

## **13.1 Ergebnisse wassertechnischer Berechnungen**

### **13.1.3 Entwässerungsabschnitt 3**

#### **13.1.3.1 Bemessung der Retentionsfläche 1 Bau-km 20+800**

#### **13.1.3.2 Bemessung der Regenwasserkanäle von Bau-km 19+710 bis 21+650**

- Lastfall 1- r15(1)      =102,80 l(s\*ha) – Ergebnisdatei „EXTRAN”

**Bemessung Retentionsfläche 1 mit vorgeschaltetem Absetzbecken**

Entwässerungsabschnitt: 3

Bau-km: 19+710 bis 21+665

**Bemessung Absetzbecken**Bemessungszufluss:

$$Q_{\text{bem}} = r_{15(1)} \times \phi_{1,0} \times A_{\text{red}}$$

$A_{\text{red}}$  aus Ergebnisdatei EXTRAN, Seite 3  
"Einzugsgebiet undurchlässig"

$$A_{\text{red}} = 4,396 \text{ ha} \approx 4,40 \text{ ha}$$

$$Q_{\text{bem}} = 102,8 \text{ l/(s*ha)} \times 1,00 \times 4,40 \text{ ha}$$

$$Q_{\text{bem}} = 452,32 \text{ l/s}$$

erforderliche Beckenoberfläche:

$$O_{\text{erf}} = Q_{\text{bem}} / v_s$$

$$v_s = 9 \text{ m/h} = 0,0025 \text{ m/s}$$

mit  $v_s$  = Steiggeschwindigkeit [m/s]

$$O_{\text{erf}} = 0,452 / 0,0025 = 180,80 \text{ m}^2$$

$$O_{\text{vorh}} = 200 \text{ m}^2 > 180,80 \text{ m}^2$$

Nachweis eines Ölfangraumes

$$V_{\text{Öl}} = O \times h_s \text{ [m}^3\text{]}$$

mit  $h_s$  = Höhe des Ölfangraumes [m] $O$  = Oberfläche des Abscheideraumes [m<sup>2</sup>]

$$V_{\text{Öl}} = 200 \text{ m}^2 \times 0,20 \text{ m} = 40 \text{ m}^3$$

## Bemessung von Versickerungsbecken im Näherungsverfahren nach ATV-DVWK-A 138

BAB A20 Nordwestumfahrung Hamburg

**Auftraggeber:**

**Beckenbemessung:**

Entwässerungsabschnitt 3

Bemessung mit 10 jährigem Wiederkehrereignis

**Eingabedaten:**

$$V = (A_u \cdot 10^{-3} \cdot r_{D(m)} - Q_s) \cdot D \cdot 60 \cdot f_z \cdot f_A \quad \text{mit } Q_s = A_u \cdot q_s$$

|                                                 |                          |                    |         |
|-------------------------------------------------|--------------------------|--------------------|---------|
| Einzugsgebietsfläche                            | $A_E$                    | $m^2$              | 48.840  |
| Abflussbeiwert gem. Tabelle 2 (ATV-DVWK-A 138)  | $\Psi_m$                 | 1                  | 0,90    |
| undurchlässige Fläche                           | $A_u$                    | $m^2$              | 43.956  |
| Drosselabflussspende bezogen auf $A_u$          | $q_s$                    | $l/(s \text{ ha})$ | 2,0     |
| Durchlässigkeitsbeiwert der Sohle               | $k_{f, \text{Sohle}}$    | $m/s$              | 1,0E-05 |
| Durchlässigkeitsbeiwert der Böschung            | $k_{f, \text{Böschung}}$ | $m/s$              | 1,0E-05 |
| gewählte Länge der Sohlfläche (Rechteckbecken)  | $L_s$                    | $m$                | 106,0   |
| gewählte Breite der Sohlfläche (Rechteckbecken) | $B_s$                    | $m$                | 130,0   |
| gewählte max. Einstauhöhe (Rechteckbecken)      | $z_{\max}$               | $m$                | 0,2     |
| gewählte Böschungsneigung (Rechteckbecken)      | 1:m                      | 1                  | 2,5     |
| gewählte Regenhäufigkeit                        | $n$                      | 1/Jahr             | 0,1     |
| Zuschlagfaktor                                  | $f_z$                    | 1                  | 1,20    |
| Abminderungsfaktor                              | $f_A$                    | 1                  | 1,20    |

**Bemerkungen:**

# Bemessung von Versickerungsbecken im Näherungsverfahren nach ATV-DVWK-A 138

BAB A20 Nordwestumfahrung Hamburg

**Auftraggeber:**

**Beckenbemessung:**

Entwässerungsabschnitt 3

Bemessung mit 10 jährigem Wiederkehrereignis

**örtliche Regendaten:**

| D [min] | $r_{D,n}$ [l/(s*ha)] |
|---------|----------------------|
| 10      | 258,0                |
| 20      | 169,0                |
| 45      | 103,3                |
| 60      | 86,8                 |
| 120     | 49,6                 |
| 240     | 28,6                 |
| 540     | 15,0                 |
| 720     | 11,9                 |
| 1080    | 8,7                  |
|         |                      |

**Berechnung:**

| V [m <sup>3</sup> ] |
|---------------------|
| 972                 |
| 1268                |
| 1731                |
| 1932                |
| 2169                |
| 2425                |
| 2666                |
| 2707                |
| 2748                |
|                     |

**Ergebnisse:**

|                                                         |           |                |              |
|---------------------------------------------------------|-----------|----------------|--------------|
| maßgebende Dauer des Bemessungsregens                   | D         | min            | 540          |
| maßgebende Regenspende                                  | $r_{D,n}$ | l/(s*ha)       | 15           |
| <b>erforderliches Speichervolumen</b>                   | $V_{erf}$ | m <sup>3</sup> | <b>2666</b>  |
| <b>vorhandenes Speichervolumen</b>                      | V         | m <sup>3</sup> | <b>2780</b>  |
| <b>Beckenlänge an Böschungsoberkante <sup>1)</sup></b>  | $L_o$     | m              | <b>107,0</b> |
| <b>Beckenbreite an Böschungsoberkante <sup>1)</sup></b> | $B_o$     | m              | <b>131,0</b> |

<sup>1)</sup> ohne Freibord

**Nachweis der Versickerungsrate:**

|                                              |                 |                   |               |
|----------------------------------------------|-----------------|-------------------|---------------|
| <b>vorhandene minimale Versickerungsrate</b> | $Q_{s,min}$     | m <sup>3</sup> /s | <b>0,0689</b> |
| <b>vorhandene maximale Versickerungsrate</b> | $Q_{s,max}$     | m <sup>3</sup> /s | <b>0,0701</b> |
| <b>vorhandene mittlere Versickerungsrate</b> | $Q_{s,m}$       | m <sup>3</sup> /s | <b>0,0695</b> |
| <b>gewählte Versickerungsrate</b>            | $q_s \cdot A_u$ | m <sup>3</sup> /s | <b>0,0088</b> |

4

## Bemessung von Versickerungsbecken im Näherungsverfahren nach ATV-DVWK-A 138

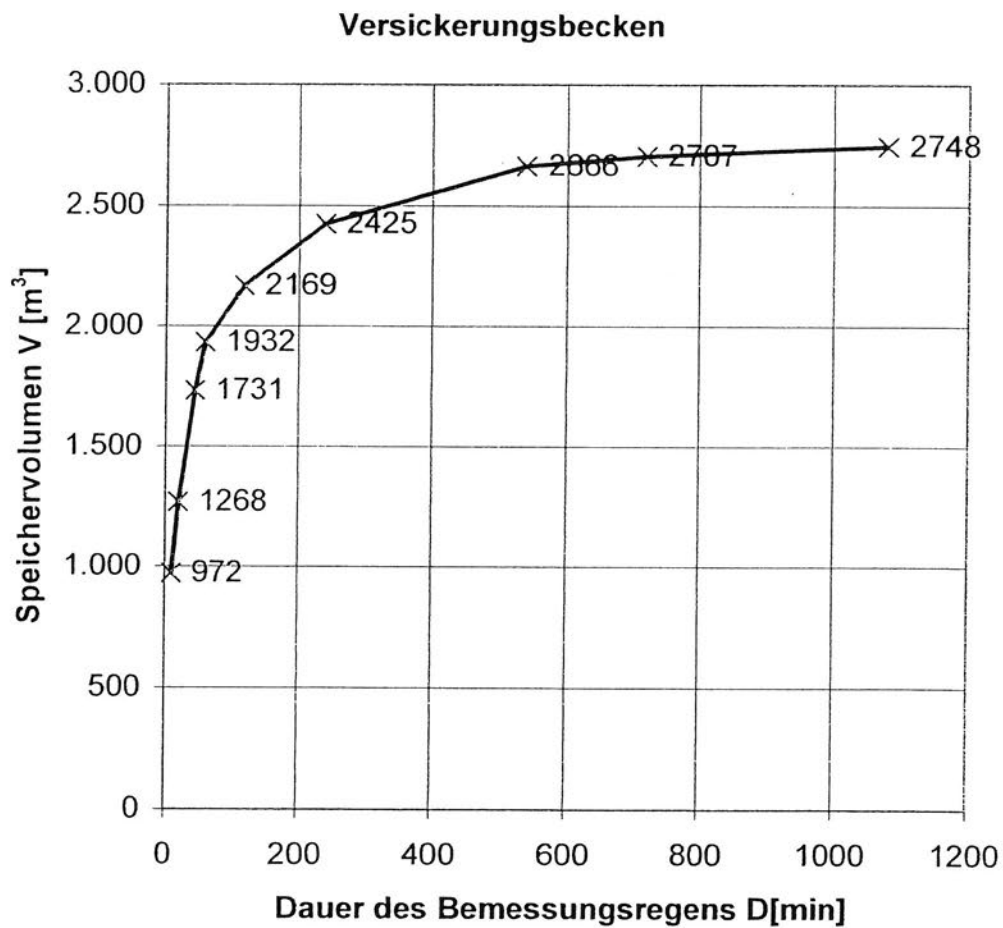
BAB A20 Nordwestumfahrung Hamburg

**Auftraggeber:**

**Beckenbemessung:**

Entwässerungsabschnitt 3

Bemessung mit 10 jährigem Wiederkehrereignis



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 \*\*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\*  
 \*\*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L.FUCHS \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*\*\*  
 \*\*\*\* ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\* SEITE 1 \*\*\*\*  
 \*\*\*\*\*

BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

FEHLERMELDUNGEN UND WARNUNGEN:



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***** SEITE 2 *****

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BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

# RECHENLAUFGROESSEN:

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KENNUNG DES KANALNETZES :
KANALNETZDATEI : C:\Programme\Itwh\Projekte\A20-Kanal\EA_06\3_BA\RL15-1\EA_06.net
1. WELLENDATEI : C:\Programme\Itwh\Projekte\A20-Kanal\EA_06\3_BA\RL15-1\EA_06.wel
DATEI FUER CSV-AUSGABE : C:\Programme\Itwh\Projekte\A20-Kanal\EA_06\3_BA\RL15-1\EA_06.csv
AUSGABEDATEI VON EXTRAV : C:\Programme\Itwh\Projekte\A20-Kanal\EA_06\3_BA\RL15-1\EA_06.vor
AUSGABEDATEI VON EXTRAN : C:\Programme\Itwh\Projekte\A20-Kanal\EA_06\3_BA\RL15-1\EA_06.ext

EINHEITEN : SI
AUSGABE-REIHENFOLGE : IN DER REIHENFOLGE DER EINGABE
RAUHGKEITSANSATZ : PRANDTL-COLEBROOK (KB), FALLS NICHTS ANGEGEBEN IST

TRENNSYSTEM

SIMULATIONSANFANG : 31.10.2007 0:00:00 UHR
SIMULATIONSENDE : 31.10.2007 3:00:00 UHR
BERECHNUNGSZEITSCHRITT : 3.00 SEC

ANFANG DER GANGLINIENAUSGABE : 31.10.2007 0:00:00 UHR
AUSGABEZEITSCHRITT : 60.00 SEC
AUSGABEZEITSCHRITT VERWENDET : 60.00 SEC
ANZAHL TABELLARISCHER AUSGABEN : 0 (MAXIMAL: 100)

ANZAHL WASSERSTANDS-PRINTERPLOTS : 0 (MAXIMAL: 100)
ANZAHL DURCHFLUSS-PRINTERPLOTS : 0 (MAXIMAL: 100)

TROCKENWETTERBERECHNUNG
MAX. ITERATIONSANZAHL : 0
BENOETIGTE ANZAHL : 0
MAX. VOLUMENFEHLER : 0.0100 L/S
BERECHNUNGSDAUER : 0 STD 0 MIN 0.00 SEC

EINSTAU/UEBERSTAU
MAX. ITERATIONSANZAHL : 0
BENOETIGTE ANZAHL : 0
MAX. VOLUMENFEHLER : 0.050 CBM
SCHACHTOBERFLAECHE : VARIABLE
MINDEST-HALTUNGSLAENGE : 10.00 M
MIT WASSERRUECKFUEHRUNG BEI UEBERSTAU

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BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

STATISTISCHE ANGABEN ZUM KANALNETZ: C:\Programme\itwh\Projekte\A20-kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

|                              |   |         |           |                 |
|------------------------------|---|---------|-----------|-----------------|
| ANZAHL ELEMENTE              | : | 93      | (MAXIMAL: | 5000)           |
| ANZAHL HALTUNGEN             | : | 92      | (MAXIMAL: | 5000)           |
| ANZAHL GRUND/SEITENAUSLAESSE | : | 0       | (MAXIMAL: | 300)            |
| ANZAHL PUMPEN                | : | 0       | (MAXIMAL: | 300)            |
| ANZAHL WEHRE/SCHIEBER        | : | 0       | (MAXIMAL: | 300)            |
| ANZAHL FREIE AUSLAESSE       | : | 1       | (MAXIMAL: | 125)            |
| ANZAHL AUSLAESSE MIT TIDETOR | : | 0       | (MAXIMAL: | 125)            |
| ANZAHL SCHAECHTE             | : | 87      | (MAXIMAL: | 5000)           |
| ANZAHL SPEICHERSCHAECHTE     | : | 0       | (MAXIMAL: | 300)            |
| ANZAHL SONDERPROFILE         | : | 0       | (MAXIMAL: | 894)            |
| ANZAHL TIDEN                 | : | 0       | (MAXIMAL: | 124)            |
|                              |   |         |           |                 |
| LAENGE DES KANALNETZES       | : | 5969.41 | M         |                 |
| VOLUMEN IN HALTUNGEN         | : | 536.970 | CBM       |                 |
|                              |   |         |           |                 |
| VORHANDENE HALTUNGSLAENGEN   | : | 12.09   | M         | BIS 81.85 M     |
| VORHANDENE ROHRSOEHLEN       | : | 21.440  | M NN      | BIS 25.340 M NN |
| VORHANDENE SCHACHTSOEHLEN    | : | 21.440  | M NN      | BIS 25.340 M NN |
| VORHANDENE SCHACHTSCHEITEL   | : | 22.060  | M NN      | BIS 25.490 M NN |
| VORHANDENE GELAENDEHOEHEN    | : | 22.800  | M NN      | BIS 26.770 M NN |
|                              |   |         |           |                 |
| EINZUGSGEBIET GESAMT         | : | 4.884   | HA        |                 |
| UNDURCHLAESSIG               | : | 4.396   | HA        |                 |
| DURCHLAESSIG                 | : | 0.488   | HA        |                 |



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BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

VOLUMENKONTROLLE AM ENDE DER RECHNUNG  
-----

|                                     |   |             |
|-------------------------------------|---|-------------|
| ANFANGSVOLUMEN IM SYSTEM            | : | 0.000 CBM   |
| TROCKENWETTERZUFLUSS                | : | 0.000 CBM   |
| OBERFLÄCHENABFLUSS                  | : | 272.804 CBM |
| GESAMTVOLUMEN (ZUFLUSS+ANFANGSVOL.) | : | 272.804 CBM |

|                                     |           |           |   |             |
|-------------------------------------|-----------|-----------|---|-------------|
| ABFLUSSVOLUMEN                      | AM KNOTEN | 03-Aus1-1 | : | 270.428 CBM |
| GESAMTABFLUSSVOLUMEN AUS DEM SYSTEM | :         |           |   | 270.428 CBM |
| RESTVOLUMEN IM SYSTEM               | :         |           |   | 1.800 CBM   |
| GESAMTVOLUMEN (ABFLUSS+RESTVOL.)    | :         |           |   | 272.228 CBM |

MAXIMAL                      EINSTAUDAUER                      UEBERSTAUDAUER

VOLUMENFEHLER                      :                      0.21 %

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BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

TROCKENWETTERWERTE FUER HALTUNGEN DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT | SCHACHT   | PRO<br>FIL<br>HOEHE | Q                    | V                    | Q                       | V                       | RELATIV<br>UNTER |      | WASSERTIEFE<br>UNTER |      | ABSOLUT |       | AUSLASTUNG |      |       |
|----|---------|---------|-----------|---------------------|----------------------|----------------------|-------------------------|-------------------------|------------------|------|----------------------|------|---------|-------|------------|------|-------|
|    |         | OBERN   | UNTEN     |                     | VOLL<br>(STATIONAER) | VOLL<br>(STATIONAER) | TROCKEN<br>(STATIONAER) | TROCKEN<br>(STATIONAER) |                  |      |                      |      |         |       |            |      | OBERN |
|    |         |         |           |                     |                      |                      |                         |                         |                  |      |                      |      |         |       |            |      |       |
|    |         |         |           | MM                  | CBM/S                | M/S                  | CBM/S                   | M/S                     | M                | M    | M                    | M    | M       | NN    | NN         |      |       |
| 1  | 03R03   | 03R03   | 03R04     | 300                 | 0.049                | 0.69                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.89 | 2.42    | 23.75 | 23.55      | 0.00 | 0.00  |
| 2  | 03R04   | 03R04   | 03R05     | 300                 | 0.049                | 0.69                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.42 | 2.90    | 23.55 | 23.35      | 0.00 | 0.00  |
| 3  | 03R05   | 03R05   | 03R06     | 300                 | 0.049                | 0.69                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.90 | 3.20    | 23.35 | 23.15      | 0.00 | 0.00  |
| 4  | 03R06   | 03R06   | 03R07     | 400                 | 0.093                | 0.74                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.30 | 3.37    | 23.05 | 22.89      | 0.00 | 0.00  |
| 5  | 03R07   | 03R07   | 03R08     | 400                 | 0.093                | 0.74                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.37 | 3.26    | 22.89 | 22.73      | 0.00 | 0.00  |
| 6  | 03R08   | 03R08   | 03R09     | 400                 | 0.093                | 0.74                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.26 | 3.09    | 22.73 | 22.57      | 0.00 | 0.00  |
| 7  | 03R09   | 03R09   | 03R10     | 400                 | 0.093                | 0.74                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.09 | 2.84    | 22.57 | 22.41      | 0.00 | 0.00  |
| 8  | 03R10   | 03R10   | 03R11     | 500                 | 0.153                | 0.78                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.94 | 2.68    | 22.31 | 22.18      | 0.00 | 0.00  |
| 9  | 03R11   | 03R11   | 03R12     | 500                 | 0.158                | 0.80                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.68 | 2.41    | 22.18 | 22.04      | 0.00 | 0.00  |
| 10 | 03R12   | 03R12   | 03R13     | 500                 | 0.152                | 0.77                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.41 | 2.14    | 22.04 | 21.91      | 0.00 | 0.00  |
|    |         |         |           |                     |                      |                      |                         |                         |                  |      |                      |      |         |       |            |      |       |
| 11 | 03R13   | 03R13   | 03R14     | 500                 | 0.152                | 0.77                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.14 | 1.87    | 21.91 | 21.78      | 0.00 | 0.00  |
| 12 | 03R14   | 03R14   | 03R15     | 500                 | 0.169                | 0.86                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.87 | 1.63    | 21.78 | 21.62      | 0.00 | 0.00  |
| 13 | 03R15   | 03R15   | 03R16     | 500                 | 0.169                | 0.86                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.63 | 1.61    | 21.62 | 21.46      | 0.00 | 0.00  |
| 14 | 03R16   | 03R16   | 03-Aus1-1 | 900                 | 0.592                | 0.93                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.61 | 1.36    | 21.46 | 21.44      | 0.00 | 0.00  |
| 15 | 03L01   | 03L01   | 03L02     | 300                 | 0.055                | 0.78                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.14 | 1.50    | 24.03 | 23.89      | 0.00 | 0.00  |
| 16 | 03L02   | 03L02   | 03L03     | 300                 | 0.048                | 0.68                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.50 | 1.87    | 23.89 | 23.77      | 0.00 | 0.00  |
| 17 | 03L03   | 03L03   | 03L04     | 300                 | 0.049                | 0.69                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.87 | 2.40    | 23.77 | 23.57      | 0.00 | 0.00  |
| 18 | 03L04   | 03L04   | 03L05     | 300                 | 0.049                | 0.69                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.40 | 2.88    | 23.57 | 23.37      | 0.00 | 0.00  |
| 19 | 03L05   | 03L05   | 03L06     | 300                 | 0.049                | 0.69                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.88 | 3.17    | 23.37 | 23.17      | 0.00 | 0.00  |
| 20 | 03L06   | 03L06   | 03L07     | 400                 | 0.094                | 0.75                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.27 | 3.34    | 23.07 | 22.91      | 0.00 | 0.00  |
|    |         |         |           |                     |                      |                      |                         |                         |                  |      |                      |      |         |       |            |      |       |
| 21 | 03L07   | 03L07   | 03L08     | 400                 | 0.094                | 0.74                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.34 | 3.23    | 22.91 | 22.75      | 0.00 | 0.00  |
| 22 | 03L08   | 03L08   | 03L09     | 400                 | 0.093                | 0.74                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.23 | 3.07    | 22.75 | 22.59      | 0.00 | 0.00  |
| 23 | 03L09   | 03L09   | 03L10     | 400                 | 0.093                | 0.74                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 3.07 | 2.82    | 22.59 | 22.43      | 0.00 | 0.00  |
| 24 | 03L10   | 03L10   | 03L11     | 500                 | 0.153                | 0.78                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.92 | 2.66    | 22.33 | 22.20      | 0.00 | 0.00  |
| 25 | 03L11   | 03L11   | 03L12     | 500                 | 0.158                | 0.80                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.66 | 2.39    | 22.20 | 22.06      | 0.00 | 0.00  |
| 26 | 03L12   | 03L12   | 03L13     | 500                 | 0.152                | 0.77                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.39 | 2.12    | 22.06 | 21.93      | 0.00 | 0.00  |
| 27 | 03L13   | 03L13   | 03L14     | 500                 | 0.152                | 0.77                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.12 | 1.85    | 21.93 | 21.80      | 0.00 | 0.00  |
| 28 | 03L14   | 03L14   | 03L15     | 500                 | 0.158                | 0.80                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.85 | 1.60    | 21.80 | 21.66      | 0.00 | 0.00  |
| 29 | 03L15   | 03L15   | 03L16     | 500                 | 0.152                | 0.77                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.60 | 1.56    | 21.66 | 21.53      | 0.00 | 0.00  |
| 30 | 03L16   | 03L16   | 03M16     | 600                 | 0.265                | 0.94                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.56 | 2.00    | 21.53 | 21.50      | 0.00 | 0.00  |
|    |         |         |           |                     |                      |                      |                         |                         |                  |      |                      |      |         |       |            |      |       |
| 31 | 03M16   | 03M16   | 03R16     | 600                 | 0.307                | 1.08                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 2.00 | 1.61    | 21.50 | 21.46      | 0.00 | 0.00  |
| 32 | 03R26   | 03R26   | 03R25     | 300                 | 0.075                | 1.06                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.31 | 1.37    | 25.02 | 24.58      | 0.00 | 0.00  |
| 33 | 03R25   | 03R25   | 03R24     | 300                 | 0.073                | 1.04                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.37 | 1.42    | 24.58 | 24.13      | 0.00 | 0.00  |
| 34 | 03R24   | 03R24   | 03R23     | 300                 | 0.073                | 1.03                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.42 | 1.46    | 24.13 | 23.69      | 0.00 | 0.00  |
| 35 | 03R23   | 03R23   | 03R22     | 300                 | 0.073                | 1.04                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.46 | 1.51    | 23.69 | 23.24      | 0.00 | 0.00  |
| 36 | 03R21   | 03R21   | 03R20     | 400                 | 0.133                | 1.06                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.65 | 1.57    | 22.70 | 22.38      | 0.00 | 0.00  |
| 37 | 03R20   | 03R20   | 03R19     | 400                 | 0.133                | 1.06                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.57 | 1.43    | 22.38 | 22.06      | 0.00 | 0.00  |
| 38 | 03R19   | 03R19   | 03R18     | 400                 | 0.105                | 0.83                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.43 | 1.34    | 22.06 | 21.86      | 0.00 | 0.00  |
| 39 | 03R18   | 03R18   | 03R17     | 400                 | 0.105                | 0.83                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.34 | 1.40    | 21.86 | 21.66      | 0.00 | 0.00  |
| 40 | 03L26   | 03L26   | 03L25     | 300                 | 0.074                | 1.05                 | 0.000                   | 0.00                    | 0.00             | 0.00 | 0.00                 | 1.15 | 1.20    | 25.19 | 24.75      | 0.00 | 0.00  |

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 \*\*\* INSTITUT FÜR TECHN.-WISS. HYDROLOGIE \*\*\*\*\* E X T R A N \*\*\*\*\* US. ENVIRONMENTAL PROTECTION AGENCY \*\*\*  
 \*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\*  
 \*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L.FUCHS \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*  
 \*\*\*\*\*  
 ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\*  
 \*\*\*\*\* SEITE 6 \*\*\*\*\*

BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

TROCKENWETTERWERTE FÜR HALTUNGEN DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-Kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT |       | PRO<br>FIL<br>HOEHE | Q                   |                     | V                      |                        | Q     |       | V     |       | RELATIV |       | WASSERTIEFE |       | ABSOLUT |       | AUSLASTUNG |       |
|----|---------|---------|-------|---------------------|---------------------|---------------------|------------------------|------------------------|-------|-------|-------|-------|---------|-------|-------------|-------|---------|-------|------------|-------|
|    |         | OBERN   | UNTEN |                     | VOLL<br>(STATIONÄR) | VOLL<br>(STATIONÄR) | TROCKEN<br>(STATIONÄR) | TROCKEN<br>(STATIONÄR) | OBERN | UNTEN | OBERN | UNTEN | OBERN   | UNTEN | OBERN       | UNTEN | OBERN   | UNTEN | OBERN      | UNTEN |
|    |         |         |       | MM                  | CBM/S               | M/S                 | CBM/S                  | M/S                    | M     | M     | M     | M     | M       | M     | M           | M     | NN      | NN    |            |       |
| 41 | 03L25   | 03L25   | 03L24 | 300                 | 0.073               | 1.04                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.20    | 1.25  | 24.75       | 24.30 | 0.00    | 0.00  |            |       |
| 42 | 03L24   | 03L24   | 03L23 | 300                 | 0.072               | 1.02                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.25    | 1.29  | 24.30       | 23.86 | 0.00    | 0.00  |            |       |
| 43 | 03L23   | 03L23   | 03L22 | 300                 | 0.073               | 1.04                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.29    | 1.34  | 23.86       | 23.41 | 0.00    | 0.00  |            |       |
| 44 | 03L21   | 03L21   | 03L20 | 400                 | 0.132               | 1.05                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.48    | 1.40  | 22.87       | 22.55 | 0.00    | 0.00  |            |       |
| 45 | 03L20   | 03L20   | 03L19 | 400                 | 0.132               | 1.05                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.27  | 22.55       | 22.23 | 0.00    | 0.00  |            |       |
| 46 | 03L19   | 03L19   | 03L18 | 400                 | 0.104               | 0.83                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.27    | 1.18  | 22.23       | 22.03 | 0.00    | 0.00  |            |       |
| 47 | 03L18   | 03L18   | 03L17 | 400                 | 0.104               | 0.83                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.18    | 1.24  | 22.03       | 21.83 | 0.00    | 0.00  |            |       |
| 48 | 03L17   | 03L17   | 03L16 | 400                 | 0.104               | 0.83                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.24    | 1.46  | 21.83       | 21.63 | 0.00    | 0.00  |            |       |
| 49 | 03R01   | 03R01   | 03R02 | 300                 | 0.052               | 0.74                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.17    | 1.52  | 24.00       | 23.87 | 0.00    | 0.00  |            |       |
| 50 | 03R02   | 03R02   | 03R03 | 300                 | 0.048               | 0.67                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.52    | 1.89  | 23.87       | 23.75 | 0.00    | 0.00  |            |       |
| 51 | 03R17   | 03R17   | 03R16 | 400                 | 0.105               | 0.83                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.61  | 21.66       | 21.46 | 0.00    | 0.00  |            |       |
| 52 | 03M03   | 03M03   | 03M02 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 24.60       | 24.35 | 0.00    | 0.00  |            |       |
| 53 | 03M06   | 03M06   | 03M05 | 150                 | 0.005               | 0.29                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.43    | 1.43  | 25.34       | 25.25 | 0.00    | 0.00  |            |       |
| 54 | 03M05   | 03M05   | 03M04 | 150                 | 0.009               | 0.49                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.43    | 1.40  | 25.25       | 25.00 | 0.00    | 0.00  |            |       |
| 55 | 03M04   | 03M04   | 03M03 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 25.00       | 24.60 | 0.00    | 0.00  |            |       |
| 56 | 03M03A  | 03M03   | 03M03 | 300                 | 0.098               | 1.39                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.55    | 1.35  | 24.45       | 24.29 | 0.00    | 0.00  |            |       |
| 57 | 03M06A  | 03M06   | 03M07 | 150                 | 0.005               | 0.29                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.43    | 1.44  | 25.34       | 25.25 | 0.00    | 0.00  |            |       |
| 58 | 03M07   | 03M07   | 03M08 | 150                 | 0.009               | 0.49                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.44    | 1.41  | 25.25       | 25.00 | 0.00    | 0.00  |            |       |
| 59 | 03M08   | 03M08   | 03M09 | 150                 | 0.011               | 0.60                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.41    | 1.40  | 25.00       | 24.62 | 0.00    | 0.00  |            |       |
| 60 | 03M09   | 03M09   | 03R09 | 300                 | 0.098               | 1.39                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.55    | 1.35  | 24.47       | 24.31 | 0.00    | 0.00  |            |       |
| 61 | 03M09A  | 03M09   | 03M10 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 24.62       | 24.21 | 0.00    | 0.00  |            |       |
| 62 | 03M10   | 03M10   | 03M11 | 150                 | 0.011               | 0.61                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 24.21       | 23.82 | 0.00    | 0.00  |            |       |
| 63 | 03M11   | 03M11   | 03M12 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 23.82       | 23.42 | 0.00    | 0.00  |            |       |
| 64 | 03M12   | 03M12   | 03M13 | 300                 | 0.098               | 1.39                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.55    | 1.34  | 23.27       | 23.11 | 0.00    | 0.00  |            |       |
| 65 | 03M12A  | 03M12   | 03M13 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 23.42       | 23.01 | 0.00    | 0.00  |            |       |
| 66 | 03M13   | 03M13   | 03M14 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 23.01       | 22.61 | 0.00    | 0.00  |            |       |
| 67 | 03M14   | 03M14   | 03M15 | 150                 | 0.010               | 0.55                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.39  | 22.61       | 22.29 | 0.00    | 0.00  |            |       |
| 68 | 03M15   | 03M15   | 03M16 | 300                 | 0.060               | 0.85                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.80    | 1.43  | 21.88       | 21.82 | 0.00    | 0.00  |            |       |
| 69 | 03M161  | 03M161  | 03M15 | 150                 | 0.005               | 0.31                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.37    | 1.65  | 22.13       | 22.03 | 0.00    | 0.00  |            |       |
| 70 | 03M162  | 03M162  | 03M17 | 150                 | 0.005               | 0.31                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.37    | 1.46  | 22.12       | 22.02 | 0.00    | 0.00  |            |       |
| 71 | 03M17   | 03M17   | 03R17 | 300                 | 0.081               | 1.15                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.61    | 1.30  | 21.87       | 21.76 | 0.00    | 0.00  |            |       |
| 72 | 03M20   | 03M20   | 03M19 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.40  | 22.91       | 22.51 | 0.00    | 0.00  |            |       |
| 73 | 03M19   | 03M19   | 03M18 | 150                 | 0.009               | 0.51                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.38  | 22.51       | 22.23 | 0.00    | 0.00  |            |       |
| 74 | 03M23   | 03M23   | 03M22 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.46    | 1.45  | 24.11       | 23.71 | 0.00    | 0.00  |            |       |
| 75 | 03M22   | 03M22   | 03M21 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.45    | 1.46  | 23.71       | 23.31 | 0.00    | 0.00  |            |       |
| 76 | 03M21   | 03M21   | 03M20 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.46    | 1.40  | 23.31       | 22.91 | 0.00    | 0.00  |            |       |
| 77 | 03M20A  | 03M20   | 03R20 | 300                 | 0.130               | 1.84                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.55    | 1.47  | 22.76       | 22.48 | 0.00    | 0.00  |            |       |
| 78 | 03M26   | 03M26   | 03M25 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.41  | 25.31       | 24.91 | 0.00    | 0.00  |            |       |
| 79 | 03M25   | 03M25   | 03M24 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.41    | 1.40  | 24.91       | 24.51 | 0.00    | 0.00  |            |       |
| 80 | 03M24   | 03M24   | 03M23 | 150                 | 0.011               | 0.62                | 0.000                  | 0.00                   | 0.00  | 0.00  | 0.00  | 0.00  | 1.40    | 1.46  | 24.51       | 24.11 | 0.00    | 0.00  |            |       |

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\*\*\* INSTITUT FÜR TECHN.-WISS. HYDROLOGIE \*\*\*\*\* E X T R A N \*\*\*\*\* US. ENVIRONMENTAL PROTECTION AGENCY \*\*\*  
\*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\*  
\*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L.FUCHS \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*  
\*\*\*\*\* ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\* SEITE 7 \*\*\*\*\*

BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

TROCKENWETTERWERTE FÜR HALTUNGEN DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT |         | PRO<br>FIL<br>HOEHE | Q                   |                     | V                      |                        | Q               |                  | V             |                            | WASSERTIEFE |       | ABSOLUT |       | AUSLASTUNG |  |
|----|---------|---------|---------|---------------------|---------------------|---------------------|------------------------|------------------------|-----------------|------------------|---------------|----------------------------|-------------|-------|---------|-------|------------|--|
|    |         | OBEN    | UNTEN   |                     | VOLL<br>(STATIONÄR) | VOLL<br>(STATIONÄR) | TROCKEN<br>(STATIONÄR) | TROCKEN<br>(STATIONÄR) | RELATIV<br>OBEN | RELATIV<br>UNTEN | UNTER<br>OBEN | UNTER<br>GELAENDE<br>UNTEN | OBEN        | UNTEN | OBEN    | UNTEN |            |  |
|    |         |         |         |                     | MM                  | CBM/S               | M/S                    | CBM/S                  | M/S             | M                | M             | M                          | M           | M     | NN      | M     | NN         |  |
| 81 | 03M23A  | 03M23   | 03R23   | 300                 | 0.128               | 1.81                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.61                       | 1.46        | 23.96 | 23.69   | 0.00  | 0.00       |  |
| 82 | 03M02A  | 03M02   | 03M01   | 150                 | 0.012               | 0.66                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.40                       | 1.43        | 24.35 | 24.09   | 0.00  | 0.00       |  |
| 83 | 03M01A  | 03M01   | 03R01   | 300                 | 0.074               | 1.04                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.43                       | 1.17        | 24.09 | 24.00   | 0.00  | 0.00       |  |
| 84 | 03M18A  | 03M18.1 | 03M18   | 150                 | 0.007               | 0.39                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.43                       | 1.61        | 22.09 | 22.00   | 0.00  | 0.00       |  |
| 85 | 03M17A  | 03M17.1 | 03M17   | 150                 | 0.003               | 0.19                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.40                       | 1.39        | 22.10 | 22.09   | 0.00  | 0.00       |  |
| 86 | 03M18   | 03M18   | 03R18   | 300                 | 0.049               | 0.69                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.61                       | 1.24        | 22.00 | 21.96   | 0.00  | 0.00       |  |
| 87 | 03R21.1 | 03R21.1 | 03R21   | 300                 | 0.072               | 1.02                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.48                       | 1.55        | 22.99 | 22.80   | 0.00  | 0.00       |  |
| 88 | 03R22   | 03R22   | 03R21.2 | 300                 | 0.072               | 1.02                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.51                       | 1.38        | 23.24 | 23.06   | 0.00  | 0.00       |  |
| 89 | 03R21.2 | 03R21.2 | 03R21.1 | 300                 | 0.074               | 1.05                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.38                       | 1.48        | 23.06 | 22.99   | 0.00  | 0.00       |  |
| 90 | 03L21.1 | 03L21.1 | 03L21   | 300                 | 0.071               | 1.00                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.22                       | 1.38        | 23.09 | 22.97   | 0.00  | 0.00       |  |
| 91 | 03L22   | 03L22   | 03L21.2 | 300                 | 0.073               | 1.03                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.34                       | 1.31        | 23.41 | 23.16   | 0.00  | 0.00       |  |
| 92 | 03L21.2 | 03L21.2 | 03L21.1 | 300                 | 0.074               | 1.05                | 0.000                  | 0.00                   | 0.00            | 0.00             | 0.00          | 1.31                       | 1.22        | 23.16 | 23.09   | 0.00  | 0.00       |  |

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 \*\*\* INSTITUT FÜR TECHN.-WISS. HYDROLOGIE \*\*\*\*\* E X T R A N \*\*\*\*\* US. ENVIRONMENTAL PROTECTION AGENCY \*\*\*  
 \*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\*  
 \*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L.FUCHS \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*  
 \*\*\*\*\*  
 \*\*\* ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\* SEITE 8 \*\*\*  
 \*\*\*\*\*

BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

MAXIMALWERTE FÜR HALTUNGEN (TEIL 1) DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-Kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT |           | PRO<br>FIL<br>HOEHE | Q<br>VOLL<br>(STATIONÄR) | V<br>VOLL | Q<br>MAX | V<br>MAX | RELATIV |       | WASSERTIEFE |       | ABSOLUT |       | AUSLASTUNG |       |
|----|---------|---------|-----------|---------------------|--------------------------|-----------|----------|----------|---------|-------|-------------|-------|---------|-------|------------|-------|
|    |         | OBERN   | UNTEN     |                     |                          |           |          |          | OBERN   | UNTEN | OBERN       | UNTEN | OBERN   | UNTEN | OBERN      | UNTEN |
|    |         |         |           | MM                  | CBM/S                    | M/S       | CBM/S    | M/S      | M       | M     | M           | M     | M       | NN    | M          | NN    |
| 1  | 03R03   | 03R03   | 03R04     | 300                 | 0.049                    | 0.69      | 0.017    | 0.57     | 0.12    | 0.15  | 1.77        | 2.27  | 23.87   | 23.70 | 0.41       | 0.50  |
| 2  | 03R04   | 03R04   | 03R05     | 300                 | 0.049                    | 0.69      | 0.024    | 0.69     | 0.15    | 0.18  | 2.27        | 2.72  | 23.70   | 23.53 | 0.50       | 0.60  |
| 3  | 03R05   | 03R05   | 03R06     | 300                 | 0.049                    | 0.69      | 0.026    | 0.74     | 0.18    | 0.12  | 2.72        | 3.08  | 23.53   | 23.27 | 0.60       | 0.41  |
| 4  | 03R06   | 03R06   | 03R07     | 400                 | 0.093                    | 0.74      | 0.031    | 0.64     | 0.16    | 0.17  | 3.14        | 3.20  | 23.21   | 23.06 | 0.39       | 0.42  |
| 5  | 03R07   | 03R07   | 03R08     | 400                 | 0.093                    | 0.74      | 0.035    | 0.67     | 0.17    | 0.18  | 3.20        | 3.08  | 23.06   | 22.91 | 0.42       | 0.44  |
| 6  | 03R08   | 03R08   | 03R09     | 400                 | 0.093                    | 0.74      | 0.038    | 0.70     | 0.18    | 0.20  | 3.08        | 2.89  | 22.91   | 22.77 | 0.44       | 0.50  |
| 7  | 03R09   | 03R09   | 03R10     | 400                 | 0.093                    | 0.74      | 0.038    | 0.76     | 0.20    | 0.14  | 2.89        | 2.70  | 22.77   | 22.55 | 0.50       | 0.34  |
| 8  | 03R10   | 03R10   | 03R11     | 500                 | 0.153                    | 0.78      | 0.040    | 0.66     | 0.18    | 0.17  | 2.76        | 2.51  | 22.49   | 22.35 | 0.35       | 0.35  |
| 9  | 03R11   | 03R11   | 03R12     | 500                 | 0.158                    | 0.80      | 0.041    | 0.67     | 0.17    | 0.18  | 2.51        | 2.23  | 22.35   | 22.22 | 0.35       | 0.36  |
| 10 | 03R12   | 03R12   | 03R13     | 500                 | 0.152                    | 0.77      | 0.042    | 0.65     | 0.18    | 0.18  | 2.23        | 1.96  | 22.22   | 22.09 | 0.36       | 0.37  |
| 11 | 03R13   | 03R13   | 03R14     | 500                 | 0.152                    | 0.77      | 0.042    | 0.68     | 0.18    | 0.17  | 1.96        | 1.70  | 22.09   | 21.95 | 0.37       | 0.34  |
| 12 | 03R14   | 03R14   | 03R15     | 500                 | 0.169                    | 0.86      | 0.042    | 0.69     | 0.17    | 0.18  | 1.70        | 1.45  | 21.95   | 21.80 | 0.34       | 0.37  |
| 13 | 03R15   | 03R15   | 03R16     | 500                 | 0.169                    | 0.86      | 0.045    | 0.49     | 0.18    | 0.31  | 1.45        | 1.30  | 21.80   | 21.77 | 0.37       | 0.62  |
| 14 | 03R16   | 03R16   | 03-Ausl-1 | 900                 | 0.592                    | 0.93      | 0.184    | 1.10     | 0.31    | 0.24  | 1.30        | 1.12  | 21.77   | 21.68 | 0.34       | 0.27  |
| 15 | 03L01   | 03L01   | 03L02     | 300                 | 0.055                    | 0.78      | 0.004    | 0.29     | 0.05    | 0.10  | 1.09        | 1.40  | 24.08   | 23.99 | 0.18       | 0.33  |
| 16 | 03L02   | 03L02   | 03L03     | 300                 | 0.048                    | 0.68      | 0.011    | 0.47     | 0.10    | 0.13  | 1.40        | 1.74  | 23.99   | 23.90 | 0.33       | 0.42  |
| 17 | 03L03   | 03L03   | 03L04     | 300                 | 0.049                    | 0.69      | 0.018    | 0.58     | 0.13    | 0.15  | 1.74        | 2.25  | 23.90   | 23.72 | 0.42       | 0.50  |
| 18 | 03L04   | 03L04   | 03L05     | 300                 | 0.049                    | 0.69      | 0.024    | 0.70     | 0.15    | 0.18  | 2.25        | 2.70  | 23.72   | 23.55 | 0.50       | 0.60  |
| 19 | 03L05   | 03L05   | 03L06     | 300                 | 0.049                    | 0.69      | 0.027    | 0.74     | 0.18    | 0.12  | 2.70        | 3.05  | 23.55   | 23.29 | 0.60       | 0.41  |
| 20 | 03L06   | 03L06   | 03L07     | 400                 | 0.094                    | 0.75      | 0.031    | 0.64     | 0.16    | 0.17  | 3.11        | 3.17  | 23.23   | 23.08 | 0.40       | 0.42  |
| 21 | 03L07   | 03L07   | 03L08     | 400                 | 0.094                    | 0.74      | 0.035    | 0.67     | 0.17    | 0.18  | 3.17        | 3.05  | 23.08   | 22.93 | 0.42       | 0.44  |
| 22 | 03L08   | 03L08   | 03L09     | 400                 | 0.093                    | 0.74      | 0.038    | 0.70     | 0.18    | 0.20  | 3.05        | 2.87  | 22.93   | 22.79 | 0.44       | 0.51  |
| 23 | 03L09   | 03L09   | 03L10     | 400                 | 0.093                    | 0.74      | 0.039    | 0.76     | 0.20    | 0.14  | 2.87        | 2.68  | 22.79   | 22.57 | 0.51       | 0.35  |
| 24 | 03L10   | 03L10   | 03L11     | 500                 | 0.153                    | 0.78      | 0.041    | 0.66     | 0.18    | 0.17  | 2.74        | 2.49  | 22.51   | 22.37 | 0.35       | 0.35  |
| 25 | 03L11   | 03L11   | 03L12     | 500                 | 0.158                    | 0.80      | 0.041    | 0.67     | 0.17    | 0.18  | 2.49        | 2.21  | 22.37   | 22.24 | 0.35       | 0.36  |
| 26 | 03L12   | 03L12   | 03L13     | 500                 | 0.152                    | 0.77      | 0.042    | 0.66     | 0.18    | 0.18  | 2.21        | 1.94  | 22.24   | 22.11 | 0.36       | 0.37  |
| 27 | 03L13   | 03L13   | 03L14     | 500                 | 0.152                    | 0.77      | 0.043    | 0.67     | 0.18    | 0.18  | 1.94        | 1.67  | 22.11   | 21.98 | 0.37       | 0.36  |
| 28 | 03L14   | 03L14   | 03L15     | 500                 | 0.158                    | 0.80      | 0.043    | 0.67     | 0.18    | 0.19  | 1.67        | 1.41  | 21.98   | 21.85 | 0.36       | 0.37  |
| 29 | 03L15   | 03L15   | 03L16     | 500                 | 0.152                    | 0.77      | 0.044    | 0.55     | 0.19    | 0.27  | 1.41        | 1.29  | 21.85   | 21.80 | 0.37       | 0.53  |
| 30 | 03L16   | 03L16   | 03M16     | 600                 | 0.265                    | 0.94      | 0.093    | 0.75     | 0.27    | 0.28  | 1.29        | 1.72  | 21.80   | 21.78 | 0.44       | 0.46  |
| 31 | 03M16   | 03M16   | 03R16     | 600                 | 0.307                    | 1.08      | 0.093    | 0.68     | 0.28    | 0.31  | 1.72        | 1.30  | 21.78   | 21.77 | 0.46       | 0.51  |
| 32 | 03R26   | 03R26   | 03R25     | 300                 | 0.075                    | 1.06      | 0.007    | 0.44     | 0.06    | 0.10  | 1.25        | 1.27  | 25.08   | 24.68 | 0.20       | 0.33  |
| 33 | 03R25   | 03R25   | 03R24     | 300                 | 0.073                    | 1.04      | 0.017    | 0.74     | 0.10    | 0.12  | 1.27        | 1.30  | 24.68   | 24.25 | 0.33       | 0.41  |
| 34 | 03R24   | 03R24   | 03R23     | 300                 | 0.073                    | 1.03      | 0.025    | 0.87     | 0.12    | 0.14  | 1.30        | 1.32  | 24.25   | 23.83 | 0.41       | 0.46  |
| 35 | 03R23   | 03R23   | 03R22     | 300                 | 0.073                    | 1.04      | 0.032    | 0.95     | 0.14    | 0.15  | 1.32        | 1.36  | 23.83   | 23.39 | 0.46       | 0.51  |
| 36 | 03R21   | 03R21   | 03R20     | 400                 | 0.133                    | 1.06      | 0.044    | 0.92     | 0.16    | 0.17  | 1.49        | 1.40  | 22.86   | 22.55 | 0.40       | 0.42  |
| 37 | 03R20   | 03R20   | 03R19     | 400                 | 0.133                    | 1.06      | 0.048    | 0.87     | 0.17    | 0.20  | 1.40        | 1.23  | 22.55   | 22.26 | 0.42       | 0.50  |
| 38 | 03R19   | 03R19   | 03R18     | 400                 | 0.105                    | 0.83      | 0.052    | 0.83     | 0.20    | 0.20  | 1.23        | 1.14  | 22.26   | 22.06 | 0.50       | 0.51  |
| 39 | 03R18   | 03R18   | 03R17     | 400                 | 0.105                    | 0.83      | 0.054    | 0.84     | 0.20    | 0.20  | 1.14        | 1.20  | 22.06   | 21.86 | 0.51       | 0.51  |
| 40 | 03L26   | 03L26   | 03L25     | 300                 | 0.074                    | 1.05      | 0.007    | 0.44     | 0.06    | 0.10  | 1.09        | 1.10  | 25.25   | 24.85 | 0.20       | 0.33  |

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 \*\*\* INSTITUT FUER TECHN.-WISS. HYDROLOGIE \*\*\*\*\* E X T R A N \*\*\*\*\* US. ENVIRONMENTAL PROTECTION AGENCY \*\*\*  
 \*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\* \*\*\*  
 \*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L.FUCHS \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*  
 \*\*\* ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\* SEITE 9 \*\*\*  
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BAB A20 Nordwestumfahrung Hamburg  
 Hydraulischer Nachweis der Regenwasserkanäle

Stand 10/2007  
 $r_{15}(1) = 102,8 \text{ l/(s*ha)}$

MAXIMALWERTE FUER HALTUNGEN (TEIL 1) DES KANALNETZES: C:\Programme\itwh\Projekte\A20-Kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT |       | PRO<br>FIL<br>HOEHE | Q<br>VOLL<br>(STATIONAER) | V<br>VOLL | Q<br>MAX | V<br>MAX | RELATIV |       | WASSERTIEFE |       | ABSOLUT |       | AUSLASTUNG |       |
|----|---------|---------|-------|---------------------|---------------------------|-----------|----------|----------|---------|-------|-------------|-------|---------|-------|------------|-------|
|    |         | OBERN   | UNTEN |                     |                           |           |          |          | OBERN   | UNTEN | OBERN       | UNTEN | OBERN   | UNTEN | OBERN      | UNTEN |
|    |         |         |       | MM                  | CBM/S                     | M/S       | CBM/S    | M/S      | M       | M     | M           | M     | M       | NN    | M          | NN    |
| 41 | 03L25   | 03L25   | 03L24 | 300                 | 0.073                     | 1.04      | 0.017    | 0.74     | 0.10    | 0.12  | 1.10        | 1.13  | 24.85   | 24.42 | 0.33       | 0.41  |
| 42 | 03L24   | 03L24   | 03L23 | 300                 | 0.072                     | 1.02      | 0.025    | 0.86     | 0.12    | 0.14  | 1.13        | 1.15  | 24.42   | 24.00 | 0.41       | 0.47  |
| 43 | 03L23   | 03L23   | 03L22 | 300                 | 0.073                     | 1.04      | 0.032    | 0.95     | 0.14    | 0.15  | 1.15        | 1.19  | 24.00   | 23.56 | 0.47       | 0.51  |
| 44 | 03L21   | 03L21   | 03L20 | 400                 | 0.132                     | 1.05      | 0.044    | 0.93     | 0.16    | 0.17  | 1.32        | 1.23  | 23.03   | 22.72 | 0.40       | 0.42  |
| 45 | 03L20   | 03L20   | 03L19 | 400                 | 0.132                     | 1.05      | 0.049    | 0.89     | 0.17    | 0.20  | 1.23        | 1.07  | 22.72   | 22.43 | 0.42       | 0.50  |
| 46 | 03L19   | 03L19   | 03L18 | 400                 | 0.104                     | 0.83      | 0.052    | 0.82     | 0.20    | 0.20  | 1.07        | 0.98  | 22.43   | 22.23 | 0.50       | 0.51  |
| 47 | 03L18   | 03L18   | 03L17 | 400                 | 0.104                     | 0.83      | 0.054    | 0.84     | 0.20    | 0.23  | 0.98        | 1.01  | 22.23   | 22.06 | 0.51       | 0.56  |
| 48 | 03L17   | 03L17   | 03L16 | 400                 | 0.104                     | 0.83      | 0.053    | 0.88     | 0.23    | 0.17  | 1.01        | 1.29  | 22.06   | 21.80 | 0.56       | 0.41  |
| 49 | 03R01   | 03R01   | 03R02 | 300                 | 0.052                     | 0.74      | 0.004    | 0.28     | 0.06    | 0.10  | 1.11        | 1.42  | 24.06   | 23.97 | 0.19       | 0.32  |
| 50 | 03R02   | 03R02   | 03R03 | 300                 | 0.048                     | 0.67      | 0.011    | 0.47     | 0.10    | 0.12  | 1.42        | 1.77  | 23.97   | 23.87 | 0.32       | 0.41  |
| 51 | 03R17   | 03R17   | 03R16 | 400                 | 0.105                     | 0.83      | 0.054    | 0.65     | 0.20    | 0.31  | 1.20        | 1.30  | 21.86   | 21.77 | 0.51       | 0.77  |
| 52 | 03M03   | 03M03   | 03M02 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 24.60   | 24.35 | 0.00       | 0.00  |
| 53 | 03M06   | 03M06   | 03M05 | 150                 | 0.005                     | 0.29      | 0.000    | 0.00     | 0.00    | 0.00  | 1.43        | 1.43  | 25.34   | 25.25 | 0.00       | 0.00  |
| 54 | 03M05   | 03M05   | 03M04 | 150                 | 0.009                     | 0.49      | 0.000    | 0.00     | 0.00    | 0.00  | 1.43        | 1.40  | 25.25   | 25.00 | 0.00       | 0.00  |
| 55 | 03M04   | 03M04   | 03M03 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 25.00   | 24.60 | 0.00       | 0.00  |
| 56 | 03M03A  | 03M03   | 03R03 | 300                 | 0.098                     | 1.39      | 0.000    | 0.00     | 0.00    | 0.00  | 1.55        | 1.35  | 24.45   | 24.29 | 0.00       | 0.00  |
| 57 | 03M06A  | 03M06   | 03M07 | 150                 | 0.005                     | 0.29      | 0.000    | 0.00     | 0.00    | 0.00  | 1.43        | 1.44  | 25.34   | 25.25 | 0.00       | 0.00  |
| 58 | 03M07   | 03M07   | 03M08 | 150                 | 0.009                     | 0.49      | 0.000    | 0.00     | 0.00    | 0.00  | 1.44        | 1.41  | 25.25   | 25.00 | 0.00       | 0.00  |
| 59 | 03M08   | 03M08   | 03M09 | 150                 | 0.011                     | 0.60      | 0.000    | 0.00     | 0.00    | 0.00  | 1.41        | 1.40  | 25.00   | 24.62 | 0.00       | 0.00  |
| 60 | 03M09   | 03M09   | 03R09 | 300                 | 0.098                     | 1.39      | 0.000    | 0.00     | 0.00    | 0.00  | 1.55        | 1.35  | 24.47   | 24.31 | 0.00       | 0.00  |
| 61 | 03M09A  | 03M09   | 03M10 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 24.62   | 24.21 | 0.00       | 0.00  |
| 62 | 03M10   | 03M10   | 03M11 | 150                 | 0.011                     | 0.61      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 24.21   | 23.82 | 0.00       | 0.00  |
| 63 | 03M11   | 03M11   | 03M12 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 23.82   | 23.42 | 0.00       | 0.00  |
| 64 | 03M12   | 03M12   | 03R12 | 300                 | 0.098                     | 1.39      | 0.000    | 0.00     | 0.00    | 0.00  | 1.55        | 1.34  | 23.27   | 23.11 | 0.00       | 0.00  |
| 65 | 03M12A  | 03M12   | 03M13 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 23.42   | 23.01 | 0.00       | 0.00  |
| 66 | 03M13   | 03M13   | 03M14 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 23.01   | 22.61 | 0.00       | 0.00  |
| 67 | 03M14   | 03M14   | 03M15 | 150                 | 0.010                     | 0.55      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.39  | 22.61   | 22.29 | 0.00       | 0.00  |
| 68 | 03M15   | 03M15   | 03R15 | 300                 | 0.060                     | 0.85      | 0.000    | 0.00     | 0.00    | 0.00  | 1.80        | 1.43  | 21.88   | 21.82 | 0.00       | 0.00  |
| 69 | 03M161  | 03M161  | 03M15 | 150                 | 0.005                     | 0.31      | 0.000    | 0.00     | 0.00    | 0.00  | 1.37        | 1.65  | 22.13   | 22.03 | 0.00       | 0.00  |
| 70 | 03M162  | 03M162  | 03M17 | 150                 | 0.005                     | 0.31      | 0.000    | 0.00     | 0.00    | 0.00  | 1.37        | 1.46  | 22.12   | 22.02 | 0.00       | 0.00  |
| 71 | 03M17   | 03M17   | 03R17 | 300                 | 0.081                     | 1.15      | 0.000    | 0.00     | 0.00    | 0.10  | 1.61        | 1.20  | 21.87   | 21.86 | 0.00       | 0.35  |
| 72 | 03M20   | 03M20   | 03M19 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.40  | 22.91   | 22.51 | 0.00       | 0.00  |
| 73 | 03M19   | 03M19   | 03M18 | 150                 | 0.009                     | 0.51      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.38  | 22.51   | 22.23 | 0.00       | 0.00  |
| 74 | 03M23   | 03M23   | 03M22 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.46        | 1.45  | 24.11   | 23.71 | 0.00       | 0.00  |
| 75 | 03M22   | 03M22   | 03M21 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.45        | 1.46  | 23.71   | 23.31 | 0.00       | 0.00  |
| 76 | 03M21   | 03M21   | 03M20 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.46        | 1.40  | 23.31   | 22.91 | 0.00       | 0.00  |
| 77 | 03M20A  | 03M20   | 03R20 | 300                 | 0.130                     | 1.84      | 0.000    | 0.00     | 0.00    | 0.07  | 1.55        | 1.40  | 22.76   | 22.55 | 0.00       | 0.22  |
| 78 | 03M26   | 03M26   | 03M25 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.41  | 25.31   | 24.91 | 0.00       | 0.00  |
| 79 | 03M25   | 03M25   | 03M24 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.41        | 1.40  | 24.91   | 24.51 | 0.00       | 0.00  |
| 80 | 03M24   | 03M24   | 03M23 | 150                 | 0.011                     | 0.62      | 0.000    | 0.00     | 0.00    | 0.00  | 1.40        | 1.46  | 24.51   | 24.11 | 0.00       | 0.00  |

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 \*\*\*\* INSTITUT FUER TECHN.-WISS. HYDROLOGIE \*\*\*\*\* E X T R A N \*\*\*\*\* US. ENVIRONMENTAL PROTECTION AGENCY \*\*\*\*  
 \*\*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\*  
 \*\*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L.FUCHS \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*\*\*  
 \*\*\*\* ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\* SEITE 10 \*\*\*\*  
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BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

MAXIMALWERTE FUER HALTUNGEN (TEIL 1) DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-Kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT | SCHACHT | PRO<br>FIL<br>HOEHE | Q                    | V    | Q      | V    | RELATIV<br>OBER UNTER | WASSERTIEFE<br>UNTER OBER | GELAENDE<br>UNTER | ABSOLUT |       | AUSLASTUNG |       |      |
|----|---------|---------|---------|---------------------|----------------------|------|--------|------|-----------------------|---------------------------|-------------------|---------|-------|------------|-------|------|
|    |         | OBER    | UNTEN   |                     | VOLL<br>(STATIONAER) | VOLL | MAX    | MAX  |                       |                           |                   | OBER    | UNTEN | OBER       | UNTEN |      |
|    |         |         |         | MM                  | CBM/S                | M/S  | CBM/S  | M/S  | M                     | M                         | M                 | M       | M NN  | M NN       |       |      |
| 81 | 03M23A  | 03M23   | 03R23   | 300                 | 0.128                | 1.81 | 0.000  | 0.00 | 0.00                  | 0.14                      | 1.61              | 1.32    | 23.96 | 23.83      | 0.00  | 0.46 |
| 82 | 03M02A  | 03M02   | 03M01   | 150                 | 0.012                | 0.66 | 0.000  | 0.00 | 0.00                  | 0.00                      | 1.40              | 1.43    | 24.35 | 24.09      | 0.00  | 0.00 |
| 83 | 03M01A  | 03M01   | 03R01   | 300                 | 0.074                | 1.04 | 0.000  | 0.00 | 0.00                  | 0.06                      | 1.43              | 1.11    | 24.09 | 24.06      | 0.00  | 0.19 |
| 84 | 03M18A  | 03M18.1 | 03M18   | 150                 | 0.007                | 0.39 | 0.000  | 0.00 | 0.00                  | 0.06                      | 1.43              | 1.55    | 22.09 | 22.06      | 0.00  | 0.43 |
| 85 | 03M17A  | 03M17.1 | 03M17   | 150                 | 0.003                | 0.19 | 0.000  | 0.00 | 0.00                  | 0.00                      | 1.40              | 1.39    | 22.10 | 22.09      | 0.00  | 0.00 |
| 86 | 03M18   | 03M18   | 03R18   | 300                 | 0.049                | 0.69 | -0.002 | 0.26 | 0.06                  | 0.10                      | 1.55              | 1.14    | 22.06 | 22.06      | 0.22  | 0.35 |
| 87 | 03R21.1 | 03R21.1 | 03R21   | 300                 | 0.072                | 1.02 | 0.040  | 1.05 | 0.17                  | 0.15                      | 1.31              | 1.40    | 23.16 | 22.95      | 0.55  | 0.52 |
| 88 | 03R22   | 03R22   | 03R21.2 | 300                 | 0.072                | 1.02 | 0.037  | 1.02 | 0.15                  | 0.15                      | 1.36              | 1.23    | 23.39 | 23.21      | 0.51  | 0.51 |
| 89 | 03R21.2 | 03R21.2 | 03R21.1 | 300                 | 0.074                | 1.05 | 0.039  | 1.03 | 0.15                  | 0.17                      | 1.23              | 1.31    | 23.21 | 23.16      | 0.51  | 0.55 |
| 90 | 03L21.1 | 03L21.1 | 03L21   | 300                 | 0.071                | 1.00 | 0.041  | 1.04 | 0.17                  | 0.16                      | 1.05              | 1.22    | 23.26 | 23.13      | 0.57  | 0.52 |
| 91 | 03L22   | 03L22   | 03L21.2 | 300                 | 0.073                | 1.03 | 0.038  | 1.03 | 0.15                  | 0.16                      | 1.19              | 1.15    | 23.56 | 23.32      | 0.51  | 0.52 |
| 92 | 03L21.2 | 03L21.2 | 03L21.1 | 300                 | 0.074                | 1.05 | 0.040  | 1.02 | 0.16                  | 0.17                      | 1.15              | 1.05    | 23.32 | 23.26      | 0.52  | 0.57 |



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 \*\*\* INSTITUT FUER TECHN.-WISS. HYDROLOGIE \*\*\*\*\* E X T R A N \*\*\*\*\* US. ENVIRONMENTAL PROTECTION AGENCY \*\*\*  
 \*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*\*\*  
 \*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L. FUCHS \*\*\*\*\*  
 \*\*\* ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\* SEITE 11 \*\*\*\*\*

BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

MAXIMALWERTE FUER HALTUNGEN (TEIL 2) DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT | SCHACHT   | Q     | DATUM    | ZEIT  | V    | DATUM    | ZEIT  | WASSER    | DATUM    | ZEIT  | WASSER    | DATUM    | ZEIT  |
|----|---------|---------|-----------|-------|----------|-------|------|----------|-------|-----------|----------|-------|-----------|----------|-------|
|    |         | OBERN   | UNTEN     | MAX   |          |       | MAX  |          |       | STAND MAX |          |       | STAND MAX |          |       |
|    |         |         |           | CBM/S |          | HH:MM | M/S  |          | HH:MM | M NN      |          | HH:MM | M NN      |          | HH:MM |
| 1  | 03R03   | 03R03   | 03R04     | 0.017 | 31.10.07 | 0:10  | 0.57 | 31.10.07 | 0:10  | 23.87     | 31.10.07 | 0:10  | 23.70     | 31.10.07 | 0:11  |
| 2  | 03R04   | 03R04   | 03R05     | 0.024 | 31.10.07 | 0:11  | 0.69 | 31.10.07 | 0:10  | 23.70     | 31.10.07 | 0:11  | 23.53     | 31.10.07 | 0:13  |
| 3  | 03R05   | 03R05   | 03R06     | 0.026 | 31.10.07 | 0:13  | 0.74 | 31.10.07 | 0:14  | 23.53     | 31.10.07 | 0:13  | 23.27     | 31.10.07 | 0:13  |
| 4  | 03R06   | 03R06   | 03R07     | 0.031 | 31.10.07 | 0:14  | 0.64 | 31.10.07 | 0:13  | 23.21     | 31.10.07 | 0:14  | 23.06     | 31.10.07 | 0:14  |
| 5  | 03R07   | 03R07   | 03R08     | 0.035 | 31.10.07 | 0:14  | 0.67 | 31.10.07 | 0:14  | 23.06     | 31.10.07 | 0:14  | 22.91     | 31.10.07 | 0:14  |
| 6  | 03R08   | 03R08   | 03R09     | 0.038 | 31.10.07 | 0:14  | 0.70 | 31.10.07 | 0:12  | 22.91     | 31.10.07 | 0:14  | 22.77     | 31.10.07 | 0:16  |
| 7  | 03R09   | 03R09   | 03R10     | 0.038 | 31.10.07 | 0:16  | 0.76 | 31.10.07 | 0:17  | 22.77     | 31.10.07 | 0:16  | 22.55     | 31.10.07 | 0:17  |
| 8  | 03R10   | 03R10   | 03R11     | 0.040 | 31.10.07 | 0:17  | 0.66 | 31.10.07 | 0:17  | 22.49     | 31.10.07 | 0:16  | 22.35     | 31.10.07 | 0:18  |
| 9  | 03R11   | 03R11   | 03R12     | 0.041 | 31.10.07 | 0:18  | 0.67 | 31.10.07 | 0:17  | 22.35     | 31.10.07 | 0:18  | 22.22     | 31.10.07 | 0:18  |
| 10 | 03R12   | 03R12   | 03R13     | 0.042 | 31.10.07 | 0:18  | 0.65 | 31.10.07 | 0:18  | 22.22     | 31.10.07 | 0:18  | 22.09     | 31.10.07 | 0:19  |
| 11 | 03R13   | 03R13   | 03R14     | 0.042 | 31.10.07 | 0:19  | 0.68 | 31.10.07 | 0:20  | 22.09     | 31.10.07 | 0:19  | 21.95     | 31.10.07 | 0:20  |
| 12 | 03R14   | 03R14   | 03R15     | 0.042 | 31.10.07 | 0:20  | 0.69 | 31.10.07 | 0:23  | 21.95     | 31.10.07 | 0:20  | 21.80     | 31.10.07 | 0:19  |
| 13 | 03R15   | 03R15   | 03R16     | 0.045 | 31.10.07 | 0:22  | 0.49 | 31.10.07 | 0:23  | 21.80     | 31.10.07 | 0:19  | 21.77     | 31.10.07 | 0:19  |
| 14 | 03R16   | 03R16   | 03-Aus1-1 | 0.184 | 31.10.07 | 0:19  | 1.10 | 31.10.07 | 0:19  | 21.77     | 31.10.07 | 0:19  | 21.68     | 31.10.07 | 0:19  |
| 15 | 03L01   | 03L01   | 03L02     | 0.004 | 31.10.07 | 0:09  | 0.29 | 31.10.07 | 0:09  | 24.08     | 31.10.07 | 0:09  | 23.99     | 31.10.07 | 0:09  |
| 16 | 03L02   | 03L02   | 03L03     | 0.011 | 31.10.07 | 0:09  | 0.47 | 31.10.07 | 0:09  | 23.99     | 31.10.07 | 0:09  | 23.90     | 31.10.07 | 0:10  |
| 17 | 03L03   | 03L03   | 03L04     | 0.018 | 31.10.07 | 0:10  | 0.58 | 31.10.07 | 0:09  | 23.90     | 31.10.07 | 0:10  | 23.72     | 31.10.07 | 0:11  |
| 18 | 03L04   | 03L04   | 03L05     | 0.024 | 31.10.07 | 0:11  | 0.70 | 31.10.07 | 0:10  | 23.72     | 31.10.07 | 0:11  | 23.55     | 31.10.07 | 0:13  |
| 19 | 03L05   | 03L05   | 03L06     | 0.027 | 31.10.07 | 0:13  | 0.74 | 31.10.07 | 0:14  | 23.55     | 31.10.07 | 0:13  | 23.29     | 31.10.07 | 0:13  |
| 20 | 03L06   | 03L06   | 03L07     | 0.031 | 31.10.07 | 0:14  | 0.64 | 31.10.07 | 0:13  | 23.23     | 31.10.07 | 0:14  | 23.08     | 31.10.07 | 0:14  |
| 21 | 03L07   | 03L07   | 03L08     | 0.035 | 31.10.07 | 0:14  | 0.67 | 31.10.07 | 0:13  | 23.08     | 31.10.07 | 0:14  | 22.93     | 31.10.07 | 0:14  |
| 22 | 03L08   | 03L08   | 03L09     | 0.038 | 31.10.07 | 0:14  | 0.70 | 31.10.07 | 0:12  | 22.93     | 31.10.07 | 0:14  | 22.79     | 31.10.07 | 0:16  |
| 23 | 03L09   | 03L09   | 03L10     | 0.039 | 31.10.07 | 0:16  | 0.76 | 31.10.07 | 0:17  | 22.79     | 31.10.07 | 0:16  | 22.57     | 31.10.07 | 0:16  |
| 24 | 03L10   | 03L10   | 03L11     | 0.041 | 31.10.07 | 0:17  | 0.66 | 31.10.07 | 0:17  | 22.51     | 31.10.07 | 0:16  | 22.37     | 31.10.07 | 0:18  |
| 25 | 03L11   | 03L11   | 03L12     | 0.041 | 31.10.07 | 0:18  | 0.67 | 31.10.07 | 0:18  | 22.37     | 31.10.07 | 0:18  | 22.24     | 31.10.07 | 0:18  |
| 26 | 03L12   | 03L12   | 03L13     | 0.042 | 31.10.07 | 0:18  | 0.66 | 31.10.07 | 0:17  | 22.24     | 31.10.07 | 0:18  | 22.11     | 31.10.07 | 0:19  |
| 27 | 03L13   | 03L13   | 03L14     | 0.043 | 31.10.07 | 0:19  | 0.67 | 31.10.07 | 0:20  | 22.11     | 31.10.07 | 0:19  | 21.98     | 31.10.07 | 0:20  |
| 28 | 03L14   | 03L14   | 03L15     | 0.043 | 31.10.07 | 0:20  | 0.67 | 31.10.07 | 0:21  | 21.98     | 31.10.07 | 0:20  | 21.85     | 31.10.07 | 0:20  |
| 29 | 03L15   | 03L15   | 03L16     | 0.044 | 31.10.07 | 0:21  | 0.55 | 31.10.07 | 0:26  | 21.85     | 31.10.07 | 0:20  | 21.80     | 31.10.07 | 0:19  |
| 30 | 03L16   | 03L16   | 03M16     | 0.093 | 31.10.07 | 0:19  | 0.75 | 31.10.07 | 0:16  | 21.80     | 31.10.07 | 0:19  | 21.78     | 31.10.07 | 0:19  |
| 31 | 03M16   | 03M16   | 03R16     | 0.093 | 31.10.07 | 0:19  | 0.68 | 31.10.07 | 0:20  | 21.78     | 31.10.07 | 0:19  | 21.77     | 31.10.07 | 0:19  |
| 32 | 03R26   | 03R26   | 03R25     | 0.007 | 31.10.07 | 0:10  | 0.44 | 31.10.07 | 0:09  | 25.08     | 31.10.07 | 0:10  | 24.68     | 31.10.07 | 0:10  |
| 33 | 03R25   | 03R25   | 03R24     | 0.017 | 31.10.07 | 0:10  | 0.74 | 31.10.07 | 0:10  | 24.68     | 31.10.07 | 0:10  | 24.25     | 31.10.07 | 0:10  |
| 34 | 03R24   | 03R24   | 03R23     | 0.025 | 31.10.07 | 0:10  | 0.87 | 31.10.07 | 0:10  | 24.25     | 31.10.07 | 0:10  | 23.83     | 31.10.07 | 0:11  |
| 35 | 03R23   | 03R23   | 03R22     | 0.032 | 31.10.07 | 0:11  | 0.95 | 31.10.07 | 0:10  | 23.83     | 31.10.07 | 0:11  | 23.39     | 31.10.07 | 0:11  |
| 36 | 03R21   | 03R21   | 03R20     | 0.044 | 31.10.07 | 0:13  | 0.92 | 31.10.07 | 0:12  | 22.86     | 31.10.07 | 0:13  | 22.55     | 31.10.07 | 0:13  |
| 37 | 03R20   | 03R20   | 03R19     | 0.048 | 31.10.07 | 0:13  | 0.87 | 31.10.07 | 0:12  | 22.55     | 31.10.07 | 0:13  | 22.26     | 31.10.07 | 0:14  |
| 38 | 03R19   | 03R19   | 03R18     | 0.052 | 31.10.07 | 0:14  | 0.83 | 31.10.07 | 0:12  | 22.26     | 31.10.07 | 0:14  | 22.06     | 31.10.07 | 0:15  |
| 39 | 03R18   | 03R18   | 03R17     | 0.054 | 31.10.07 | 0:16  | 0.84 | 31.10.07 | 0:16  | 22.06     | 31.10.07 | 0:15  | 21.86     | 31.10.07 | 0:16  |
| 40 | 03L26   | 03L26   | 03L25     | 0.007 | 31.10.07 | 0:10  | 0.44 | 31.10.07 | 0:09  | 25.25     | 31.10.07 | 0:10  | 24.85     | 31.10.07 | 0:10  |

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 \*\*\*\* INSTITUT FUER TECHN.-WISS. HYDROLOGIE \*\*\*\*\* E X T R A N \*\*\*\*\* US. ENVIRONMENTAL PROTECTION AGENCY \*\*\*\*\*  
 \*\*\*\* ITWH -- HANNOVER \*\*\*\*\* 6.3.2 \*\*\*\*\*  
 \*\*\*\* INST. F. WASSERWIRTSCHAFT - UNI HANNOVER \*\*\*\*\* L. FUCHS \*\*\*\*\* CAMP DRESSER AND MCKEE INC. \*\*\*\*\*  
 \*\*\*\* ARGE MIV - Schwerin / Merkel Ing.-Consult \*\*\*\*\* SEITE 12 \*\*\*\*\*  
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BAB A20 nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

MAXIMALWERTE FUER HALTUNGEN (TEIL 2) DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-Kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT |       | Q<br>MAX | DATUM    | ZEIT | V<br>MAX | DATUM    | ZEIT | WASSER |              | DATUM | ZEIT  | WASSER   |              | DATUM | ZEIT     |      |
|----|---------|---------|-------|----------|----------|------|----------|----------|------|--------|--------------|-------|-------|----------|--------------|-------|----------|------|
|    |         | OBERN   | UNTEN |          |          |      |          |          |      | STAND  | MAX<br>OBERN |       |       | STAND    | MAX<br>UNTEN |       |          |      |
|    |         |         |       |          |          |      |          |          |      |        |              |       |       |          |              |       |          |      |
|    |         |         |       |          | CBM/S    |      |          | M/S      |      |        | M NN         |       |       | M NN     |              |       | HH:MM    |      |
| 41 | 03L25   | 03L25   | 03L24 | 0.017    | 31.10.07 | 0:10 | 0.74     | 31.10.07 | 0:10 | 24.85  | 31.10.07     | 0:10  | 24.42 | 31.10.07 | 0:10         | 24.42 | 31.10.07 | 0:10 |
| 42 | 03L24   | 03L24   | 03L23 | 0.025    | 31.10.07 | 0:10 | 0.86     | 31.10.07 | 0:10 | 24.42  | 31.10.07     | 0:10  | 24.00 | 31.10.07 | 0:10         | 24.00 | 31.10.07 | 0:11 |
| 43 | 03L23   | 03L23   | 03L22 | 0.032    | 31.10.07 | 0:11 | 0.95     | 31.10.07 | 0:10 | 24.00  | 31.10.07     | 0:11  | 23.56 | 31.10.07 | 0:11         | 23.56 | 31.10.07 | 0:11 |
| 44 | 03L21   | 03L21   | 03L20 | 0.044    | 31.10.07 | 0:12 | 0.93     | 31.10.07 | 0:12 | 23.03  | 31.10.07     | 0:12  | 22.72 | 31.10.07 | 0:12         | 22.72 | 31.10.07 | 0:13 |
| 45 | 03L20   | 03L20   | 03L19 | 0.049    | 31.10.07 | 0:13 | 0.89     | 31.10.07 | 0:12 | 22.72  | 31.10.07     | 0:13  | 22.43 | 31.10.07 | 0:13         | 22.43 | 31.10.07 | 0:14 |
| 46 | 03L19   | 03L19   | 03L18 | 0.052    | 31.10.07 | 0:14 | 0.82     | 31.10.07 | 0:14 | 22.43  | 31.10.07     | 0:14  | 22.23 | 31.10.07 | 0:14         | 22.23 | 31.10.07 | 0:15 |
| 47 | 03L18   | 03L18   | 03L17 | 0.054    | 31.10.07 | 0:15 | 0.84     | 31.10.07 | 0:13 | 22.23  | 31.10.07     | 0:15  | 22.06 | 31.10.07 | 0:15         | 22.06 | 31.10.07 | 0:16 |
| 48 | 03L17   | 03L17   | 03L16 | 0.053    | 31.10.07 | 0:17 | 0.88     | 31.10.07 | 0:17 | 22.06  | 31.10.07     | 0:16  | 21.80 | 31.10.07 | 0:16         | 21.80 | 31.10.07 | 0:19 |
| 49 | 03R01   | 03R01   | 03R02 | 0.004    | 31.10.07 | 0:09 | 0.28     | 31.10.07 | 0:09 | 24.06  | 31.10.07     | 0:09  | 23.97 | 31.10.07 | 0:09         | 23.97 | 31.10.07 | 0:09 |
| 50 | 03R02   | 03R02   | 03R03 | 0.011    | 31.10.07 | 0:09 | 0.47     | 31.10.07 | 0:09 | 23.97  | 31.10.07     | 0:09  | 23.87 | 31.10.07 | 0:09         | 23.87 | 31.10.07 | 0:10 |
|    |         |         |       |          |          |      |          |          |      |        |              |       |       |          |              |       |          |      |
| 51 | 03R17   | 03R17   | 03R16 | 0.054    | 31.10.07 | 0:16 | 0.65     | 31.10.07 | 0:16 | 21.86  | 31.10.07     | 0:16  | 21.77 | 31.10.07 | 0:16         | 21.77 | 31.10.07 | 0:19 |
| 52 | 03M03   | 03M03   | 03M02 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.60  | 31.10.07     | 0:00  | 24.35 | 31.10.07 | 0:00         | 24.35 | 31.10.07 | 0:00 |
| 53 | 03M06   | 03M06   | 03M05 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 25.34  | 31.10.07     | 0:00  | 25.25 | 31.10.07 | 0:00         | 25.25 | 31.10.07 | 0:00 |
| 54 | 03M05   | 03M05   | 03M04 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 25.25  | 31.10.07     | 0:00  | 25.00 | 31.10.07 | 0:00         | 25.00 | 31.10.07 | 0:00 |
| 55 | 03M04   | 03M04   | 03M03 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 25.00  | 31.10.07     | 0:00  | 24.60 | 31.10.07 | 0:00         | 24.60 | 31.10.07 | 0:00 |
| 56 | 03M03A  | 03M03   | 03R03 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.45  | 31.10.07     | 0:10  | 24.29 | 31.10.07 | 0:10         | 24.29 | 31.10.07 | 0:10 |
| 57 | 03M06A  | 03M06   | 03M07 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 25.34  | 31.10.07     | 0:00  | 25.25 | 31.10.07 | 0:00         | 25.25 | 31.10.07 | 0:00 |
| 58 | 03M07   | 03M07   | 03M08 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 25.25  | 31.10.07     | 0:00  | 25.00 | 31.10.07 | 0:00         | 25.00 | 31.10.07 | 0:00 |
| 59 | 03M08   | 03M08   | 03M09 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 25.00  | 31.10.07     | 0:00  | 24.62 | 31.10.07 | 0:00         | 24.62 | 31.10.07 | 0:00 |
| 60 | 03M09   | 03M09   | 03R09 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.47  | 31.10.07     | 0:16  | 24.31 | 31.10.07 | 0:16         | 24.31 | 31.10.07 | 0:16 |
|    |         |         |       |          |          |      |          |          |      |        |              |       |       |          |              |       |          |      |
| 61 | 03M09A  | 03M09   | 03M10 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.62  | 31.10.07     | 0:00  | 24.21 | 31.10.07 | 0:00         | 24.21 | 31.10.07 | 0:00 |
| 62 | 03M10   | 03M10   | 03M11 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.21  | 31.10.07     | 0:00  | 23.82 | 31.10.07 | 0:00         | 23.82 | 31.10.07 | 0:00 |
| 63 | 03M11   | 03M11   | 03M12 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 23.82  | 31.10.07     | 0:00  | 23.42 | 31.10.07 | 0:00         | 23.42 | 31.10.07 | 0:00 |
| 64 | 03M12   | 03M12   | 03R12 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 23.27  | 31.10.07     | 0:18  | 23.11 | 31.10.07 | 0:18         | 23.11 | 31.10.07 | 0:18 |
| 65 | 03M12A  | 03M12   | 03M13 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 23.42  | 31.10.07     | 0:00  | 23.01 | 31.10.07 | 0:00         | 23.01 | 31.10.07 | 0:00 |
| 66 | 03M13   | 03M13   | 03M14 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 23.01  | 31.10.07     | 0:00  | 22.61 | 31.10.07 | 0:00         | 22.61 | 31.10.07 | 0:00 |
| 67 | 03M14   | 03M14   | 03M15 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 22.61  | 31.10.07     | 0:00  | 22.29 | 31.10.07 | 0:00         | 22.29 | 31.10.07 | 0:00 |
| 68 | 03M15   | 03M15   | 03R15 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 21.88  | 31.10.07     | 0:19  | 21.82 | 31.10.07 | 0:19         | 21.82 | 31.10.07 | 0:19 |
| 69 | 03M161  | 03M161  | 03M15 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 22.13  | 31.10.07     | 0:00  | 22.03 | 31.10.07 | 0:00         | 22.03 | 31.10.07 | 0:00 |
| 70 | 03M162  | 03M162  | 03M17 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 22.12  | 31.10.07     | 0:00  | 22.02 | 31.10.07 | 0:00         | 22.02 | 31.10.07 | 0:00 |
|    |         |         |       |          |          |      |          |          |      |        |              |       |       |          |              |       |          |      |
| 71 | 03M17   | 03M17   | 03R17 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 21.87  | 31.10.07     | 0:16  | 21.86 | 31.10.07 | 0:16         | 21.86 | 31.10.07 | 0:16 |
| 72 | 03M20   | 03M20   | 03M19 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 22.91  | 31.10.07     | 0:00  | 22.51 | 31.10.07 | 0:00         | 22.51 | 31.10.07 | 0:00 |
| 73 | 03M19   | 03M19   | 03M18 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 22.51  | 31.10.07     | 0:16  | 22.23 | 31.10.07 | 0:16         | 22.23 | 31.10.07 | 0:16 |
| 74 | 03M23   | 03M23   | 03M22 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.11  | 31.10.07     | 0:00  | 23.71 | 31.10.07 | 0:00         | 23.71 | 31.10.07 | 0:00 |
| 75 | 03M22   | 03M22   | 03M21 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 23.71  | 31.10.07     | 0:00  | 23.31 | 31.10.07 | 0:00         | 23.31 | 31.10.07 | 0:00 |
| 76 | 03M21   | 03M21   | 03M20 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 23.31  | 31.10.07     | 0:00  | 22.91 | 31.10.07 | 0:00         | 22.91 | 31.10.07 | 0:00 |
| 77 | 03M20A  | 03M20   | 03R20 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 22.76  | 31.10.07     | 0:13  | 22.55 | 31.10.07 | 0:13         | 22.55 | 31.10.07 | 0:13 |
| 78 | 03M26   | 03M26   | 03M25 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 25.31  | 31.10.07     | 0:00  | 24.91 | 31.10.07 | 0:00         | 24.91 | 31.10.07 | 0:00 |
| 79 | 03M25   | 03M25   | 03M24 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.91  | 31.10.07     | 0:00  | 24.51 | 31.10.07 | 0:00         | 24.51 | 31.10.07 | 0:00 |
| 80 | 03M24   | 03M24   | 03M23 | 0.000    | 31.10.07 | 0:00 | 0.00     | 31.10.07 | 0:00 | 24.51  | 31.10.07     | 0:00  | 24.11 | 31.10.07 | 0:00         | 24.11 | 31.10.07 | 0:00 |

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**** INSTITUT FUER TECHN.-WISS. HYDROLOGIE ***** E X T R A N ***** US. ENVIRONMENTAL PROTECTION AGENCY ****
**** ITWH -- HANNOVER ***** 6.3.2 ***** CAMP DRESSER AND MCKEE INC. ****
**** INST. F. WASSERWIRTSCHAFT - UNI HANNOVER ***** L.FUCHS *****
***** ARGE MIV - Schwerin / Merkel Ing.-Consult ***** SEITE 13 ****
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BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

MAXIMALWERTE FUER HALTUNGEN (TEIL 2) DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | HALTUNG | SCHACHT<br>OBEN | SCHACHT<br>UNTEN | Q<br>MAX | DATUM    | ZEIT  | V<br>MAX | DATUM    | ZEIT  | WASSER<br>STAND MAX<br>OBEN | DATUM    | ZEIT  | WASSER<br>STAND MAX<br>UNTEN | DATUM    | ZEIT  |
|----|---------|-----------------|------------------|----------|----------|-------|----------|----------|-------|-----------------------------|----------|-------|------------------------------|----------|-------|
|    |         |                 |                  | CBM/S    |          | HH:MM | M/S      |          | HH:MM | M NN                        |          | HH:MM | M NN                         |          | HH:MM |
| 81 | 03M23A  | 03M23           | 03R23            | 0.000    | 31.10.07 | 0:00  | 0.00     | 31.10.07 | 0:00  | 23.96                       | 31.10.07 | 0:11  | 23.83                        | 31.10.07 | 0:11  |
| 82 | 03M02A  | 03M02           | 03M01            | 0.000    | 31.10.07 | 0:00  | 0.00     | 31.10.07 | 0:00  | 24.35                       | 31.10.07 | 0:00  | 24.09                        | 31.10.07 | 0:00  |
| 83 | 03M01A  | 03M01           | 03R01            | 0.000    | 31.10.07 | 0:00  | 0.00     | 31.10.07 | 0:00  | 24.09                       | 31.10.07 | 0:09  | 24.06                        | 31.10.07 | 0:09  |
| 84 | 03M18A  | 03M18.1         | 03M18            | 0.000    | 31.10.07 | 0:00  | 0.00     | 31.10.07 | 0:00  | 22.09                       | 31.10.07 | 0:16  | 22.06                        | 31.10.07 | 0:16  |
| 85 | 03M17A  | 03M17.1         | 03M17            | 0.000    | 31.10.07 | 0:00  | 0.00     | 31.10.07 | 0:00  | 22.10                       | 31.10.07 | 0:00  | 22.09                        | 31.10.07 | 0:00  |
| 86 | 03M18   | 03M18           | 03R18            | -0.002   | 31.10.07 | 0:13  | 0.26     | 31.10.07 | 2:53  | 22.06                       | 31.10.07 | 0:16  | 22.06                        | 31.10.07 | 0:15  |
| 87 | 03R21.1 | 03R21.1         | 03R21            | 0.040    | 31.10.07 | 0:12  | 1.05     | 31.10.07 | 0:13  | 23.16                       | 31.10.07 | 0:12  | 22.95                        | 31.10.07 | 0:12  |
| 88 | 03R22   | 03R22           | 03R21.2          | 0.037    | 31.10.07 | 0:11  | 1.02     | 31.10.07 | 0:11  | 23.39                       | 31.10.07 | 0:11  | 23.21                        | 31.10.07 | 0:12  |
| 89 | 03R21.2 | 03R21.2         | 03R21.1          | 0.039    | 31.10.07 | 0:12  | 1.03     | 31.10.07 | 0:10  | 23.21                       | 31.10.07 | 0:12  | 23.16                        | 31.10.07 | 0:12  |
| 90 | 03L21.1 | 03L21.1         | 03L21            | 0.041    | 31.10.07 | 0:12  | 1.04     | 31.10.07 | 0:12  | 23.26                       | 31.10.07 | 0:12  | 23.13                        | 31.10.07 | 0:12  |
| 91 | 03L22   | 03L22           | 03L21.2          | 0.038    | 31.10.07 | 0:11  | 1.03     | 31.10.07 | 0:11  | 23.56                       | 31.10.07 | 0:11  | 23.32                        | 31.10.07 | 0:12  |
| 92 | 03L21.2 | 03L21.2         | 03L21.1          | 0.040    | 31.10.07 | 0:12  | 1.02     | 31.10.07 | 0:10  | 23.32                       | 31.10.07 | 0:12  | 23.26                        | 31.10.07 | 0:12  |

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**** INSTITUT FUER TECHN.-WISS. HYDROLOGIE ***** E X T R A N ***** US. ENVIRONMENTAL PROTECTION AGENCY ****
**** ITWH -- HANNOVER ***** 6.3.2 *****
**** INST. F. WASSERWIRTSCHAFT - UNI HANNOVER ***** L.FUCHS ***** CAMP DRESSER AND MCKEE INC. ****
***** ARGE MIV - Schwerin / Merkel Ing.-Consult ***** SEITE 14 ****
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BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)

MAXIMALWERTE FUER SONDERBAUWERKE DES KANALNETZES: C:\Programme\Itwh\Projekte\A20-Kanal\EA\_06\3\_BA\RL15-1\EA\_06.net

| NR | ELEMENT   | SCHACHT<br>OBEN | SCHACHT<br>UNTEN | Q                       | Q     | DATUM    | ZEIT  | GESAMT                   | DAUER |
|----|-----------|-----------------|------------------|-------------------------|-------|----------|-------|--------------------------|-------|
|    |           |                 |                  | TROCKEN<br>(STATIONAER) | MAX   |          |       | VOLUMEN<br>DER GANGLINIE |       |
|    |           |                 |                  | CBM/S                   | CBM/S |          | HH:MM | CBM                      | HH:MM |
| 93 | FR.AUS. 1 | 03-Aus1-1       |                  | 0.000                   | 0.184 | 31.10.07 | 0:19  | 270.428                  | 2:59  |

PROJEKT : BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 : Hydraulischer Nachweis der Regenwasserkanäle r15(1) = 102,8 l/(s\*ha)  
 BERECHNUNGSMETHODE: HYSTEM / EXTRAN 6.3.2 (ITWH)  
 ERSTELLT VOM : ITWH HANNOVER -- INSTITUT FUER TECHNISCH-WISSENSCHAFTLICHE HYDROLOGIE  
 AUFTRAGGEBER :  
 AUFTRAGNEHMER : ARGE MIV - Schwerin / Merkel Ing.-Consult

| NR | HNR<br>SNO | SNU       | HSO   | HSU   | HGO   | HGU   | PRO<br>FIL | DN   | LE    | AEZG | ARED<br>G | QTU | QGR<br>MAX | WSP<br>MAX | VOG<br>MAX | N  | QV    | VV   |
|----|------------|-----------|-------|-------|-------|-------|------------|------|-------|------|-----------|-----|------------|------------|------------|----|-------|------|
| 1  | 2          | 3         | 4     | 5     | 6     | 7     | 8          | 9    | 10    | 11   | 12        | 13  | 14         | 15         | 16         | 17 | 18    | 19   |
|    |            |           | M NN  | M NN  | M NN  | M NN  |            | MM   | M     | HA   | HA        | L/S | L/S        | M NN       | M/S        | MM | L/S   | M/S  |
| 1  | 03R03      | 03R04     | 23.75 | 23.55 | 25.64 | 25.97 | 1          | 300. | 80.29 | 0.10 | 0.09      | 0.0 | 17.4       | 23.70      | 0.57       |    | 48.7  | 0.69 |
| 2  | 03R04      | 03R05     | 23.55 | 23.35 | 25.97 | 26.25 | 1          | 300. | 80.32 | 0.10 | 0.09      | 0.0 | 23.9       | 23.53      | 0.69       |    | 48.6  | 0.69 |
| 3  | 03R05      | 03R06     | 23.35 | 23.15 | 26.25 | 26.35 | 1          | 300. | 80.26 | 0.10 | 0.09      | 0.0 | 26.2       | 23.27      | 0.74       |    | 48.7  | 0.69 |
| 4  | 03R06      | 03R07     | 23.05 | 22.89 | 26.35 | 26.26 | 1          | 400. | 80.31 | 0.10 | 0.09      | 0.0 | 30.7       | 23.06      | 0.64       |    | 93.3  | 0.74 |
| 5  | 03R07      | 03R08     | 22.89 | 22.73 | 26.26 | 25.99 | 1          | 400. | 80.17 | 0.10 | 0.09      | 0.0 | 34.5       | 22.91      | 0.67       |    | 93.4  | 0.74 |
| 6  | 03R08      | 03R09     | 22.73 | 22.57 | 25.99 | 25.66 | 1          | 400. | 80.04 | 0.10 | 0.09      | 0.0 | 37.7       | 22.77      | 0.70       |    | 93.4  | 0.74 |
| 7  | 03R09      | 03R10     | 22.57 | 22.41 | 25.66 | 25.25 | 1          | 400. | 81.21 | 0.10 | 0.09      | 0.0 | 38.3       | 22.55      | 0.76       |    | 92.7  | 0.74 |
| 8  | 03R10      | 03R11     | 22.31 | 22.18 | 25.25 | 24.86 | 1          | 500. | 79.03 | 0.10 | 0.09      | 0.0 | 40.2       | 22.35      | 0.66       |    | 152.9 | 0.78 |
| 9  | 03R11      | 03R12     | 22.18 | 22.04 | 24.86 | 24.45 | 1          | 500. | 80.00 | 0.10 | 0.09      | 0.0 | 40.9       | 22.22      | 0.67       |    | 157.8 | 0.80 |
| 10 | 03R12      | 03R13     | 22.04 | 21.91 | 24.45 | 24.05 | 1          | 500. | 79.98 | 0.10 | 0.09      | 0.0 | 41.5       | 22.09      | 0.65       |    | 152.0 | 0.77 |
| 11 | 03R13      | 03R14     | 21.91 | 21.78 | 24.05 | 23.65 | 1          | 500. | 79.93 | 0.10 | 0.09      | 0.0 | 42.2       | 21.95      | 0.68       |    | 152.0 | 0.77 |
| 12 | 03R14      | 03R15     | 21.78 | 21.62 | 23.65 | 23.25 | 1          | 500. | 79.93 | 0.10 | 0.09      | 0.0 | 42.5       | 21.80      | 0.69       |    | 168.8 | 0.86 |
| 13 | 03R15      | 03R16     | 21.62 | 21.46 | 23.25 | 23.07 | 1          | 500. | 79.91 | 0.10 | 0.09      | 0.0 | 44.9       | 21.77      | 0.49       |    | 168.8 | 0.86 |
| 14 | 03R16      | 03-Ausl-1 | 21.46 | 21.44 | 23.07 | 22.80 | 1          | 900. | 18.00 | 0.00 | 0.00      | 0.0 | 183.9      | 21.68      | 1.10       |    | 592.2 | 0.93 |
| 15 | 03L01      | 03L02     | 24.03 | 23.89 | 25.17 | 25.39 | 1          | 300. | 43.62 | 0.07 | 0.06      | 0.0 | 4.1        | 23.99      | 0.29       |    | 55.3  | 0.78 |
| 16 | 03L02      | 03L03     | 23.89 | 23.77 | 25.39 | 25.64 | 1          | 300. | 49.78 | 0.06 | 0.06      | 0.0 | 11.0       | 23.90      | 0.47       |    | 47.9  | 0.68 |
| 17 | 03L03      | 03L04     | 23.77 | 23.57 | 25.64 | 25.97 | 1          | 300. | 79.69 | 0.10 | 0.09      | 0.0 | 17.8       | 23.72      | 0.58       |    | 48.8  | 0.69 |
| 18 | 03L04      | 03L05     | 23.57 | 23.37 | 25.97 | 26.25 | 1          | 300. | 79.69 | 0.10 | 0.09      | 0.0 | 24.3       | 23.55      | 0.70       |    | 48.8  | 0.69 |
| 19 | 03L05      | 03L06     | 23.37 | 23.17 | 26.25 | 26.34 | 1          | 300. | 79.74 | 0.10 | 0.09      | 0.0 | 26.6       | 23.29      | 0.74       |    | 48.8  | 0.69 |
| 20 | 03L06      | 03L07     | 23.07 | 22.91 | 26.34 | 26.25 | 1          | 400. | 79.68 | 0.10 | 0.09      | 0.0 | 31.1       | 23.08      | 0.64       |    | 93.6  | 0.75 |
| 21 | 03L07      | 03L08     | 22.91 | 22.75 | 26.25 | 25.98 | 1          | 400. | 79.82 | 0.10 | 0.09      | 0.0 | 35.0       | 22.93      | 0.67       |    | 93.6  | 0.74 |
| 22 | 03L08      | 03L09     | 22.75 | 22.59 | 25.98 | 25.66 | 1          | 400. | 79.97 | 0.10 | 0.09      | 0.0 | 38.2       | 22.79      | 0.70       |    | 93.5  | 0.74 |
| 23 | 03L09      | 03L10     | 22.59 | 22.43 | 25.66 | 25.25 | 1          | 400. | 80.80 | 0.10 | 0.09      | 0.0 | 38.8       | 22.57      | 0.76       |    | 93.0  | 0.74 |
| 24 | 03L10      | 03L11     | 22.33 | 22.20 | 25.25 | 24.86 | 1          | 500. | 78.96 | 0.10 | 0.09      | 0.0 | 40.7       | 22.37      | 0.66       |    | 153.0 | 0.78 |
| 25 | 03L11      | 03L12     | 22.20 | 22.06 | 24.86 | 24.45 | 1          | 500. | 79.99 | 0.10 | 0.09      | 0.0 | 41.4       | 22.24      | 0.67       |    | 157.8 | 0.80 |
| 26 | 03L12      | 03L13     | 22.06 | 21.93 | 24.45 | 24.05 | 1          | 500. | 80.03 | 0.10 | 0.09      | 0.0 | 42.1       | 22.11      | 0.66       |    | 151.9 | 0.77 |
| 27 | 03L13      | 03L14     | 21.93 | 21.80 | 24.05 | 23.65 | 1          | 500. | 80.07 | 0.10 | 0.09      | 0.0 | 42.9       | 21.98      | 0.67       |    | 151.9 | 0.77 |
| 28 | 03L14      | 03L15     | 21.80 | 21.66 | 23.65 | 23.26 | 1          | 500. | 80.08 | 0.10 | 0.09      | 0.0 | 43.0       | 21.85      | 0.67       |    | 157.7 | 0.80 |
| 29 | 03L15      | 03L16     | 21.66 | 21.53 | 23.26 | 23.09 | 1          | 500. | 80.09 | 0.10 | 0.09      | 0.0 | 44.4       | 21.80      | 0.55       |    | 151.9 | 0.77 |
| 30 | 03L16      | 03M16     | 21.53 | 21.50 | 23.09 | 23.50 | 1          | 600. | 15.90 | 0.00 | 0.00      | 0.0 | 92.6       | 21.78      | 0.75       |    | 265.3 | 0.94 |
| 31 | 03M16      | 03R16     | 21.50 | 21.46 | 23.50 | 23.07 | 1          | 600. | 15.90 | 0.00 | 0.00      | 0.0 | 92.8       | 21.77      | 0.68       |    | 306.7 | 1.08 |
| 32 | 03R26      | 03R25     | 25.02 | 24.58 | 26.33 | 25.95 | 1          | 300. | 75.49 | 0.11 | 0.10      | 0.0 | 6.7        | 24.68      | 0.44       |    | 74.7  | 1.06 |
| 33 | 03R25      | 03R24     | 24.58 | 24.13 | 25.95 | 25.55 | 1          | 300. | 79.84 | 0.10 | 0.09      | 0.0 | 17.4       | 24.25      | 0.74       |    | 73.4  | 1.04 |
| 34 | 03R24      | 03R23     | 24.13 | 23.69 | 25.55 | 25.15 | 1          | 300. | 79.74 | 0.10 | 0.09      | 0.0 | 25.5       | 23.83      | 0.87       |    | 72.6  | 1.03 |
| 35 | 03R23      | 03R22     | 23.69 | 23.24 | 25.15 | 24.75 | 1          | 300. | 79.79 | 0.10 | 0.09      | 0.0 | 32.3       | 23.39      | 0.95       |    | 73.4  | 1.04 |
| 36 | 03R21      | 03R20     | 22.70 | 22.38 | 24.35 | 23.95 | 1          | 400. | 79.81 | 0.10 | 0.09      | 0.0 | 43.8       | 22.55      | 0.92       |    | 132.7 | 1.06 |
| 37 | 03R20      | 03R19     | 22.38 | 22.06 | 23.95 | 23.49 | 1          | 400. | 79.81 | 0.10 | 0.09      | 0.0 | 48.0       | 22.26      | 0.87       |    | 132.7 | 1.06 |
| 38 | 03R19      | 03R18     | 22.06 | 21.86 | 23.49 | 23.20 | 1          | 400. | 79.82 | 0.10 | 0.09      | 0.0 | 52.2       | 22.06      | 0.83       |    | 104.7 | 0.83 |
| 39 | 03R18      | 03R17     | 21.86 | 21.66 | 23.20 | 23.06 | 1          | 400. | 79.84 | 0.10 | 0.09      | 0.0 | 53.5       | 21.86      | 0.84       |    | 104.7 | 0.83 |
| 40 | 03L26      | 03L25     | 25.19 | 24.75 | 26.34 | 25.95 | 1          | 300. | 75.98 | 0.11 | 0.10      | 0.0 | 6.7        | 24.85      | 0.44       |    | 74.4  | 1.05 |

PROJEKT : BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 Hydraulischer Nachweis der Regenwasserkanäle  $r15(1) = 102,8 \text{ l/(s*ha)}$   
 BERECHNUNGSMETHODE: HYSTEN / EXTRAN 6.3.2 (ITWH)  
 ERSTELLT VOM: ITWH HANNOVER -- INSTITUT FUER TECHNISCH-WISSENSCHAFTLICHE HYDROLOGIE  
 AUFTRAGGEBER:  
 AUFTRAGNEHMER: ARGE MIV - Schwerin / Merkel Ing.-Consult

| NR | HNR<br>SNO | SNU   | HSO   | HSU   | HGO   | HGU   | PRO<br>FIL | DN   | LE    | AEZG | ARED<br>G | QTU | QGR<br>MAX | WSP<br>MAX | VQG<br>MAX | N     | QV   | VV  |
|----|------------|-------|-------|-------|-------|-------|------------|------|-------|------|-----------|-----|------------|------------|------------|-------|------|-----|
| 1  | 2          | 3     | 4     | 5     | 6     | 7     | 8          | 9    | 10    | 11   | 12        | 13  | 14         | 15         | 16         | 17    | 18   | 19  |
|    |            |       | M NN  | M NN  | M NN  | M NN  |            | MM   | M     | HA   | HA        | L/S | L/S        | M NN       | M/S        | MM    | L/S  | M/S |
| 41 | 03L25      | 03L24 | 24.75 | 24.30 | 25.95 | 25.55 | 1          | 300. | 80.17 | 0.10 | 0.09      | 0.0 | 17.4       | 24.42      | 0.74       | 73.3  | 1.04 |     |
| 42 | 03L24      | 03L23 | 24.30 | 23.86 | 25.55 | 25.15 | 1          | 300. | 80.25 | 0.10 | 0.09      | 0.0 | 25.4       | 24.00      | 0.86       | 72.4  | 1.02 |     |
| 43 | 03L23      | 03L22 | 23.86 | 23.41 | 25.15 | 24.75 | 1          | 300. | 80.21 | 0.10 | 0.09      | 0.0 | 32.4       | 23.56      | 0.95       | 73.3  | 1.04 |     |
| 44 | 03L21      | 03L20 | 22.87 | 22.55 | 24.35 | 23.95 | 1          | 400. | 80.18 | 0.10 | 0.09      | 0.0 | 44.5       | 22.72      | 0.93       | 132.4 | 1.05 |     |
| 45 | 03L20      | 03L19 | 22.55 | 22.23 | 23.95 | 23.50 | 1          | 400. | 80.21 | 0.10 | 0.09      | 0.0 | 48.7       | 22.43      | 0.89       | 132.3 | 1.05 |     |
| 46 | 03L19      | 03L18 | 22.23 | 22.03 | 23.50 | 23.21 | 1          | 400. | 80.17 | 0.10 | 0.09      | 0.0 | 52.1       | 22.23      | 0.82       | 104.5 | 0.83 |     |
| 47 | 03L18      | 03L17 | 22.03 | 21.83 | 23.21 | 23.07 | 1          | 400. | 80.17 | 0.10 | 0.09      | 0.0 | 54.0       | 22.06      | 0.84       | 104.5 | 0.83 |     |
| 48 | 03L17      | 03L16 | 21.83 | 21.63 | 23.07 | 23.09 | 1          | 400. | 80.14 | 0.10 | 0.09      | 0.0 | 53.2       | 21.80      | 0.88       | 104.5 | 0.83 |     |
| 49 | 03R01      | 03R02 | 24.00 | 23.87 | 25.17 | 25.39 | 1          | 300. | 45.51 | 0.07 | 0.06      | 0.0 | 3.9        | 23.97      | 0.28       | 52.1  | 0.74 |     |
| 50 | 03R02      | 03R03 | 23.87 | 23.75 | 25.39 | 25.64 | 1          | 300. | 50.22 | 0.06 | 0.06      | 0.0 | 10.7       | 23.87      | 0.47       | 47.6  | 0.67 |     |
| 51 | 03R17      | 03R16 | 21.66 | 21.46 | 23.06 | 23.07 | 1          | 400. | 79.85 | 0.10 | 0.09      | 0.0 | 54.1       | 21.77      | 0.65       | 104.7 | 0.83 |     |
| 52 | 03M03      | 03M02 | 24.60 | 24.35 | 26.00 | 25.75 | 1          | 150. | 50.00 | 0.00 | 0.00      | 0.0 | 0.0        | 24.35      | 0.00       | 10.9  | 0.62 |     |
| 53 | 03M06      | 03M05 | 25.34 | 25.25 | 26.77 | 26.68 | 1          | 150. | 81.85 | 0.00 | 0.00      | 0.0 | 0.0        | 25.25      | 0.00       | 5.0   | 0.29 |     |
| 54 | 03M05      | 03M04 | 25.25 | 25.00 | 26.68 | 26.40 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 25.00      | 0.00       | 8.6   | 0.49 |     |
| 55 | 03M04      | 03M03 | 25.00 | 24.60 | 26.40 | 26.00 | 1          | 150. | 79.99 | 0.00 | 0.00      | 0.0 | 0.0        | 24.60      | 0.00       | 10.9  | 0.62 |     |
| 56 | 03M03      | 03R03 | 24.45 | 24.29 | 26.00 | 25.64 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 24.29      | 0.00       | 98.3  | 1.39 |     |
| 57 | 03M06      | 03M07 | 25.34 | 25.25 | 26.77 | 26.69 | 1          | 150. | 78.15 | 0.00 | 0.00      | 0.0 | 0.0        | 25.25      | 0.00       | 5.2   | 0.29 |     |
| 58 | 03M07      | 03M08 | 25.25 | 25.00 | 26.69 | 26.41 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 25.00      | 0.00       | 8.6   | 0.49 |     |
| 59 | 03M08      | 03M09 | 25.00 | 24.62 | 26.41 | 26.02 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 24.62      | 0.00       | 10.6  | 0.60 |     |
| 60 | 03M09      | 03R09 | 24.47 | 24.31 | 26.02 | 25.66 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 24.31      | 0.00       | 98.3  | 1.39 |     |
| 61 | 03M09      | 03M10 | 24.62 | 24.21 | 26.02 | 25.61 | 1          | 150. | 81.00 | 0.00 | 0.00      | 0.0 | 0.0        | 24.21      | 0.00       | 11.0  | 0.62 |     |
| 62 | 03M10      | 03M11 | 24.21 | 23.82 | 25.61 | 25.22 | 1          | 150. | 79.00 | 0.00 | 0.00      | 0.0 | 0.0        | 23.82      | 0.00       | 10.8  | 0.61 |     |
| 63 | 03M11      | 03M12 | 23.82 | 23.42 | 25.22 | 24.82 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 23.42      | 0.00       | 10.9  | 0.62 |     |
| 64 | 03M12      | 03R12 | 23.27 | 23.11 | 24.82 | 24.45 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 23.11      | 0.00       | 98.3  | 1.39 |     |
| 65 | 03M12      | 03M13 | 23.42 | 23.01 | 24.82 | 24.41 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 23.01      | 0.00       | 11.0  | 0.62 |     |
| 66 | 03M13      | 03M14 | 23.01 | 22.61 | 24.41 | 24.01 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 22.61      | 0.00       | 10.9  | 0.62 |     |
| 67 | 03M14      | 03M15 | 22.61 | 22.29 | 24.01 | 23.68 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 22.29      | 0.00       | 9.7   | 0.55 |     |
| 68 | 03M15      | 03R15 | 21.88 | 21.82 | 23.68 | 23.25 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 21.82      | 0.00       | 60.0  | 0.85 |     |
| 69 | 03M161     | 03M15 | 22.13 | 22.03 | 23.50 | 23.68 | 1          | 150. | 78.00 | 0.00 | 0.00      | 0.0 | 0.0        | 22.03      | 0.00       | 5.5   | 0.31 |     |
| 70 | 03M162     | 03M17 | 22.12 | 22.02 | 23.49 | 23.48 | 1          | 150. | 78.00 | 0.00 | 0.00      | 0.0 | 0.0        | 22.02      | 0.00       | 5.5   | 0.31 |     |
| 71 | 03M17      | 03R17 | 21.87 | 21.76 | 23.48 | 23.06 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 21.86      | 0.00       | 81.4  | 1.15 |     |
| 72 | 03M20      | 03M19 | 22.91 | 22.51 | 24.31 | 23.91 | 1          | 150. | 80.01 | 0.00 | 0.00      | 0.0 | 0.0        | 22.51      | 0.00       | 10.9  | 0.62 |     |
| 73 | 03M19      | 03M18 | 22.51 | 22.23 | 23.91 | 23.61 | 1          | 150. | 79.99 | 0.00 | 0.00      | 0.0 | 0.0        | 22.23      | 0.00       | 9.1   | 0.51 |     |
| 74 | 03M23      | 03M22 | 24.11 | 23.71 | 25.57 | 25.16 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 23.71      | 0.00       | 10.9  | 0.62 |     |
| 75 | 03M22      | 03M21 | 23.71 | 23.31 | 25.16 | 24.77 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 23.31      | 0.00       | 10.9  | 0.62 |     |
| 76 | 03M21      | 03M20 | 23.31 | 22.91 | 24.77 | 24.31 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 22.91      | 0.00       | 10.9  | 0.62 |     |
| 77 | 03M20      | 03R20 | 22.76 | 22.48 | 24.31 | 23.95 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 22.55      | 0.00       | 130.2 | 1.84 |     |
| 78 | 03M26      | 03M25 | 25.31 | 24.91 | 26.71 | 26.32 | 1          | 150. | 79.48 | 0.00 | 0.00      | 0.0 | 0.0        | 24.91      | 0.00       | 10.9  | 0.62 |     |
| 79 | 03M25      | 03M24 | 24.91 | 24.51 | 26.32 | 25.91 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 24.51      | 0.00       | 10.9  | 0.62 |     |
| 80 | 03M24      | 03M23 | 24.51 | 24.11 | 25.91 | 25.57 | 1          | 150. | 80.00 | 0.00 | 0.00      | 0.0 | 0.0        | 24.11      | 0.00       | 10.9  | 0.62 |     |

PROJEKT : BAB A20 Nordwestumfahrung Hamburg Stand 10/2007  
 : Hydraulischer Nachweis der Regenwasserkanäle  $r_{15}(1) = 102,8 \text{ l/(s*ha)}$   
 BERECHNUNGSMETHODE: HYSTEM / EXTRAN 6.3.2 (ITWH)  
 ERSTELLT VOM : ITWH HANNOVER -- INSTITUT FÜR TECHNISCH-WISSENSCHAFTLICHE HYDROLOGIE  
 AUFTRAGGEBER :  
 AUFTRAGNEHMER : ARGE MIV - Schwerin / Merkel Ing.-Consult

| NR | HNR<br>SNO | SNU     | HSO   | HSU   | HGO   | HGU   | PRO<br>FIL | DN   | LE    | AEZG | ARED<br>G | QTU | QGR<br>MAX | WSP<br>MAX | VQG<br>MAX | N  | QV    | VV   |
|----|------------|---------|-------|-------|-------|-------|------------|------|-------|------|-----------|-----|------------|------------|------------|----|-------|------|
| 1  | 2          | 3       | 4     | 5     | 6     | 7     | 8          | 9    | 10    | 11   | 12        | 13  | 14         | 15         | 16         | 17 | 18    | 19   |
|    |            |         | M NN  | M NN  | M NN  | M NN  |            | MM   | M     | HA   | HA        | L/S | L/S        | M NN       | M/S        | MM | L/S   | M/S  |
| 81 | 03M23      | 03R23   | 23.96 | 23.69 | 25.57 | 25.15 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 23.83      | 0.00       |    | 127.8 | 1.81 |
| 82 | 03M02      | 03M01   | 24.35 | 24.09 | 25.75 | 25.52 | 1          | 150. | 45.41 | 0.00 | 0.00      | 0.0 | 0.0        | 24.09      | 0.00       |    | 11.7  | 0.66 |
| 83 | 03M01      | 03R01   | 24.09 | 24.00 | 25.52 | 25.17 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | 0.0        | 24.06      | 0.00       |    | 73.6  | 1.04 |
| 84 | 03M18.1    | 03M18   | 22.09 | 22.00 | 23.52 | 23.61 | 1          | 150. | 45.00 | 0.00 | 0.00      | 0.0 | 0.0        | 22.06      | 0.00       |    | 6.8   | 0.39 |
| 85 | 03M17.1    | 03M17   | 22.10 | 22.09 | 23.50 | 23.48 | 1          | 150. | 20.00 | 0.00 | 0.00      | 0.0 | 0.0        | 22.09      | 0.00       |    | 3.4   | 0.19 |
| 86 | 03M18      | 03R18   | 22.00 | 21.96 | 23.61 | 23.20 | 1          | 300. | 15.90 | 0.00 | 0.00      | 0.0 | -1.7       | 22.06      | 0.26       |    | 48.9  | 0.69 |
| 87 | 03R21.1    | 03R21   | 22.99 | 22.80 | 24.47 | 24.35 | 1          | 300. | 34.74 | 0.04 | 0.04      | 0.0 | 40.3       | 22.95      | 1.05       |    | 72.3  | 1.02 |
| 88 | 03R22      | 03R21.2 | 23.24 | 23.06 | 24.75 | 24.44 | 1          | 300. | 32.94 | 0.04 | 0.04      | 0.0 | 37.2       | 23.21      | 1.02       |    | 72.3  | 1.02 |
| 89 | 03R21.2    | 03R21.1 | 23.06 | 22.99 | 24.44 | 24.47 | 1          | 300. | 12.09 | 0.01 | 0.01      | 0.0 | 38.8       | 23.16      | 1.03       |    | 74.4  | 1.05 |
| 90 | 03L21.1    | 03L21   | 23.09 | 22.97 | 24.31 | 24.35 | 1          | 300. | 22.83 | 0.03 | 0.03      | 0.0 | 41.0       | 23.13      | 1.04       |    | 70.9  | 1.00 |
| 91 | 03L22      | 03L21.2 | 23.41 | 23.16 | 24.75 | 24.47 | 1          | 300. | 45.29 | 0.06 | 0.05      | 0.0 | 37.5       | 23.32      | 1.03       |    | 72.7  | 1.03 |
| 92 | 03L21.2    | 03L21.1 | 23.16 | 23.09 | 24.47 | 24.31 | 1          | 300. | 12.15 | 0.01 | 0.01      | 0.0 | 39.6       | 23.26      | 1.02       |    | 74.2  | 1.05 |