$3,500		\$2,500		\$2,500		\$3,000	\$15,000	\$8,000
Fate & Transport Modeling					\$35,000					\$40,500	\$75,500	\$40,500
Extensometer Monitoring											\$0	\$0
Shallow Wells Near Creeks (10)											\$0	\$0
Shallow Well Level Monitoring											\$0	\$0
Shallow Well WQ Monitoring											\$0	\$0
Install New Nested Wells (3)											\$0	\$0
New Nested Wells GW Level Monitoring											\$0	\$0
New Nested Wells WQ Sampling											\$0	\$0
Install Stream Gages (2)											\$0	\$0
Stream Gauge Monitoring											\$0	\$0
Synoptic Stream Monitoring											\$0	\$0
Isotopic Sampling											\$0	\$0
Baseline Habitat Survey (1 Event)											\$0	\$0
Habitat Survey (Every 5 Years)											\$0	\$0
Total (including capital costs; every five year costs)	\$49,750	\$44,500	\$57,000	\$60,500	\$163,500	\$73,100	\$70,600	\$54,600	\$52,100	\$217,600	\$843,250	\$468,000
Total (ongoing annual costs only)	\$49,750	\$44,500	\$41,000	\$44,500	\$41,000	\$54,600	\$52,100	\$54,600	\$52,100	\$55,100	\$489,250	\$268,500

Costs above don't include EBMUD/Hayward Staff time to meet with stakeholders, provide Board updates, DMS capital costs/maintenance, etc.

Capital or one-time costs

Every five year costs